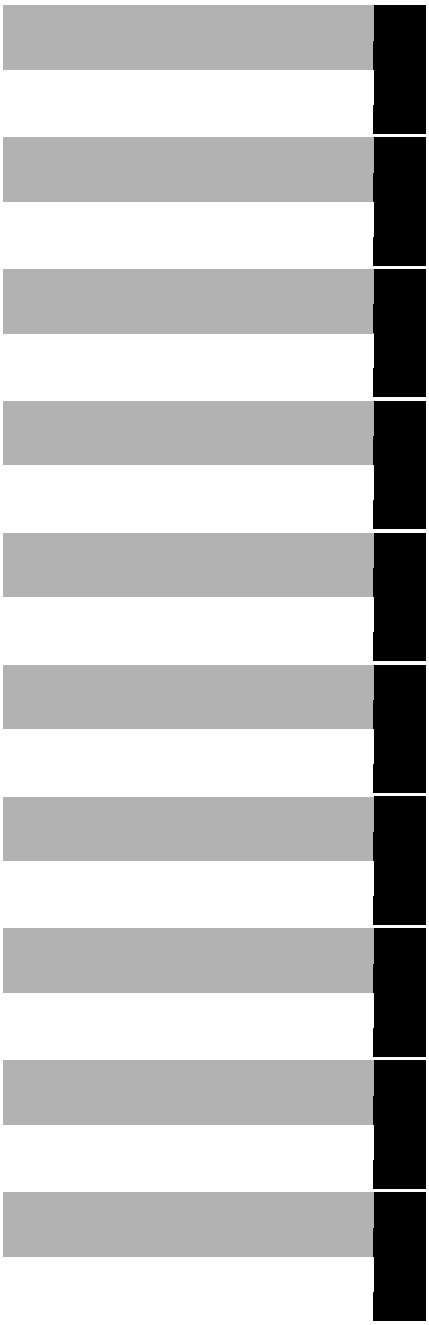
SYSTEM BOARD D1170

REFERENCE MANUAL



November 1999 edition

Contents

Introduction

This system board is available in different configurations. There may be some hardware options unavailable on your version of the system board.

You may find further information in the description "BIOS Set-up".

Notational conventions

The following symbols and fonts are used in this manual:

Pay particular attention to texts marked with this symbol. Failure to observe this warning may endanger your life, damage the system, or lead to loss of data.

Supplementary information, remarks and tips follow this symbol.

`Texts in this typeface` are screen outputs.

`Texts in this bold typeface` are entries you make via the keyboard.

Texts in italics indicate commands or menu items.

"Quotation marks" indicate names of chapters and terms that are being emphasised.

Important notes

Please retain this manual for future reference.

Be sure to read this page carefully.

You cannot access the system board without first opening the device it is installed in.

Please note manufacturer supplied safety information provided in the chapter "Safety" in the Operating Manual of the device.

Incorrect replacement of the lithium battery may lead to a risk of explosion. It is therefore essential to observe the instructions in the chapter “**Installation**” and “**Replacing the lithium battery**“.

The lithium battery must be replaced with an identical type (CR2032).

Lithium batteries must be disposed of in accordance with local regulations.

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 of the receiving device.

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

Components can become very hot during operation. There is a risk of burns if you touch certain components when adding extensions to the system board.

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

Information on boards

To prevent damage to the system board or the components and conductors on it please take care when inserting or removing extension boards and ensure that they are slotted in straight.

Be especially careful with the locking mechanisms (catches, centring pins etc.) when replacing the system board or components on it (memory modules / 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 observe the following points under all circumstances:

- You must always discharge yourself before working by touching a grounded object (eg. Computer chassis).
- The equipment and tools you use must be free of static charges.
- Disconnect power before inserting or removing boards.
- Always hold boards by their edges.
- Never touch the pins or conductors.

Features

- System board in micro ATX format
- Intel Celeron processor with 66 MHz/100 MHz Front Side Bus for PGA 370 socket and Pentium III with 100 / 133 MHz Front Side Bus for PGA 370 socket.

Intel Celeron and Pentium III processors support MMX technology and Intel Streaming SIMD Extensions. The size of first and second level cache is dependent on the processor used.

- Intel chipset 810E
  consisting of GMCH 82810E, ICH 82801 and FWH82802
- AC'97 Audio Codec
  internal: Stereo CD-In, Stereo AUX-In
  external: Mono Micro-In, Stereo Line-In, Game/Midi-Port, Stereo Line-Out (max. 2 x 0,5 W/8 Ω))
- 2 DIMM slots for 16 to 512 Mbyte main memory without ECC (SDRAM memory modules must meet the PC100 specification)
- Flash BIOS

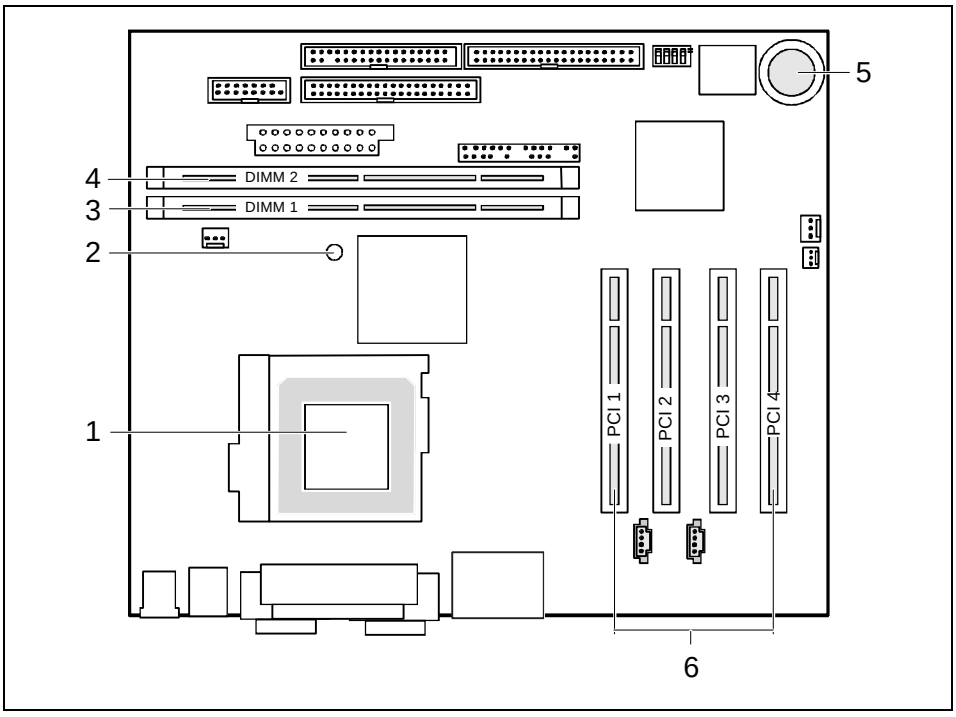
- Energy saving functions:
  - ACPI and APM
  - Switching on/off, standby mode, suspend mode via on/off switch
  - Switching on/off via software
  - Wake on RTC
  - Wake on LAN
  - Wake on PCI Cards
- Security functions:
  - System, Set-up and Keyboard password
  - parallel and serial ports can be deactivated
  - Write protection for floppy disk drive
  - Virus warning function for the boot hard disk
  - Virus protection function for the flash BIOS and the EEPROMs on the memory modules
- 4 PCI slots
  PCI slots support 3.3 V main voltage.
- IDE hard disk controller connected to PCI bus for up to four IDE drives
  (e.g. IDE hard disk drives, ATAPI CD-ROM drives)
  The IDE hard disk controller is ATA33/66 ultra DMA capable and supports PIO modes 0-4.
- Floppy disk drive controller (possible formats: 720 Kbyte, 1.44 Mbyte, 2.88 Mbyte)
- The system board supports booting from a 120 Mbyte IDE floppy disk drive.
- 2D/3D graphics processor, 24 bit 230 MHz RAMDAC
- Monitor connector: Sub D
- 1 external parallel interface (ECP- and EPP-compatible)
- 1 external serial port (16C550 compatible with FIFO)
  This port does not support the ring indicator signal.
- 1 internal serial port (16C550 compatible with FIFO)
  This port does not support the ring indicator signal.
- 1 internal WOL interface
- 2 external PS/2 interfaces for keyboard and mouse
- 2 external USB ports
- Real-time clock/calendar with integrated battery backup

Installation

For all steps described in this chapter switch off the device and then disconnect power.

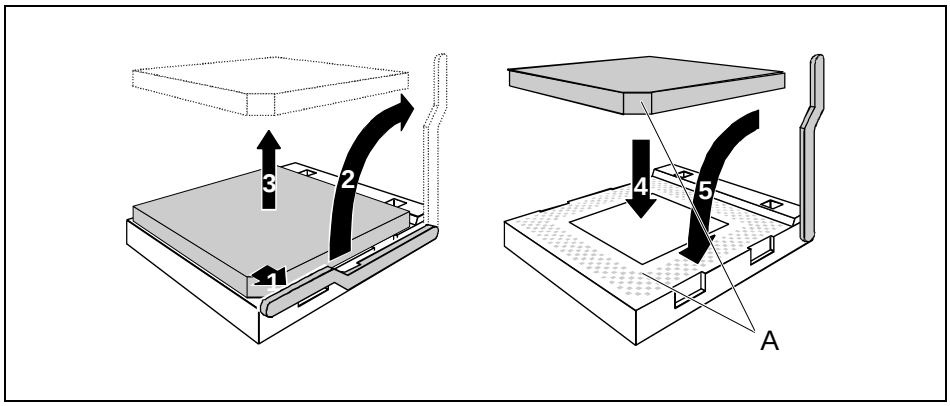
Even when switched off parts of the device are energised (e.g. memory modules, AGP and PCI extension boards). The voltage indicator LED glows or flashes to indicate this.

All PCI slots have bus master capability and support 3.3 V.



1 = Slot for processor with heat sink
2 = Voltage indicator LED
3 = Location bank 1 for main memory
1 = Location bank 2 for main memory
2 = Lithium battery
3 = PCI slots 1, 2, 3, 4

Installing / removing processor



- Gently prise the lever out to unlock (1) and lift it as far as it will go (2).
- Remove the old processor from the socket (3).
- Insert the new processor in the socket so that the angled corner of the processor matches the coding on the socket (A) with regard to the position (4).

The angled corner of the processor may be covered by the heat sink. In this case ensure the pins on the underside of the processor line up correctly with the socket.

- Push the lever back down so that it snaps into place.

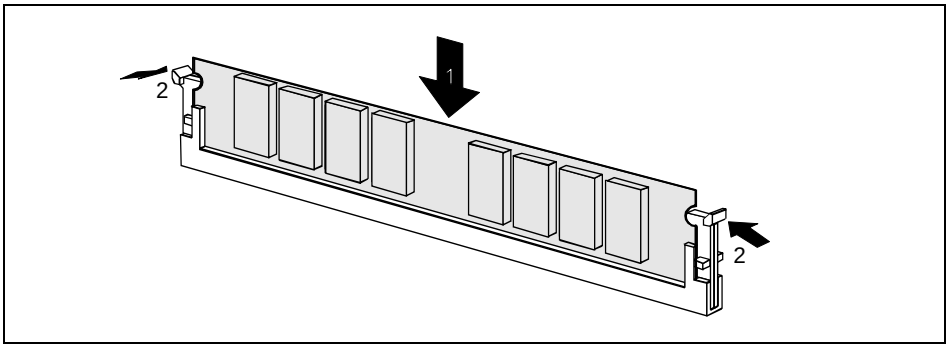
Main memory

The slots are suitable for 16, 32, 64, 128 and 256 Mbyte SDRAM DIMM memory modules. Modules with ECC can be used but ECC does not function. Different capacities and types can be mixed.

You may only use unbuffered 3.3V memory modules. Buffered memory modules are not permitted.

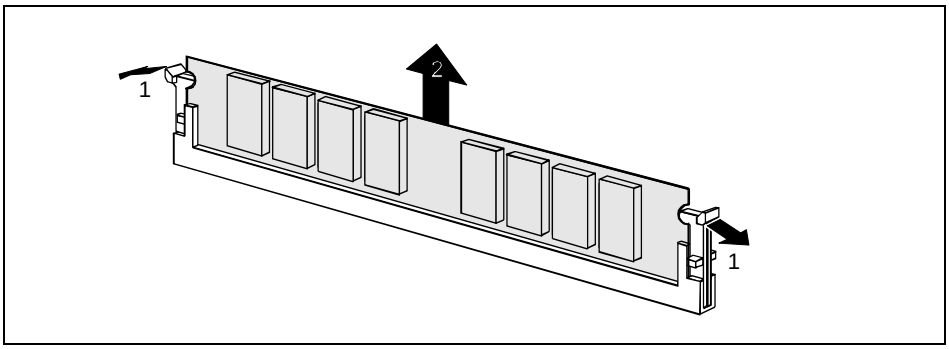
SDRAM memory modules must meet the PC100 specification.

Installing memory modules



- Flip the holders on each side of the relevant location outwards.
- Insert the memory module into the location (ensure the key is correctly aligned).
- At the same time flip the lateral holders upwards until the memory module snaps in place.

Removing a memory module



- Flip the holders to the right and left of the location outwards.
- Pull the memory module out of its location.

Installing network board with WOL

- Install the network board as described in the manufacturer's operating manual.
- Push the WOL cable onto the WOL plug connector of the system board.

i To use the WOL functionality of a network board the power supply must provide a 5 V auxiliary voltage of at least 1 A. If you have purchased the system board alone, you must check whether your power supply can provide the auxiliary voltage.

You may find further information in the documentation for the network board.

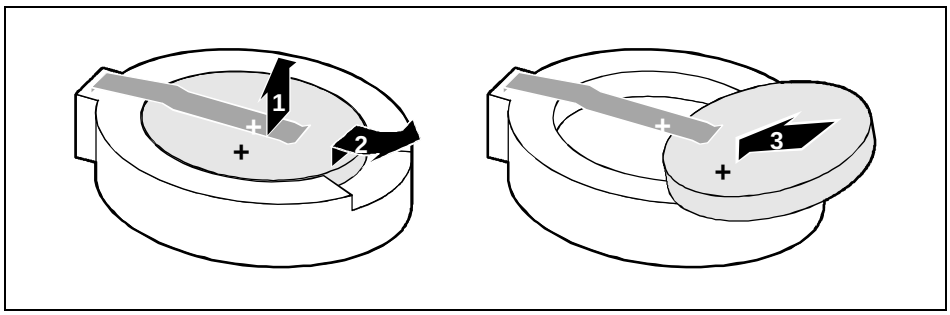
Replacing the lithium battery

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

The lithium battery must be replaced with an identical type (CR2032).

Lithium batteries must be disposed of in accordance with local regulations.

Make sure that you insert the battery with the correct polarity.



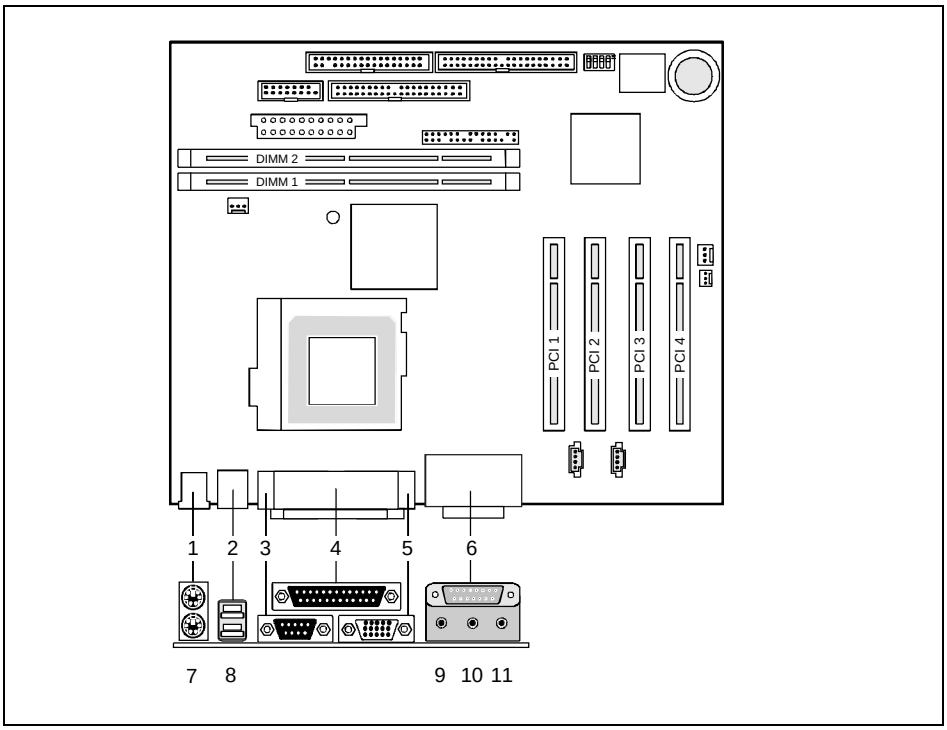
- Lift the contact (1) a few millimetres and remove the battery from its socket (2).
- Insert a new lithium battery of the same type in the socket (3).

Configuration

External Connections

µ-ATX 9,6" x 8'' (243,84 mm x 203,2 mm)

Some of the following connectors are optional and may not be included on your mainboard.

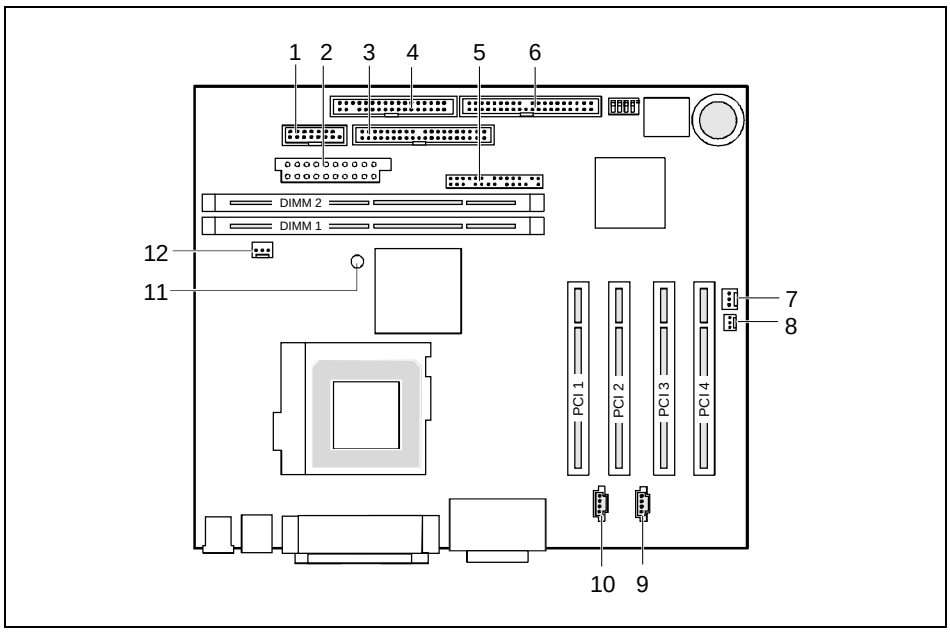


1 = PS/2 mouse port
2 = USB port B
3 = Serial port 1
4 = Parallel port
5 = VGA connector
6 = Game/Midi port

1 = PS/2 keyboard port
2 = USB port A
3 = Audio line-out
4 = Audio line-in
5 = Audio micro-in

The components and connectors marked may not be present on the system board.

Internal connections



1 = Serial port 2
2 = Power supply
3 = Secondary IDE
4 = Floppy disk drive
5 = Front panel and loudspeaker
6 = Primary IDE

1 = Fan 2 (e. g. for the processor)
2 = Wake On LAN
3 = CD audio input
4 = AUX audio input
5 = Voltage indicator LED
6 = Fan 1 (e. g. for the processor)

The components and connectors marked do not have to be present on the system board.

An ultra ATA/66 hard disk must be connected with a cable designed for the ATA/66 mode.

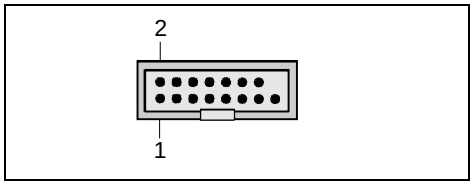
➢ Connect the blue marked end of the cable to the system board.

Connector pin assignments

Some of the following connectors are optional!

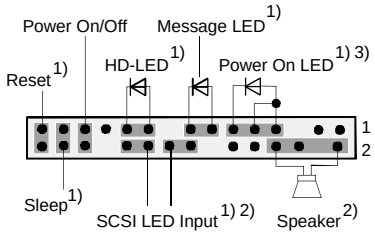
Internal serial port 2 (COM 2)

External via optional cable



Pin	Signal	Pin	Signal
1	DCD 2	2	DSR 2
3	SIN 2	4	RTS 2
5	SOUT 2	6	CTS 2
7	DTR 2	8	PC_On_Strobe
9	GND	10	VCC Auxiliary
11	Not connected	12	VCC
13	RESET (high asserted)	14	GND
15	GND	16	Key

Front panel connector



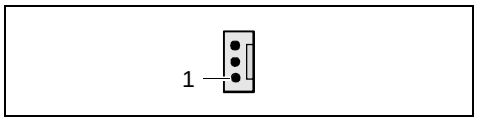
1) Cable is not included in the delivery scope.
2) The same interface
3) 2pin or 3pin connector possible

Pin	Signal	Pin	Signal
1	Not connected	2	Speaker
3	Standby LED (Anode)	4	Key
5	Key	6	GND
7	PON_LED (Anode)	8[1)]	VCC or GND
9	PON_LED (Anode)	10	Key pin
11	PON_LED (Cathode/GND) Standby LED (Cathode/GND)	12	Key pin
13	Message LED (Anode)	14	Key
15	Message LED (Cathode)	16	Not connected
17	Key	18	SCSI LED input (low asserted)
19	HD_LED (Anode)	20	SCSI LED input (low asserted)
21	HD_LED (Cathode)	22	Not connected
23	GND	24	Key
25	Power button (low asserted)	26	GND
27[2)]	Sleep button (low asserted)	28	GND
29	Reset button (low asserted)	30	GND

1) Pin 8 is connected to VCC if audio is not onboard.
Pin 8 is connected to GND if audio is onboard.

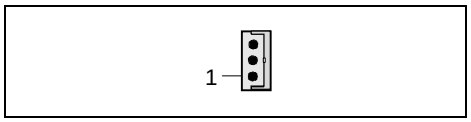
2) The sleep button (optional) functions only for operating systems with APM (not with ACPI).

Fan 2 connector



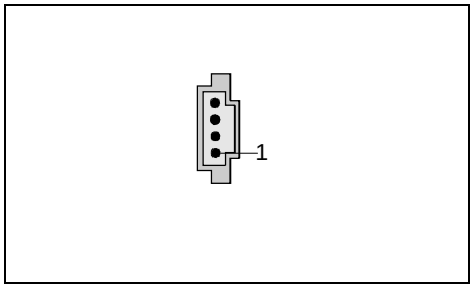
Pin	Signal
1	GND
2	+12 V
3	Fan sense

Wake On LAN (WOL) connector



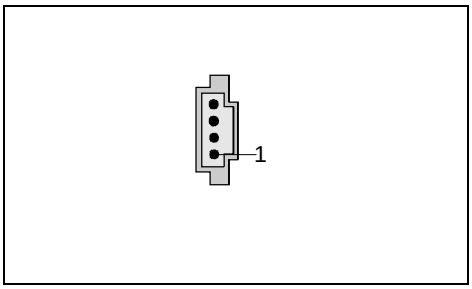
Pin	Signal
1	VCC Auxiliary
2	GND
3	Wake pulse (high asserted)

CD-ROM audio connector (internal)



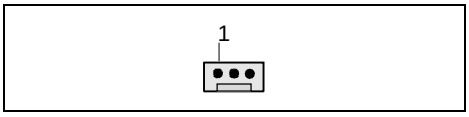
Pin	Signal
1	Left CD audio input
2	CD GND
3	CD GND
4	Right CD audio input

Auxiliary (MPEG, TV) audio connector (internal)



Pin	Signal
1	Left AUX audio input
2	Analog GND
3	Analog GND
4	Right AUX audio input

Fan 1 connector



Pin	Signal
1	GND
2	+12 V
3	Fan sense

Power

Power requirement

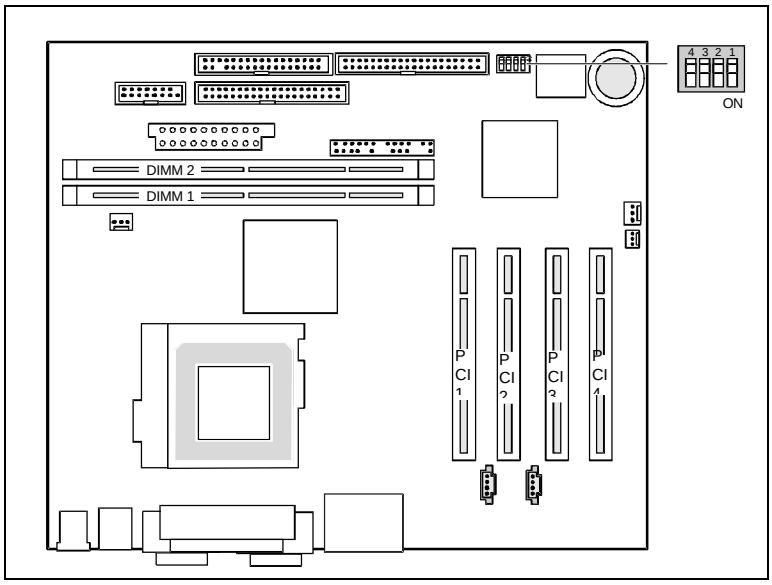
Source	Voltage	Maximum variation	Maximum current	Comment
Main power supply	+5.0 V	±5 %	15 A	
Main power supply	+12 V	±10 %	350 mA	
Main power supply	-12 V	±10 %	150 mA	
Main power supply	+3.3 V	±5 %	4 A	
Auxiliary power supply	+5.0 V	±5 %	1 A	

Power loading

Fuse number	Maximum fuse current	Function	Maximum function current
1	750 A	Keyboard port	Not specified
		Mouse port	Not specified
		Game port	Not specified
		VGA connector	Minimum 50 mA
2	750 mA	Universal serial bus (USB) Port A	500 mA
3	750 mA	Universal serial bus (USB) Port B	500 mA

Further information

Switch settings



Switch 1	Switch 2	Switch 3	Switch 4
Password skip	BIOS recovery	Floppy protection	*Reserved - stays off*

i The clock frequency of the processor is set automatically.

Recovering System BIOS

Switch 2 enables recovery of the old system BIOS after an attempt to update has failed. To restore the old system BIOS you need a Flash BIOS Diskette (please call our customer service centre).

On Inserted "Flash-BIOS-Diskette" restores the BIOS to the system board.

Off Normal operation (default setting).

Write protection for floppy disks

Switch 3 is used to define whether floppy disks can be written to. To write to floppy disks write-protection in *BIOS Set-up* must be disabled (menu *Security*, field *Diskette Write* set to *Enabled*).

On The floppy disk drive is write-protected.

Off	Read, write and delete floppy disks (default setting).

PCI bus interrupts

The following table shows how PCI bus interrupts are assigned.

PCI bus interrupt	Component on system board:
A	PCI bus slot 1
B	PCI bus slot 2
C	PCI bus slot 3
D	PCI bus slot 4
D	USB controller
A	Graphics processor
B	SMBus
B	AC'97

Screen resolution

The screen resolutions in the following table refer to the display controller on the system board.

If you are using an external display 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)	Horizontal-rate (kHz) *	Max. number of colors
640x480	60	31.5	16
640x480	60 - 85	31.5 - 43.3	256
640x480	60 - 85	31.5 - 43.3	65536
640x480	60 - 85	31.5 - 43.3	16777216
800x600	60 - 85	35.1 - 53.7	256
800x600	60 - 85	35.1 - 53.7	65536
800x600	60 - 85	35.1 - 53.7	16777216
1024x768	60 - 85	48.8 - 68.7	256
1024x768	60 - 85	48.8 - 68.7	65536
1024x768	60 - 85	48.8 - 68.7	16777216
1152x864	60 - 85	54.4 - 76.9	256
1152x864	60 - 85	54.4 - 76.9	65536
1152x864	60 - 85	54.4 - 76.9	16777216
1280x1024	60 - 85	64.0 - 91.1	256
1280x1024	60 - 85	64.0 - 91.1	65536
1280x1024	60 - 85	64.0 - 91.1	16777216
1600x1200	60 - 75	75.0 - 93.8	256

* The horizontal rate values may have a tolerance range of ±0.3 kHz.

Troubleshooting

Message BIOS update

The System BIOS provides optimum support for the processor you have chosen. If the message

`BIOS update for installed CPU failed`

appears the microcode required for the processor inserted must be loaded. Further information on this is available in the "BIOS Setup" manual on the "Drivers & Utilities" CD provided.

The screen stays blank

If your screen stays blank this may have the following cause:

The wrong RAM memory module has been inserted

- See the chapter "Main Memory" for information which memory modules can be used.

ACPI S3 (Save-to-RAM) and/or ACPI S4 (Save-to-Disk) doesn't work

This system board is fully compliant for ACPI S3 and S4. Therefore it is PC98 certified by Microsoft.

If you have any problems with ACPI please ensure that all of your components are supporting ACPI S3 and S4.

- Operating system
- Hardware and drivers of controllers (e. g. VGA, audio, LAN, SCSI controllers).

The system board D1170 supports Save-to-RAM. Intel and Microsoft certify the D1170. The operating system, the extension boards and the power supply must also guarantee this support. For the time neither Windows 98 1st edition nor Windows NT4.0 support this function reliably. Windows 98 SE and Windows 2000 will support ACPI S3. Unfortunately only a few extension boards work with functional Save-to-RAM compliant drivers (refer to *http://developer.intel.com/technology/iapc/involve.htm*).

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 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
CPU ..... Central Processing Unit
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
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
PCI ..... Peripheral Component Interconnect
PXE..... Preboot eXecution Environment
RAM ..... Random Access Memory
RAMDAC ..... Random Access Memory Digital Analog 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
SMBus ..... System Management Bus
SVGA..... Super Video Graphic Adapter
USB..... Universal Serial Bus
VGA ..... Video Graphic Adapter
WOL ..... Wake On LAN