PRIMERGY Econel 200 Server System

Operating Manual

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Certified documentation according to DIN EN ISO 9001:2000

To ensure a consistently high quality standard and user-friendliness, this documentation was created to meet the regulations of a quality management system which complies with the requirements of the standard DIN EN ISO 9001:2000.

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1 Introduction

The PRIMERGY Econel 200 server is an Intel-based server for workgroups and small networks. It is suited as a file server as well as an application, information or internet server.

The PRIMERGY Econel 200 server offers a high degree of reliability and availability through highly developed hardware and software components.

Security functions in the *BIOS Setup* and on the system board protect the data on the server against manipulation. With the RAID levels supported, the hard disk controllers offer fault tolerance via data redundancy for users who want to protect valuable data without loss.

1.1 Overview of the Documentation

> **i** PRIMERGY manuals are available in PDF format on the *ServerBooks* CD. The *ServerBooks* CD is part of the ServerView Suite delivered with each server system.
>
> The PDF files for the manuals can also be downloaded free of charge from the Internet. The overview page showing the online documentation available on the Internet can be found via the URL:
> *http://manuals.fujitsu-siemens.com* (choose: *industry standard servers*).

Concept and Target Group of this Manual

This operating manual describes how to install, how to operate and how to expand your server.

This operating manual is intended for those responsible for installing the hardware and operating the system. The manual contains all the information required for mounting and operating your PRIMERGY Econel 200.

To understand the manual, you need a knowledge of hardware and data transmission, as well as a basic knowledge of the operating system used.

Additional components of the server documentation

The following additional manuals belong to the PRIMERGY Econel 200 documentation set:

– "Quick Start Hardware - PRIMERGY Econel 200" (poster)

– "Quick Start Software - PRIMERGY ServerView Suite" (poster)

– "Warranty" manual (print version delivered together with the system, PDF file available on the *ServerBooks* CD)

– "Safety" manual (print version delivered together with the system, PDF file available on the *ServerBooks* CD)

– "Ergonomics" manual (PDF file available on the *ServerBooks* CD)

– "Helpdesk" (poster with worldwide help desk telephone numbers)

– Technical Manual for the D2020 system board (PDF file available on the *ServerBooks* CD)

– "D2020 Setup Utility" manual (PDF file available on the *ServerBooks* CD)

– "PRIMERGY Econel 200 Server System Options Guide" (PDF file available on the *ServerBooks* CD)

> **i** In the "Options Guide", the server extension and modification possibilities are described.

– "ServerView Suite" includes the *ServerStart* CD, the *ServerBooks* CD and the *ServerSupport* CDs. The PDF version of the user manual „PRIMERGY ServerView Suite - ServerStart" is also available on the *ServerBooks* CD.

> **i** If you need a backup of the *ServerBooks* CD, send the details of your server via email address: *Reklamat-PC-LOG@fujitsu-siemens.com*.

– "FastTrak S150 TX4 User Manual" (PDF file available on the *ServerBooks* CD)

– "FastTrak S150 TX4 Quick Start Guide" (PDF file available on the *ServerBooks* CD)

– "Promise Array Management (PAM) for FastTrak S150 TX2plus, S150 TX4 and TX4000 User Manual" (PDF file available on the *ServerBooks* CD)

– "LSI SATA Software RAID User's Guide" (PDF file available on the *ServerBooks* CD)

– "Global Array Manager Client Software User's Guide" (PDF file available on the *ServerBooks* CD)

– "Global Array Manager Server Software User's Guide" (PDF file available on the *ServerBooks* CD)

– "Integrated Mirroring User's Guide" (PDF file available on the *ServerBooks* CD)

– "Ultra320 SCSI Host Adapters User's Guide" (PDF file available on the *ServerBooks* CD)

Further sources of information

– manual for the monitor
– server management manual *ServerView*
– in the documentation for the boards and drives
– operating system documentation
– information files of your operating system

(see also "Related publications" on page 53)

1.2 Features

System board

The features of the system board can be found in the Technical Manual of the system board for the hardware and in the "D2020 Setup Utility" manual for the firmware (see "Related publications" on page 53).

Hard disk drives

Two basic configuration variants will be offered for the server: equipped either with SATA or with SCSI hard disk drives.

Basic configuration with SATA hard disk drives

The drive cage is equipped with up to four SATA hard disk drives with a maximum height of 1 inch. Each drive is connected to the controller via a cable.

The SATA hard disk drives are controlled by an onboard SATA RAID controller (up to two drives) or by an optional PCI SATA RAID controller (up to four drives).

Basic configuration with SCSI hard disk drives

The drive cage is equipped with up to four ULTRA320 SCSI hard disk drives with a maximum height of 1 inch. The drives are connected to the controller via a cable.

The SCSI hard disk drives are controlled by a PCI SCSI RAID controller.

Onboard SATA RAID Controller

On the system board, a 2-channel SATA RAID controller is integrated for operating up to two disks. RAID levels 0 and 1 are supported via LSI SATA Software RAID.

| **i** | The controller has its own configuration utility. For further information see the "LSI SATA Software RAID User's Guide" on the *ServerBooks* CD (choose *Controllers* from the menu). |

PCI SATA RAID Controller (FastTrak S150 TX4)

A low-cost and powerful 4-channel SATA RAID controller is optionally available for operating a maximum of four hard disks, enhancing data security and avail-ability. RAID levels 0, 1, 10 are supported.

> **i** The controller has its own configuration utility. For further information see the "Promise Array Management" manual on the *ServerBooks* CD (choose *Controllers* from the menu).

PCI Ultra320 SCSI controller with Integrated Mirroring Enhanced (IME) functionality

In the SCSI configuration variant, a 1-channel Ultra320 SCSI controller with "Integrated Mirroring Enhanced" (IME) functionality (LSI20320A-R) is available for operating the four SCSI hard disk drives. In addition, IME offers RAID functionality for the internal disk configuration (RAID levels 1, 1E).

> **i** For IME configuration, the controller has its own utility. For further infor-mation see the "Integrated Mirroring User's Guide" on the *ServerBooks* CD (choose *Controllers* from the menu).

With this controller also a SCSI magnetic tape backup drive can be addressed additionally to the four SCSI hard disk drives.

Accessible drives

By default, the server has a 3.5-inch floppy disk drive (1.44 MB) and a CD/DVD drive. In addition, two 5.25-inch slots for accessible drives (CD-ROM, DVD-ROM, CD/DVD burner or magnetic tape backup drive) are available. The acces-sible drives cannot be replaced during operation.

Power supply

The server has a fixed power supply unit which automatically adjusts to any power voltage in the range from 100 V to 240 V.

High level of availability and reliability

When memory data are accessed, 1-bit errors in the main memory are recog-nized and automatically corrected with the ECC (Error Correcting Code) method.

Server management

Server management is implemented with the aid of the supplied *ServerView* software.

ServerView enables the management of all PRIMERGY servers in the network via a central console. Here *ServerView* supports the following functions:

● Remote startup (Wakeup On LAN)

● Intrusion detection

● Temperature monitoring of the CPU and the surrounding area

● Power monitoring

● End-of-life monitoring of the fans with timely notification before a failure

● Watchdog timer for operating system monitoring and application monitoring

Further information on the *ServerView* server management is provided in the associated documentation (see "Related publications" on page 53).

ServerStart

You can configure your PRIMERGY server quickly and precisely with the *Server-Start* software provided. User-guided menus are available for installing the server operating systems.

Service and support

PRIMERGY server are service-friendly and modular, thus enabling quick and simple maintenance. The flash EPROM program supplied with the Fujitsu Siemens utilities supports fast BIOS Update.

1.3   Notational Conventions

The following notational conventions are used in this manual:

Italics	indicate commands, menu items or software programs.
"Quotation marks"	indicate names of chapters and terms that should be emphasized.
►	text which follows this symbol describes activities that must be performed in the order shown.
⚠ **CAUTION!**	pay particular attention to text marked with this symbol. Failure to observe this warning may endanger your life, damage the server, or lead to loss of data.
i	supplementary information, remarks, and tips follow this symbol.

Table 1: Notational Conventions

1.4   Technical Data

Electrical Data (standard power supply)

Rated voltage range	100 - 240 V
Rated frequency	50 Hz - 60 Hz
Rated current in basic configuration:	100 V - 240 V / 1.5 A - 0.6 A
Max. rated current:	100 V - 240 V / 5 A - 2.5 A
AC output (if available)	100 V - 240 V / 2 A
Rated power	453 W
Apparent power	473 VA
Thermal dissipation	1631 kJ/h (1546 btu/h)
Building fuse	16 A
Protection class	I

Compliance Standards

Product safety and ergonomics	IEC 60950 / EN 60950 / UL 60950 3rd. Ed., CAN/CSA C22.2 No. 60950 3rd. Ed.
Electromagnetic Compatibility	FCC class A VCCI class A AS/NZS 3548 class A CNS 13438
Emitted interference	EN 55022 class A
Harmonic current	EN 61000-3-2 JEIDA
Flicker	EN 61000-3-3
Noise immunity	EN 55024
CE label according to EU directives	Low-Voltage Directive 73/23/EEC Electromagnetic Compatibility 89/336/EEC (Product safety)

Mechanical Values

Width	205 mm
Depth	560 mm
Height	444 mm (with feet)

Weight

Approx. 21-28 kg (depending on the configuration).

Ventilation Clearance

At least 200 mm on the front and on the rear side.

Environmental Conditions

Environment class 3K2 Environment class 2K2	EN 60721 (IEC 721) section 3-3 EN 60721 (IEC 721) section 3-2

Temperature:
    Operation (3K2)
     Transport (2K2)
	
	10 °C .... 35 °C
	-25 °C .... 60 °C

Relative humidity	10%...85%

Condensation during operation must be avoided.

Noise Level

Sound power level L_{WAd} (ISO 9296)	$\leq$ 6.0 B (standby) $\leq$ 6.0 B (operation)
Sound pressure level at bystander position L_{pAm} (ISO 9296)	$\leq$ 45 dB(A) (standby) $\leq$ 45 dB(A) (operating)

2 Installation Steps: Overview

In this chapter you will find an overview of the steps necessary to install your server system. Links guide you to sections where you can find more detailed information on the individual steps:

► At first, please take notice of chapter "Important Notes" on page 13ff, especially of the "Safety" section.

► Transport the server to the place where you want to set it up.

► Unpack the system, check the contents of the package for visible transport damage and check whether the delivery agrees with the details in the delivery note (see section "Unpacking and Setting up the Server" on page 24).

► Make sure all necessary manuals (see section "Overview of the Documentation" on page 1) are available; possibly print of the PDF files.

► Set up the server (see section "Unpacking and Setting up the Server" on page 24).

► Cable the server. Please also refer to the section "Connecting Devices to the Server" on page 25 and section "Hints: Connecting/Disconnecting Cables" on page 28.

► Connect the server to the line voltage (see section "Connecting the Server to the Line Voltage" on page 26).

► Make yourself familiar with the operating and indicator elements on the front and on the rear side of the server (see section "Operating and Indicator Elements" on page 29).

► Configure and install the desired operating system and applications. To do so, you have the following possibilities:

   – Configuring the SATA RAID controller separately or in a ServerStart installation (see "Configuring the SATA RAID Controller" on page 34).

   – Configuring the SCSI RAID controller separately or in a ServerStart installation (see "Configuring the SCSI RAID controller" on page 35).

– Configuration and installation with or without *ServerStart* (see section "Configuration with ServerStart" on page 36 or section "Configuration without ServerStart" on page 36, respectively).

> **i** To find out how to operate *ServerStart* and for further information, refer to the manual "ServerView Suite - ServerStart" delivered as a PDF file with the system.

3 Important Notes

In this chapter you will find essential information regarding safety when working with your server.

3.1 Safety

| i | The following safety notes are also provided in the "Safety" manual. |

This device complies with the relevant safety regulations for data processing equipment.

If you have any questions about where you can set up the device, contact your sales outlet or our customer service team.

⚠ **CAUTION!**

The actions described in these instructions should only be performed by technical specialists. Equipment repairs should only be performed by authorized, qualified staff. Any unauthorized openings and improper repairs could expose the user to risks (electric shock, energy hazards, fire hazards) and could also damage the equipment. Please note that any unauthorized openings of the device will result in the invalidation of the warranty and exclusion from all liability.

Before operating the device

⚠ **CAUTION!**

● During installation and before operating the device, observe the instructions on environmental conditions for your device (see section "Technical Data" on page 7).

● If the device is brought in from a cold environment, condensation may form both inside and on the outside of the machine.

Wait until the device has acclimatized to room temperature and is absolutely dry before starting it up. Material damage may be caused to the device if this requirement is not observed.

● Transport the device only in the original packaging or in packaging that protects it from knocks and jolts.

Installation and operation

⚠ **CAUTION!**

● The server automatically sets itself to a voltage in the range of 100 V to 240 V. Make sure that your local voltage is within this range.

● This device has a specially approved power cable and must only be connected to a grounded insulated socket.

● Ensure that the power socket on the device or the grounded wall outlet is freely accessible.

● The ON/OFF button does not disconnect the device from the mains voltage. To disconnect the line voltage completely, switch OFF the mains power switch (if available) and remove the power plug from the grounded insulated socket.

● Always connect the device and the attached peripherals to the same power circuit. Otherwise you run the risk of losing data if, for example, the central processing unit is still running but the peripheral device (e.g. storage subsystem) has failed during a power outage.

CAUTION!

- Data cables must be adequately shielded to avoid interference.

- To the LAN wiring the requirements apply in accordance with the standards EN 50173 and EN 50174-1/2. As minimum requirement the use of a protected LAN line of category 5 for 10/100 MBps Ethernet, and/or of category 5e for Gigabit Ethernet is considered. The requirements of the specification ISO/IEC 11801 are to be considered.

- Route the cables in such a way that they do not form a potential hazard (make sure no-one can trip over them) and that they cannot be damaged. When connecting up a device, refer to the relevant notes in the operating manual of the device.

- Never connect or disconnect data transmission lines during a storm (lightning hazard).

- Make sure that no objects (such as bracelets or paper clips) fall into or liquids spill into the device (risk of electric shock or short circuit).

- In emergencies (e.g. damaged casing, controls or cables, penetration of liquids or foreign matter), switch off the device immediately, remove the power plug and contact your sales outlet or customer service team.

- Proper operation of the device (in accordance with IEC 60950/EN 60950) is only ensured if the casing is completely assembled and the rear covers for the installation openings have been put in place (electric shock, cooling, fire protection, interference suppression).

- Only install system expansions that satisfy the requirements and rules governing safety and electromagnetic compatibility and relating to telecommunications terminal equipment. If you install other expansions, you may damage the system or violate the safety regulations and regulations governing RFI suppression. Information on which system expansions are suitable can be obtained from the customer service centre or your sales outlet.

CAUTION!

- The components marked with a warning label (e.g. lightning symbol) may only be opened, removed or exchanged by authorized, qualified personnel.

- The warranty expires if the device is damaged during the installation or replacement of system expansions.

- You may set only those resolutions and refresh rates specified in the "Technical data" section of the monitor description. Otherwise, you may damage your monitor. If you are in any doubt, contact your sales outlet or customer service center.

Batteries

CAUTION!

- Incorrect replacement of batteries may lead to a risk of explosion. The battery may only be replaced with an identical battery or with a type recommended by the manufacturer (see the technical manual for the system board under "Related publications" on page 53).

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

- The battery must be disposed of in accordance with local regulations concerning special waste.

- Replace the lithium battery on the system board in accordance with the instructions in the technical manual for the system board (see "Related publications" on page 53).

- All batteries containing pollutants are marked with a symbol (a crossed-out garbage can). In addition, the marking is provided with the chemical symbol of the heavy metal decisive for the classification as a pollutant:

  Cd Cadmium
  Hg Mercury
  Pb Lead

Notes on Handling CDs/DVDs and CD/DVD Drives

⚠️ **CAUTION!**

● Use only CDs/DVDs in proper condition in the CD/DVD drive of your server to prevent data loss, damage to the device and injuries.

● Therefore, check each CD/DVD for damage, cracks, breakage etc. before inserting it in the drive.

Please note that any additional labels applied may change the mechanical properties of a CD/DVD and cause imbalance.

Damaged and imbalanced CDs/DVDs can break at high drive speeds (data loss).

Under certain conditions, sharp-edged pieces of broken CDs/DVDs can penetrate the cover of the drive (damage to the device) and be thrown out of the device (danger of injury, particularly on uncovered body parts such as the face or neck).

ℹ️ You protect the CD/DVD drive and prevent mechanical damage, as well as premature wearing of the CDs/DVDs by observing the following suggestions:

– Only insert the CDs/DVDs in the drive when needed and remove them after use.
– Store the CDs/DVDs in suitable sleeves.
– Protect the CDs/DVDs from exposure to heat and direct sunlight.

Note about the Laser

The CD/DVD drive is classified for laser class 1 according to IEC 60825-1.

⚠️ **CAUTION!**

The CD/DVD drive contains a laser diode (LED). Sometimes, the LED produces a stronger laser beam than laser class 1. Direct view into the laser beam is dangerous.

Never remove parts of the CD/DVD drive assembly!

Modules with electrostatic-sensitive components:

Systems and components that might be damaged by electrostatic discharge (ESD) are marked with the following label:
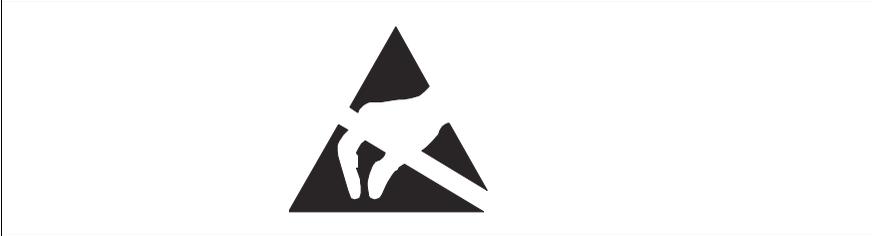

Figure 1: ESD label

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

● Remove the power plug from the power socket before inserting or removing components containing ESDs.

● You must always discharge yourself of static charges (e.g. by touching a grounded object) before working.

● Use a grounding cable designed for this purpose to connect yourself to the system unit as you install components.

● The equipment and tools you use must be free of static charges.

● Only touch the components at the edges or at the positions highlighted in green (touch points).

● Do not touch any exposed pins or conductors on a component.

● Place all components on a static-safe base.

| i | You will find a detailed description for handling ESD components in the relevant European or international standards (EN 61340-5-1, ANSI/ESD S20.20). |

Other important notes:

● When cleaning the device, please observe the relevant notes in the section section "Cleaning the Server" on page 37.

● Keep this operating manual and all additional documentation (such as the technical manual, CD) together with the device. All documentation should be included if the device is passed on to a third party.

3.2   CE Certificate

The shipped version of this device complies with the requirements of the EEC directives 89/336/EEC "Electromagnetic compatibility" and 73/23/EEC "Low voltage directive". The device therefore qualifies for the CE certificate (CE=Communauté Européenne).

3.3   FCC Class A Compliance Statement

If there is an FCC statement on the device, then:

The following statement applies to the products covered in this manual, unless otherwise specified herein. The statement for other products will appear in the accompanying documentation.

NOTE:

This equipment has been tested and found to comply with the limits for a "Class A" digital device, pursuant to Part 15 of the FCC rules and meets all requirements of the Canadian Interference-Causing Equipment Standard ICES-003 for digital apparatus. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in strict accordance with the instructions, may cause harmful interference to radio communications. However, there is no warranty that inter-ference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

● Reorient or relocate the receiving antenna.

● Increase the separation between equipment and the receiver.

● Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

● Consult the dealer or an experienced radio/T.V. technician for help.

Fujitsu Siemens Computers is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by Fujitsu Siemens Computers. The correction of interferences caused by such unauthorized modification, substitution or attachment will be the responsibility of the user.

The use of shielded I/O cables is required when connecting this equipment to any and all optional peripheral or host devices. Failure to do so may violate FCC and ICES rules.

3.4 Transporting the Server

⚠ **CAUTION!**

Only transport the server to the new site in its original packaging or in packaging that protects it from knocks and jolts. Do not unpack the server until it is at its installation location.

If you need to lift or transport the server, ask other people to help you.

3.5   Environmental Protection

Environmentally friendly product design and development

This product has been designed in accordance with the Fujitsu Siemens Computers standard for "environmentally friendly product design and development". This means that key factors such as durability, selection and labeling of materials, emissions, packaging, ease of disassembly and recycling have been taken into account.

This saves resources and thus reduces the harm done to the environment.

Notes on saving energy

Devices that do not have to be switched on permanently should be switched off until they are needed as well as during long breaks and after completion of work.

Notes on packaging

Please do not throw away the packaging. You may need it later for transporting your system unit. If possible, the device should only be transported in its original packaging.

Notes on dealing with consumables

Please dispose of printer consumables and batteries in accordance with local government regulations.

Do not throw batteries or rechargeable batteries into the trash can. They must be disposed of in accordance with local regulations concerning special waste.

Notes on labeling plastic housing parts

Please avoid sticking your own labels on plastic parts wherever possible, since this makes it difficult to recycle them.

Take-back, recycling and disposal

For details on take-back and reuse of devices and consumables within Europe, contact your Fujitsu Siemens Computers branch office/subsidiary or our recycling centre in Paderborn:

Fujitsu Siemens Computers
Recycling Center
D-33106 Paderborn

Tel.:   +49 5251 8 18010

Fax   +49 5251 8 18015

4 Hardware Installation

⚠ **CAUTION!**

Please note the safety instructions in chapter "Important Notes" on page 13.

Do not expose the server to extreme environmental conditions (see section "Technical Data" on page 7). Protect it from dust, moisture, and heat.

In order to avoid the formation of condensation inside or on the outside of the hard disk drives the server must be acclimatized in its operating environment for an acclimatization time (table 2).

Temperature difference (°C)	Minimum acclimatization time (hours)
5	3
10	5
15	7
20	8
25	9
30	10

Table 2: Acclimatization time

4.1   Unpacking and Setting up the Server

⚠ **CAUTION!**

Please note the safety instructions in chapter "Important Notes" on page 13.

If you need to lift or transport the server, ask other people to help you.

Do not unpack the server until all transport maneuvers are completed.

It is recommended to not throw away the original packaging material! It may be required for transportation at some later date.

► Transport the server to the desired site.

► Unpack all the individual parts.

► Check the contents of the package for visible transport damage.

► Check whether the delivery agrees with the details in the delivery note.

The identification rating plate is located on top of the server.

If you find transport damage or inconsistencies between the contents of the package and the delivery note, inform your supplier immediately!

– Cable the server. Please also refer to the section "Connecting Devices to the Server" on page 25 and section "Hints: Connecting/Disconnecting Cables" on page 28.

– Connect the server to the power supply (see section "Connecting the Server to the Line Voltage" on page 26).

4.2   Connecting Devices to the Server

The ports for external devices are on the rear of the server. Which additional ports are available on your server depends on the PCI boards installed. For more information, please refer to the "Options Guide" (see "Related publications" on page 53).

The standard ports (figure 2) are marked with symbols, and some are color-coded.
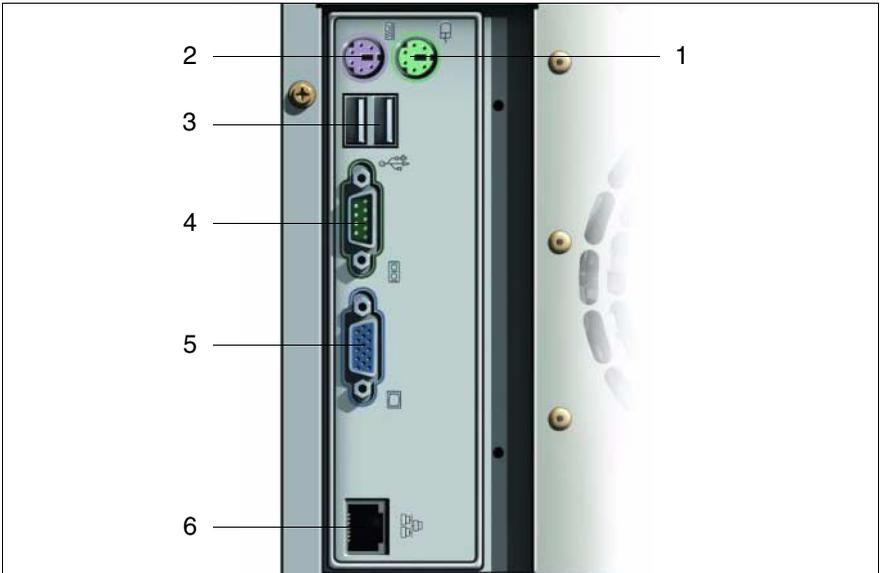
Figure 2: Standard ports

1	Mouse port (PS/2) (green)	4	Serial port COM1 (turquoise)
2	Keyboard port (PS/2) (purple)	5	Monitor port (VGA) (blue)
3	USB ports (black)	6	LAN port (RJ45)

> **i** Some of the devices that you connect require special driver software (see the documentation for the connected device).
>
> If a monitor is to be connected, please refer to the section "Connecting the Monitor" on page 26.

▶ Connect the data cables to the server and peripherals.

4.2.1   Connecting the Monitor

▶   Connect the monitor data cable to the monitor port of the server (5).

▶   Connect the power cable of the monitor to the server's AC outlet (if available) or to a grounded mains outlet of the in-house mains.

> **i**   It is recommended to use the AC outlet of the server (if available). Thus, the monitor is automatically switched on or off together with the server.

> ⚠ **CAUTION!**
>
> You may only connect the monitor to the server's AC outlet if the monitor's current consumption does not exceed 2 A. The rated current for the monitor can be found on the technical data label on the monitor or in the operating manual for the monitor.

4.3   Connecting the Server to the Line Voltage

The server is equipped with a fixed power supply unit.

> ⚠ **CAUTION!**
>
> The server automatically adjusts to a mains voltage between 100 - 240 V. The server may be placed in operation only if the mains voltage range set on the server corresponds to the local mains voltage.
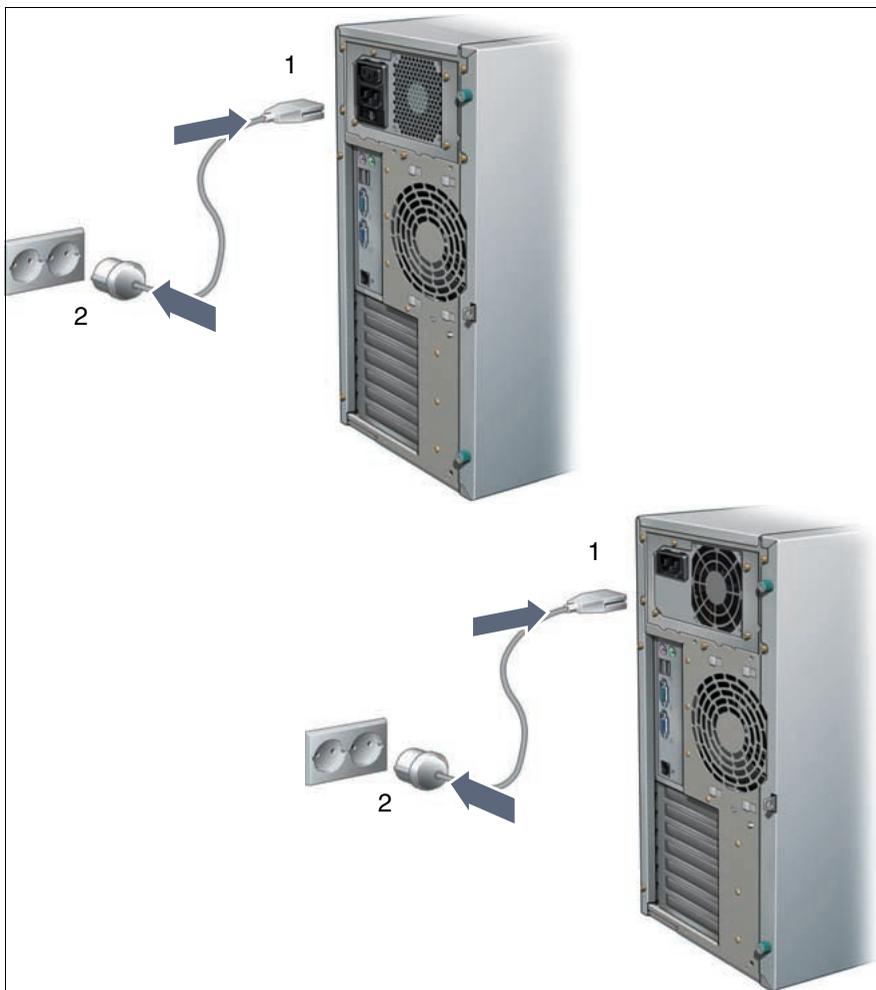
Figure 3: Connecting the server to the line voltage

► Connect the insulated connector of the power cable to the power supply unit of the server (1), and the power plug to a grounded mains outlet (2) of the in-house mains.

4.4   Hints: Connecting/Disconnecting Cables

⚠ **CAUTION!**

Be sure to read the documentation for the peripheral devices before connecting them.

Do not connect or disconnect data cables during a thunderstorm.

When removing a cable, always hold it by the plug.

Connect and disconnect the cables in the order described below.

Connecting leads

► Turn off all power and equipment switches.

► Unplug all power plugs of grounded power sockets.

► Plug all cables into the server and peripherals. Secure the data transmission cable connections (e. g. nut retention).

► Plug all data communication cables into the utility sockets.

► Plug all power cables into the grounded power sockets.

Disconnecting leads

► Turn off all power and equipment switches.

► Unplug all power plugs of grounded power sockets.

► Unplug all data communication cables from the utility sockets.

► Loosen the nut retentions on the connector housings and pull the corre-sponding cables out from the server and from the peripherals.

5 Preparation for Use and Operation

⚠️ **CAUTION!**

Please note the safety instructions in chapter "Important Notes" on page 13.

5.1 Operating and Indicator Elements

5.1.1 The Front
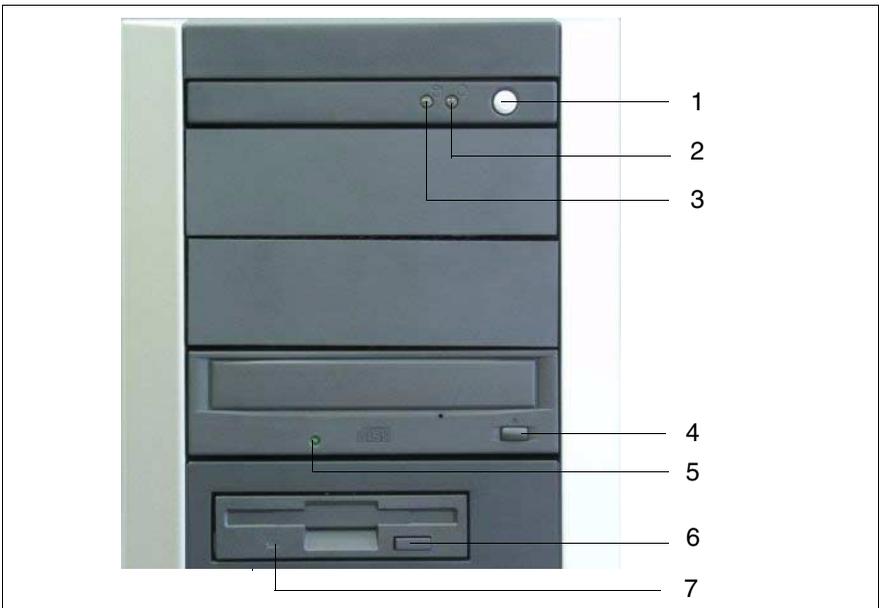
Figure 4: The front: operating and indicator elements

1	ON/OFF button	4	CD/DVD eject button
2	Power-on indicator	5	CD/DVD access indicator
3	Hard disk drive active indicator	6	Floppy disk eject button
		7	Floppy disk drive access indicator

Operating elements

ON/OFF button

When the system is switched OFF, it can be switched ON by pressing the ON/OFF button. When the system is operating, pressing the ON/OFF button will switch OFF the system (standby). For more information see "Other ON/OFF possibilities" on page 33.

> **i** The ON/OFF button does not disconnect the server from the mains voltage. To completely disconnect it from the mains voltage, you must switch OFF the main switch (if available on the rear ; see figure 4 on page 31) and remove the power plug from the socket.

Indicators on the front panel

Power-on/standby indicator (green/orange)

Lights green when the server is switched ON and ready for operation.

Flashes green when the server is switched ON and in "sleeping mode".

Lights orange when the server is connected to the mains voltage, but it is switched OFF (standby mode).

Hard disk drive active indicator (green)

An internal hard disk drive (HDD) is being accessed.

Indicators on the accessible drives

CD/DVD drive access indicator

Lights green when the storage medium is being accessed.

Floppy disk drive access indicator

Lights green when the storage medium is being accessed.

5.1.2   The Rear

Main switch (if available)

Main switch:
0 = off
I = on
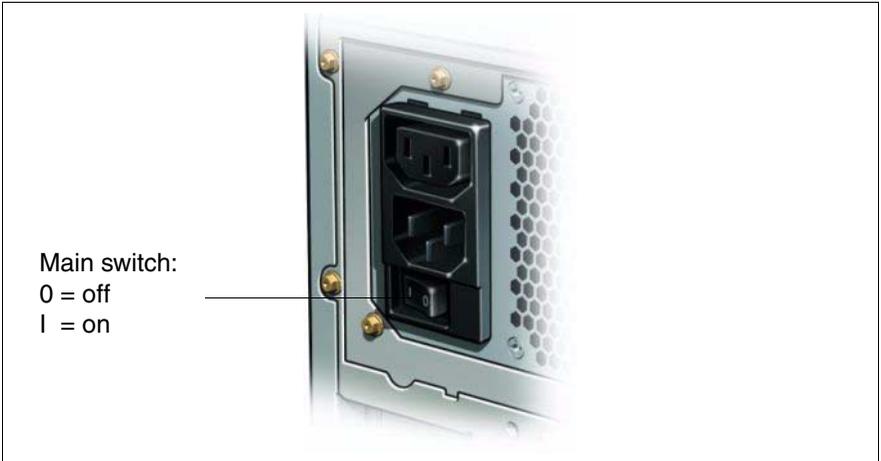
Figure 5: Main switch

LED indicators on the LAN port
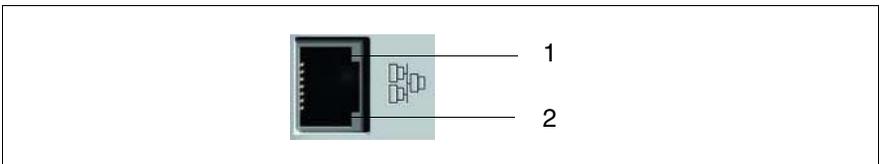
Figure 6: LED indicators on the LAN port

1   LAN connection indicator (green)

Lights when a LAN connection is established.
Flashes when data is being received or sent.

2   LAN transfer rate (orange/green)

off = 10 Mbps (or "no connection", if LED 1 is also off)
green = 100 Mbps, orange = 1000 Mbps.

5.2   Switching the Server ON/OFF

⚠️ **CAUTION!**

If after switching ON the server there is nothing but flickering stripes on the screen, switch the server OFF immediately (see chapter "Problem Solutions and Tips" on page 41).

The ON/OFF button does not disconnect the server from the mains voltage. To completely disconnect it from the mains voltage, you must switch OFF the main switch (if available on the rear; see figure 4 on page 31) and remove the power plug from the socket.

Switching the server ON

The power-on indicator (position 2 on figure 4 on page 29) lights orange (standby mode), when the server is connected to the mains and the main switch (if available) is in the ON position (see figure 5 on page 31).

– **First system installation:**

▶ Press the ON/OFF button (position 1 in figure 4 on page 29).

The power-on LED lights green (position 2 figure 4 on page 29).

▶ Insert the *ServerStart* CD and/or an installation disk into the corresponding drive.

▶ Follow the instructions on the monitor (see also section "Configuration with ServerStart" on page 36 and/or section "Configuration without ServerStart" on page 36).

– **System already installed**:

▶ Press the ON/OFF button (position 1 in figure 4 on page 29).

The server is switched ON, performs a system test and boots the operating system.

Switching the server OFF (ACPI-compatible operating systems, e.g. Windows 2000 or Linux)

Power-on indicator (position 2 on figure 4 on page 29) lights green.

▶ Shut down the operating system in an orderly manner.

The server is automatically switched OFF.
The power-on indicator lights orange (standby mode).

Switching the server OFF (non ACPI-compatible operating systems)

Power-on indicator (position 2 on figure 4 on page 29) lights green.

▶ Shut down the operating system in an orderly manner.

   The server remains switched ON and the power-on indicator remains green.

▶ Press the ON/OFF button (position 1 in figure 4 on page 29) or use one of the procedures described in "Other ON/OFF possibilities" on page 33.

   The server switches OFF and goes to standby mode. The power-on indicator lights orange.

Other ON/OFF possibilities

In addition to the ON/OFF button, the server can be switched ON and OFF in the following ways:

– Specified **switch-On time/switch-OFF time**

   The server is automatically switched ON or OFF at a time specified in the *ServerView* program.

– **Ring indicator**

   The server is switched ON via an internal or external modem.

– **Wakeup On LAN (WOL)**

   The server is switched ON by a command via the LAN.

– **After power failure**

   The server automatically switches ON following a power failure (depending of the settings in the BIOS).

– **Power override function**

   The system may be switched OFF "unconditionally" by pressing the ON/OFF button for about 4 to 5 seconds.

   ⚠ **CAUTION!**
   Data loss may occur!

5.3   Configuring the Server

This section contains information about configuring the server and installing the operating system.

| **i** | Make sure that the energy saving functions are disabled in the *BIOS Setup* during server operation. |

If you server is equipped with SCSI hard disk drives, you can skip the following section.

5.3.1   Configuring the SATA RAID Controller

You may configure the RAID either before running ServerStart or with *Server-Start*. It is recommended to use ServerStart.

Onboard SATA RAID controller

This RAID controller is a standard component of the system board. Configuring is performed via the "LSI SATA Software RAID" utility.

PCI SATA RAID controller (FastTrak S150 TX4)

This controller is optional. Configuring is either performed via the BIOS configuration utility (calling CTRL-F during BIOS POST) or with the ServerStart CD using PAM (Promise Array Management). More information is contained in the "FastTrak S150 TX4 User Manual" and in the "Promise Array Management (PAM) for FastTrak S150 TX2plus, S150 TX4 and TX4000 User Manual" on the ServerBooks CD in section "controllers", see also "Related publications" on page 53.

Activating the hard disk drive write cache for the PCI controller

By default, the hard disk write cache is disabled. This presetting may be changed. Consequently, not every data modification in main memory is written to disk immediately, thus boosting system performance during write operations.

| ⚠ | **CAUTION!**
When a power failure occurs with enabled hard disk write cache, data may be lost! |

| **i** | The hard disk write cache should always be configured in the same way for all disk drives. |

You can activate the hard disk write cache only via *PAM*:

▶   Start the *Controller Options* via *PAM*.

▶   Deactivate in *Disk Parameters* the check box *Disable Hard Disk Write Cache*.

You will find further information in the "Promise Array Management (PAM) for FastTrak S150 TX2plus, S150 TX4 and TX4000 User Manual" (see "Related publications" on page 53).

5.3.2   Configuring the SCSI RAID controller

A 1-channel Ultra320 SCSI controller with "Integrated Mirroring Enhanced" (IME) functionality (LSI20320A-R) is available for operating the SCSI hard disk drives.You may configure the RAID either before running *ServerStart* or with *ServerStart* (recommended).

Configuring the SCSI RAID controller is either performed via the BIOS configuration utility (calling CTRL-C during BIOS POST) or with the *ServerStart* CD using *GAM* (Global Array Management). More information is contained in the controller documentation on the *ServerBooks* CD in section "controllers", see also "Related publications" on page 53.

> **i**   Note on *SCSI-IDs*:
>
> The SCSI IDs 0 - 3 are reserved for the SCSI hard disk drives and will be set with jumpers on the connection field of the drives (see Econel 200 Options Guide).
>
> Please note that other SCSI drives controlled by the same SCSI controller must have a unique SCSI ID (from 4 - 15). The SCSI ID 7 is reserved for the SCSI controller.

> **i**   Descriptions of operating systems not covered in the RAID controller manual are provided in the appropriate readme files on the driver diskettes.

5.3.3   Configuration with ServerStart

With the *ServerStart*-CD provided, you can configure the server and install the operating system in a convenient manner.

–   SCSI hard disk drives: The menu-guided configuration includes the server configuration via *SCU* and the RAID controller configuration via *GAM* (Global Array Manager).

–   SATA hard disk drives: The menu-guided configuration includes the server configuration via *SCU* and the RAID controller configuration via *PAM* (Promise Array Manager).

To find out how to operate *ServerStart* and for further information, refer to the corresponding *ServerStart* manual (see "Related publications" on page 53).

If you use *ServerStart*, you can skip the following sections on how to configure the server and install the operating system. Continue with section "Cleaning the Server" on page 37.

5.3.4   Configuration without ServerStart

Configuring the RAID controller

Configure the RAID controller as described on page 34 and on page 35.

Installing the operating system

►   Insert the installation disk and the CD of the operating system you want to install.

►   Reboot the server.

►   Follow the instructions on the screen and in the manual for the operating system.

5.4   Cleaning the Server

⚠️ **CAUTION!**

Switch the server off, and pull the power plug out of the grounded-contact power socket.

Do not clean any interior parts yourself; leave this job to a service technician.

Do not use any cleaning agents that contain abrasives or may corrode plastic.

Ensure that no liquid enters the system. Ensure that the ventilation areas of the server and the monitor are free.

Use a cloth for disinfection to clean the keyboard and the mouse.

Wipe the server and monitor casing with a dry cloth. If particularly dirty, use a cloth that has been moistened in a mild domestic detergent and then carefully wrung out.

6 Property and Data Protection

6.1 Mechanical Access Protection

The server is fitted with an intrusion detection switch which enables the *ServerView* program to detect any removal of the left cover or housing cover. An alert message is displayed.

To prevent the server from being removed from its location, it can be secured to a fixed object with a steel cable run through the tab on the back.

tab for steel cable or lock
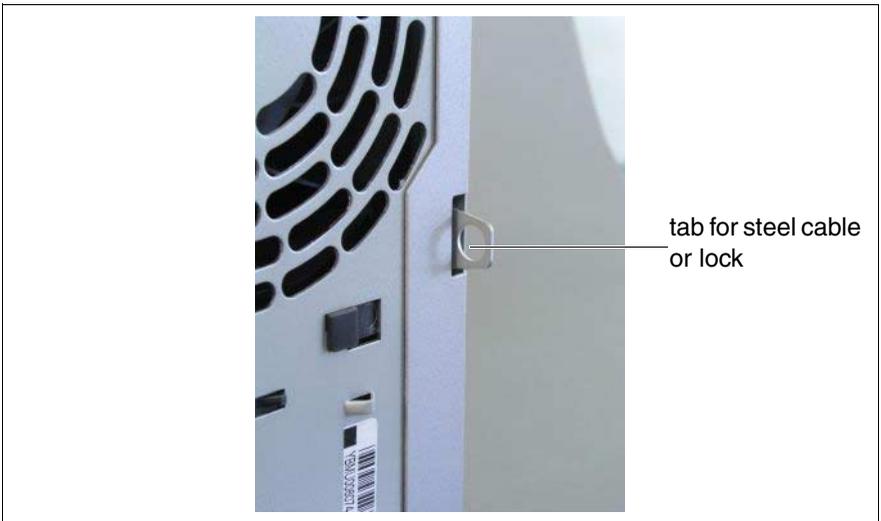
Figure 7: Rear view: tab for steel cable or lock

6.2 BIOS Setup Security Functions

The *Security* menu in *BIOS Setup* offers you various options for protecting your data from unauthorized access. For example, you can assign passwords, prevent diskette writing or BIOS flashing. By combining these options in a meaningful way, you can achieve optimum protection for your system.

| i | You will find a detailed description of the *Security* menu and how to assign passwords in the "D2020 Setup Utility" manual on the ServerBooks CD (see also "Related publications" on page 53). |

7 Problem Solutions and Tips

⚠ **CAUTION!**

Observe the safety information in the manuals "Security" and in chapter "Hardware Installation" on page 23.

If a problem occurs, try to resolve it as described:

– in this chapter,
– in the documentation for the attached devices,
– in the help systems of the software used.

If you fail to correct the problem, proceed as follows:

► Make a note of the steps and the circumstances that led to the fault. Note also any error message which may have been displayed.

► Switch the server OFF.

► Contact our Service organization.

7.1 Power-on Indicator Remains Dark

The power-on indicator remains dark after switching ON:

Power cable not connected correctly or mains switch (if available) in the OFF position

► Make sure that the power cable is correctly connected to the server and to the grounded power socket.

► Switch ON the mains switch (if available).

Power supply overloaded

► Pull the server power plug out of the power socket.

► Wait a few seconds and plug the power plug into the power socket again.

► Switch your server ON.

7.2   The Server Switches Itself OFF

Server management has detected an error

▶ Check the error list or the ErrorLog file in the *ServerView* program, and
   attempt to eliminate the error.

7.3   The Monitor Remains Dark

Monitor is switched OFF

▶ Switch ON your monitor.

Power saving has been activated (screen is blank)

▶ Press any key on the keyboard.

   or

▶ Deactivate screen blanking (screen saver). Enter the appropriate password.

Brightness control is set too dark

▶ Adjust the brightness control to increase the brightness. For detailed infor-
   mation, please refer to the operating manual supplied with your monitor.

Power cable or monitor cable not connected

▶ Switch OFF the monitor and the server.

▶ Check whether the power cable is properly connected to the monitor and to
   the power socket.

▶ Check whether the monitor cable is properly connected to the server and
   monitor (if it is connected with a plug). If a separate graphics card is installed
   in the server, then the monitor cable must be connected to the connection
   on this graphics card.

▶ Switch ON the monitor and the server.

7.4   Flickering Stripes Across the Monitor

⚠ **CAUTION!**

Switch OFF the server immediately. Risk of damaging the server.

Monitor does not support the set horizontal frequency

► Find out which horizontal frequency your monitor supports. You will find the horizontal frequency (also known as line frequency or horizontal deflection frequency) in the documentation for your monitor.

► Refer to the documentation for your operating system or to the corresponding software for the monitor controller for how to set the correct horizontal frequency for your monitor, and follow the procedure accordingly.

7.5   No Monitor Display or Display Drifts

The wrong horizontal frequency and/or resolution has been selected for the monitor or for the application program.

► Find out which horizontal frequency your monitor supports. You will find the horizontal frequency (also known as line frequency or horizontal deflection frequency) in the documentation for your monitor.

► Refer to the documentation for your operating system or to the corresponding software for the monitor controller for how to set the correct horizontal frequency for your monitor, and follow the procedure accordingly.

7.6   No Mouse Pointer Displayed on the Monitor

Mouse driver not loaded

► Check whether the mouse driver is properly installed and is present when the application program is started. Detailed information can be found in the documentation for the mouse, the operating system, or the application program.

Mouse controller disabled

The mouse controller on the system board must be enabled if you use the supplied mouse.

► In *BIOS Setup*, check the *Peripheral Configuration*, *PS/2 Mouse Support* setting in the *Advanced Configuration* menu. Make sure the setting is either *Enabled or Auto*.

7.7 Floppy Disk Cannot be Read or Written onto

► Check whether the mechanical write protection of the floppy disk is enabled.

► In *BIOS Setup*, check the floppy disk drive setting in the *Main* menu. It must not be *Disabled*.

► In *BIOS Setup*, check the *Diskette Write* setting in the *Security* menu. It must not be *Disabled*.

7.8 Time and/or Date are Incorrect

► Set the time and/or date either in the operating system or in the *BIOS Setup* (*Main* menu, *System Date* and *System Time*).

| **i** | If the time and date are repeatedly wrong when you switch on your server, you must change the lithium battery (see description in the Technical manual for the D2020 system board) or contact our Service organization. |

7.9   RAID „Critical" Status Condition during Boot

This error message is displayed by the FastTrak SATA RAID controller:

```
ID    MODE        SIZE         TRACK-MAPPING      STATUS

====================================================

1     1x2 Mirror  81000M       9847/255/63        Critical


Problem is detected with Array: 1
```

Figure 8: Status condition: example

A SATA hard disk drive from a RAID 1 or RAID 10 array has failed or is not responding.

You will find information for error cause and how to eliminate the error in the „FastTrak S150 TX4 User Manual", chapter „Troubleshooting & Tips" (see "Related publications" on page 53).

Further information is also provided in the manual on the SATA RAID controller „Promise Array Management (PAM) for FastTrak S150 TX2plus, S150 TX4 and TX4000 User Manual" (see "Related publications" on page 53).

> **i** An error message comparable to the FastTrak controller's is displayed by the onboard RAID controller.

7.10   System Fails to Boot

The system fails to boot after installing a new hard disk drive. This error can only occur with the SCSI variant of the server.

SCSI configuration incorrect

▶   In the SCSI configuration menu check the settings for the hard disk drives (*SCSI Device Configuration*) and the additional settings under *Advanced Configuration Options*.

7.11   Drives "dead" at System Boot

RAID controller configuration incorrect

▶   Check and correct the settings for the drives with the RAID controller utility.

Further information is provided in the manual on the RAID controller.

7.12   Added Drive Defective

This error message can occur with the SCSI or with the SATA server variant, provided that the server has a RAID controller.

RAID controller is not configured for this hard disk drive

▶   Configure the RAID controller for the drive with the corresponding utility. Information is contained in the documentation on the RAID controller.

If the hard disk drive continues to be shown as defective, then replace it (see Econel 200 Options Guide).

7.13   Error Messages on the Monitor

The meaning of the error messages is explained in the documentation for the relevant components and programs on the PRIMERGY ServerBooks CD.

Abbreviations

AC
  Alternating Current

ACPI
  Advanced Configuration and Power Interface

ANSI
  American National Standards Institute

ASR&R
  Automatic Server Reconfiguration and Restart

BIOS
  Basic Input-Output System

BMC
  Baseboard Management Controller

CC
  Cache Coherency

CD
  Compact Disk

CD-ROM
  Compact Disk-Read Only Memory

CE
  Communauté Européenne

CHS
  Cylinder Head Sector

CMOS
  Complementary Metal Oxide Semiconductor

COM
  Communications

CPU
  Central Processing Unit

Abbreviations

DC
    Direct Current

DIMM
    Dual Inline Memory Module

DIP
    Dual Inline Package

DMA
    Direct Memory Access

DMI
    Desktop Management Interface

ECC
    Error Checking and Correcting

ECP
    Extended Capabilities Port

EEPROM
    Electrically Erasable Programmable Read-Only Memory

EMC
    ElectroMagnetic Compatibility

EMP
    Emergency Management Port

EPP
    Enhanced Parallel Port

EPROM
    Erasable Programmable Read-Only Memory

ESD
    ElectroStatic Discharge

FCC
    Federal Communications Commission (USA)

FPC
    Front Panel Controller

FRU

Field Replaceable Unit

FSB

Front Side Bus

GAM

Global Array Manager

GUI

Graphical User Interface

HDD

Hard Disk Drive

HSC

Hot-Swap Controller

I²C

Inter-Integrated Circuit

I/O

Input/Output

ICES

Interference-Causing Equipment Standard (Canada)

ICM

Intelligent Chassis Management

ID

Identification

IDE

Integrated Drive Electronics

IME

Integrated Mirroring Enhanced

IPMI

Intelligent Platform Management Interface

IRQ

Interrupt Request Line

Abbreviations

LAN
Local Area Network

LBA
Logical Block Address

LCD
Liquid Crystal Display

LUN
Logical Unit Number

LVD
Low-Voltage Differential SCSI

MMF
Multi Mode Fibre

MRL
Manual Retention Latch

NMI
Non Maskable Interrupt

NVRAM
Non Volatile Random Access Memory

OS
Operating System

PAM
Promise Array Management

PCI
Peripheral Component Interconnect

PDA
Prefailure Detection and Analysing

PDF
Portable Data Format

POST
Power ON Self Test

PS/2
Personal System/2 (IBM)

RAID
Redundant Arrays of Independent Disks

RAM
Random Access Memory

ROM
Read-Only Memory

RSB
Remote Service Board

RTC
Real Time Clock

RTDS
Remote Test- und Diagnose-System

SAF-TE
SCSI Accessed Fault-Tolerance Enclosures

SATA
Serial ATA (Advanced Technology Attachment)

SBE
Single Bit Error

SCA
Single Connector Attachment

SCSI
Small Computer System Interface

SCU
System Configuration Utility

SDR
Sensor Data Record

SDRAM
Synchronous Dynamic Random Access Memory

Abbreviations

SEL
System Event Log

S.M.A.R.T
Self-Monitoring, Analysis, and Reporting Technology

SMI
System Management Interrupt

SSU
System Setup Utility

SVGA
Super Video Graphics Adapter

USB
Universal Serial Bus

VGA
Video Graphics Adapter

WOL
Wakeup on LAN

ZCR
Zero Channel RAID

Related publications

Manuals for PRIMERGY server systems are available as PDF files on the *ServerBooks* CD. The ServerBooks CD is part of the *PRIMERGY ServerView Suite* delivered with each server system.

The current versions of the required manuals can be downloaded free of charge as PDF files from the Internet. The overview page showing the online documentation available on the Internet can be found via the URL:

http://manuals.fujitsu-siemens.com (choose: *industry standard servers*).

[1] **Safety**

[2] **Ergonomics**

[3] **Warranty**

[4] **System Board D2020 for Econel 200**
Technical Manual

[5] **D2020 Setup Utility**
Reference Manual

[6] **Econel 200 Server System**
Options Guide

[7] **Quick Start Hardware - PRIMERGY Econel 200**
Poster

[8] **Quick Start Software - PRIMERGY ServerView Suite**
Poster

[9] **PRIMERGY ServerView Suite**
ServerStart

[10] **FastTrak S150 TX4**
User Manual

[11] **FastTrak S150 TX4**
Quick Start Guide

[12] **Promise Array Management (PAM) for FastTrak S150 TX2plus, S150 TX4 and TX4000**
User Manual

[13] **LSI SATA Software RAID**
User Manual

[14] **Global Array Manager Client Software**
User's Guide

[15] **Global Array Manager Server Software**
User's Guide

[16] **Integrated Mirroring**
User's Guide

[17] **Ultra320 SCSI Host Adapters**
User's Guide

[18] **ServerView**
Server Management
User Manual

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Comments
Suggestions
Corrections

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Comments on PRIMERGY Econel 200
                  Server System

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