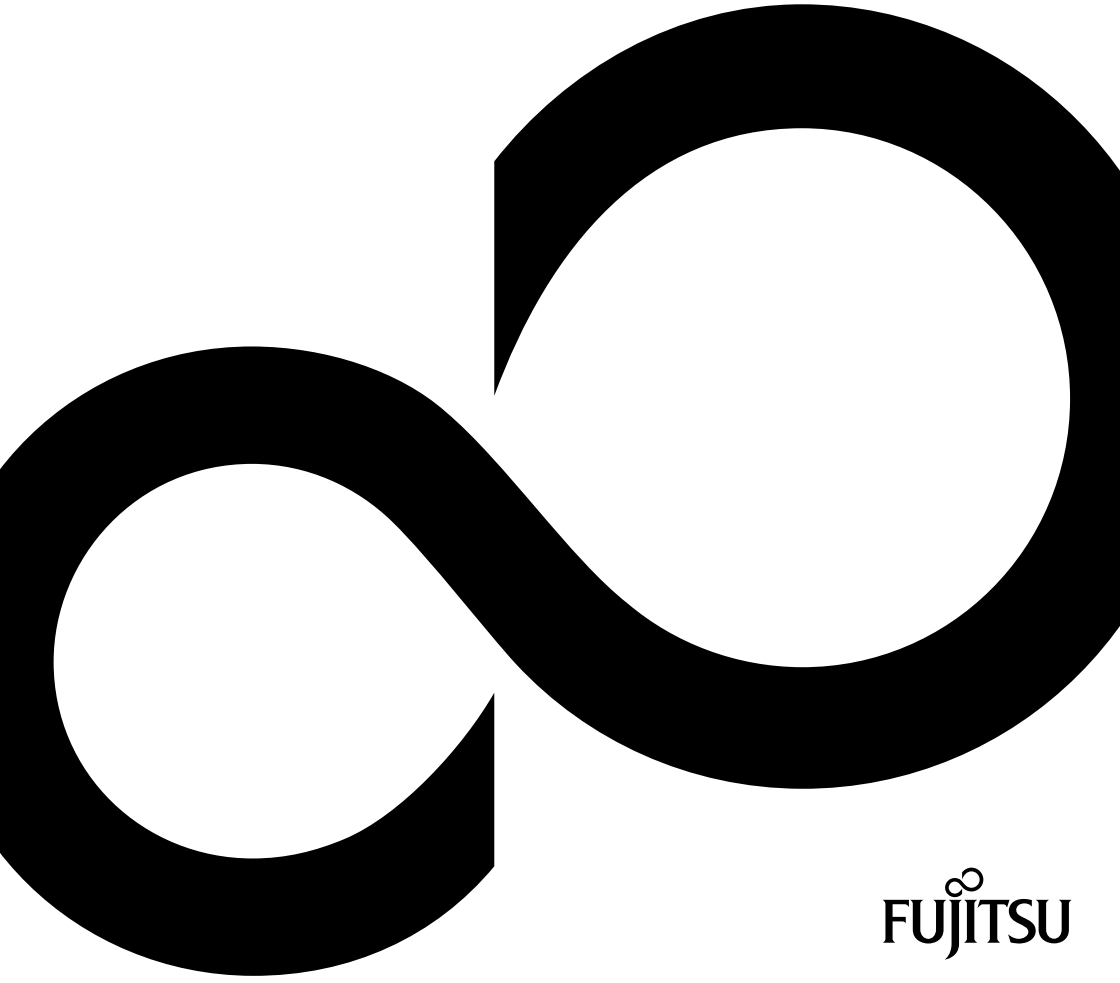
CELSIUS W520



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Published by
Fujitsu Technology Solutions GmbH
Mies-van-der-Rohe-Straße 8
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CELSIUS W520

Operating Manual

Your CELSIUS...	**5**
Ports and operating elements	**7**
Important notes	**9**
Getting started	**13**
Operation	**22**
Troubleshooting and tips	**28**
System expansions	**32**
Technical data	**62**
Index	**63**

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Contents

Your CELSIUS... ..... **5**
Notational conventions 6

Ports and operating elements **7**
Front 7
Rear 8

Important notes **9**
Safety information 9
Transporting the device 9
Cleaning the device 10
Energy saving, disposal and recycling 10
CE marking 11
FCC Compliance Statement 12
FCC Class B Compliance Statement 12

Getting started **13**
Unpacking and checking the delivery 13
Steps for initial setup 13
Setting up the device 14
Connecting the machine to the mains 14
Connecting external devices 15
Cable connecting 15
Disconnecting cables 15
Ports on the device 16
Connecting a monitor 17
Connecting the mouse 18
Connecting the keyboard 18
Connecting external devices to the parallel (optional) or serial port 19
Connecting external devices to the USB ports 19
Switching on for the first time: installing the software 20
Switching on monitor and device 21
Installing the software 21

Operation **22**
Indicators on the device 22
Switch the device on 22
Switching off the device 23
Keyboard 23
Important keys and keyboard shortcuts 24
Settings in BIOS Setup 25
Property and data protection 25
Anti-theft protection and lead-sealing 25
Mechanical casing lock (optional) 26
BIOS setup security functions 26
Access authorisation via SmartCard 27
Operating the SmartCard reader (optional) 27

Troubleshooting and tips **28**
Help if problems occur 28
Troubleshooting 28
Power-on indicator remains unlit after you have switched on your device 28

The device cannot be switched off with the ON/OFF switch. ... 29
Monitor remains blank ... 29
No mouse pointer displayed on the screen ... 30
Time and/or date is not correct ... 31
Error messages on the screen ... 31
Installing new software ... 31
Restoring the hard disk contents ... 31
Tips ... 31

System expansions ... 32
Information about boards ... 33
Opening the casing ... 34
Closing the casing ... 35
Overview of drive bays and drives in your device ... 35
Installing and removing the accessible 5 1/4 inch drive ... 36
Fitting the drive cover for the 5 1/4 inch drive ... 36
Installing an accessible drive ... 37
Removing an accessible drive ... 38
Installing/removing a 3½" reader in a 3½" bay (optional, SmartCard or MultiCard) ... 39
Removing the module holder ... 39
Screwing the reader onto the module holder ... 40
Installing a module holder with reader ... 40
Removing a module holder with reader ... 41
Removing the reader from the module holder ... 41
Installing and removing a WLAN module (optional) ... 42
Removing the front panel ... 42
Removing the front fan ... 43
Installing the WLAN module ... 45
Removing the WLAN module ... 47
Installing the front fan ... 48
Securing the front panel ... 49
Installing the hard disk drive ... 50
Installing hard disks ... 50
Removing a hard disk ... 53
Installing and removing a board ... 56
Installing a board ... 56
Removing a board ... 58
Installing and removing processor cooling devices ... 59
Removing the heat sink ... 59
Installing the heat sink ... 60
Replacing the processor ... 60
Mainboard expansions ... 60
Upgrading main memory ... 60
Replacing the lithium battery ... 61

Technical data ... 62

Index ... 63

Your CELSIUS...

... is available with various configuration levels which differ in terms of hardware and software equipment. You can install accessible drives (e.g. DVD drives) and other modules.

This manual tells you how to start using your device and how to operate it in daily use. This manual applies for all configuration levels. Depending on the chosen configuration level, some of the hardware components described may not be available on your PC. Please also read the notes about your operating system.

Depending on the configuration selected, the operating system is preinstalled on your hard disk (e.g. Windows 7).

Further information on this device is also provided:

- in the "Getting Started" poster
- in the "Safety/regulations" manual
- in the "Warranty" manual
- in the operating manual for the monitor
- in the manual for the mainboard
- in the documentation for your operating system
- in the information files (e.g. **.PDF*, **.HTML*, **.DOC*, **.CHM*, **.TXT*, **.HLP*)

Some of the manuals listed can be found in electronic form on the "Drivers & Utilities" DVD.

You can access and view the required information using the *Acrobat Reader* program, which is also included on the DVD. If necessary, you can also print out the manuals.

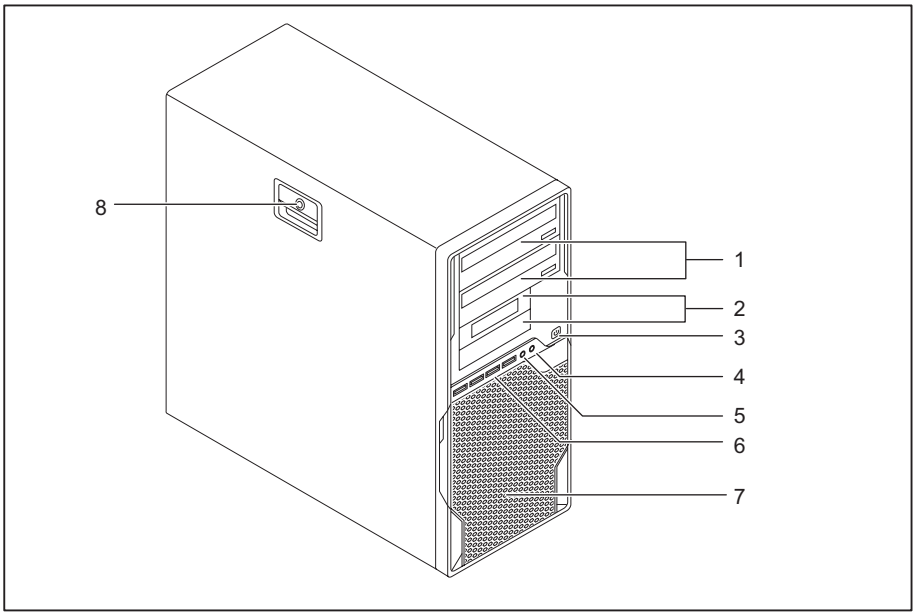
Notational conventions

	Pay particular attention to text marked with this symbol. Failure to observe these warnings could pose a risk to health, damage the device or lead to loss of data. The warranty will be invalidated if the device becomes defective through failure to observe these warnings.
	Indicates important information for the proper use of the device.
►	Indicates an activity that must be performed
↳	Indicates a result
`This font`	indicates data entered using the keyboard in a program dialogue or at the command line, e.g. your password (**`Name123`**) or a command used to start a program (**`start.exe`**)
`This font`	indicates information that is displayed on the screen by a program, e.g.: `Installation is complete.`
This font	indicates • terms and texts used in a software interface, e.g.: Click on *Save* • names of programs or files, e.g. *Windows* or *setup.exe*.
"This font"	indicates • cross-references to another section, e.g. "Safety information" • cross-references to an external source, e.g. a web address: For more information, go to "http://ts.fujitsu.com" • Names of CDs, DVDs and titles or designations for other materials, e.g.: "CD/DVD Drivers & Utilities" or "Safety/Regulations" manual
Key	indicates a key on the keyboard, e.g: F10
This font	indicates terms and texts that are emphasised or highlighted, e.g.: **Do not switch off the device**

Ports and operating elements

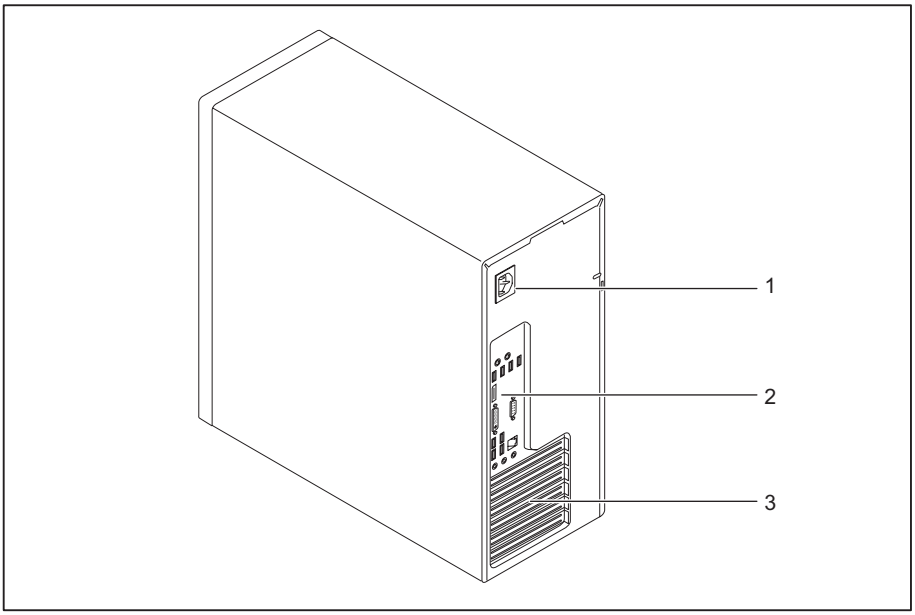
This chapter presents the individual hardware components of your device. This will provide you with an overview of the ports and operating elements on the device. Please familiarise yourself with these components before starting to work with your device.

Front



1 = Module bays for 5 1/4" drives
2 = Module bays for 3 1/2" drives
3 = ON/OFF switch
4 = Headphone port
5 = Microphone jack
6 = USB ports
7 = Hard disk front panel (removable)
8 = Casing lock (optional)

Rear



1 = Alternating voltage socket (AC IN)

2 = Ports for external devices (device-dependent)

3 = Slot covers

Important notes

In this chapter you will find information regarding safety which it is essential to take note of when working with your device.

Safety information

Please note the information provided in the "Safety/regulations" manual and in the following safety notes.

When installing and operating the device, please observe the notes on environmental conditions in Chapter "Technical data", Page 62 as well as the instructions in Chapter "Getting started", Page 13.

When setting up the device, make sure there is clearance all around it so that the casing receives enough ventilation. In order to avoid overheating, do not cover the ventilation areas of the monitor or the device.

You must only operate the device if the rated voltage used by the device is set to the local mains voltage.

You must remove the power plug from the power socket so that the mains voltage is completely disconnected.

Replace the lithium battery on the mainboard in accordance with the instructions in "Replacing the lithium battery", Page 61.

Caution, components in the system can get very hot.

The activities described in these instructions must always be performed with the greatest care.

Repairs to the device must only be performed by qualified technicians. Incorrect repairs could put the user at great risk or cause serious damage to the equipment (electric shock, risk of fire).

Transporting the device

Transport all parts separately in their original packaging or in a packaging which protects them from knocks and jolts, to the new site.

Do not unpack them until all transportation manoeuvres are completed.

If the device is brought from a cold environment into the room where it will be used, condensation may occur. To avoid damaging the device, wait until it has reached room temperature and is absolutely dry before initial startup.

Cleaning the device

Turn off all power and equipment switches and disconnect the power plug from the mains outlet.

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 (alcohol, thinner or acetone).

Never clean the device with water! Water entering into the device could present a serious risk to users (e.g. electric shock).

Ensure that no liquid enters the system.

The surface can be cleaned with a dry cloth. If particularly dirty, use a cloth that has been moistened in mild domestic detergent and then carefully wrung out.

Use disinfectant wipes to clean the keyboard and the mouse.

Energy saving, disposal and recycling

Further information can be found on the "Drivers & Utilities" DVD.

CE marking

The shipped version of this device complies with the requirements of European Union directives 2004/108/EC "Elektromagnetische Verträglichkeit", 2006/95/EC "Niederspannungsrichtlinie" and 2009/125/EC "Ökodesign Richtlinie".

CE marking for devices with radio component

This equipment complies with the requirements of Directive 1999/5/EC of the European Parliament and Commission from 9 March, 1999 governing Radio and Telecommunications Equipment and mutual recognition of conformity.

This equipment can be used in the following countries:

Belgium	Bulgaria	Denmark	Germany
Estonia	Finland	France	Greece
UK	Ireland	Iceland	Italy
Latvia	Liechtenstein	Lithuania	Luxembourg
Malta	Netherlands	Norway	Austria
Poland	Portugal	Rumania	Sweden
Switzerland	Slovakia	Slovenia	Spain
Czech Republic	Hungary	Cyprus	

Contact the corresponding government office in the respective country for current information on possible operating restrictions. If your country is not included in the list, then please contact the corresponding supervisory authority as to whether the use of this product is permitted in your country.

FCC Compliance Statement

If the device complies with the FCC regulations, the FCC sign can be found on the type rating plate.

FCC Class B Compliance Statement

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 B" 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 guarantee that interference 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/TV technician for help.

Fujitsu Technology Solutions GmbH 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 Technology Solutions GmbH. 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.

Getting started

Please observe the safety information in the "Important notes", Page 9 chapter.

Unpacking and checking the delivery

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

- ► Unpack all the individual parts.
- ► Check the contents of the package for any visible damage caused during transport.
- ► Check whether the delivery conforms to the details in the delivery note.
- ► Should you discover that the delivery does not correspond to the delivery note, notify your local sales outlet immediately.

Steps for initial setup

Only a few steps are necessary to put your new device into operation for the first time:

- Select a location for device and set up device
- Connect external devices such as mouse, keyboard and monitor
- Check the voltage at the mains outlet and connect the device to an electrical outlet
- Switch the device on

You will learn more about the individual steps in the following sections.

External devices

If you have received other external devices in addition to your own device (e.g. a printer), do not connect these until after the initial installation. The following sections describe how to connect these external devices.

Drives and boards

If you have received drives or boards with your device, please do not install them until after first-time setup. How to install drives and boards is described in the "System expansions", Page 32 chapter.

Setting up the device

When installing your device, please read the recommendations and safety notes in the "Safety/regulations" manual.

We recommend that you place your device on a surface which is not slippery. In view of the many different finishes and varnishes used on furniture, it is possible that the rubber feet will mark the surface they stand on.

Depending on the location of your device, troublesome vibrations and noises may occur. To prevent this, a distance of at least 10 mm should be maintained from other devices on casing sides without ventilation surfaces.

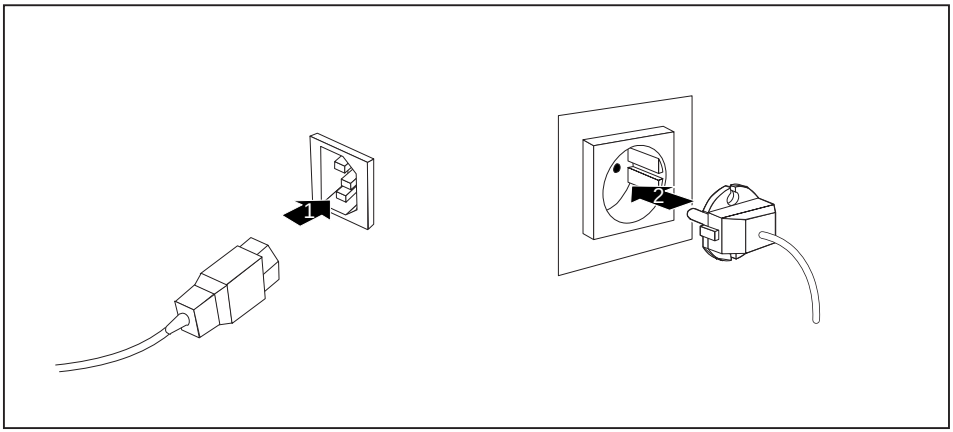
In order to avoid overheating, do not cover the ventilation areas of the monitor or the device.

A minimum distance of 200 mm from the device must be observed for ventilation areas.

Do not stack several devices on top of each other.

Do not expose the device to extreme ambient conditions (see "Technical data", Page 62, section "Ambient conditions"). Protect the device against dust, humidity and heat.

Connecting the machine to the mains



- ► Connect the mains cable to the machine (1).
- ► Plug the mains plug into a three-pin socket (2).

After the mains power cable has been attached, the device automatically switches itself on for a few seconds to run a system test, then switches off again.

Connecting external devices

Read the documentation on the external device before connecting it.

With the exception of USB devices, always remove all power plugs before connecting external devices!

Do not connect or disconnect cables during a thunderstorm.

Always take hold of the actual plug when disconnecting a cable. Never pull the cable!

Connect and disconnect the cables in the order described below.

Cable connecting

- ► Switch off all affected devices.
- ► Remove power plugs from the mains outlets for all devices.
- ► Plug all cables into the device and peripherals. Please make sure that you always observe the safety notes provided in "Important notes", Page 9.
- ► Plug all data communication cables into the sockets provided for the data / telecommunication networks.
- ► Plug all power cables into the grounded mains outlets.

USB devices are hot-pluggable. This means you can connect and disconnect USB cables while your device is switched on.

Additional information can be found in "Connecting external devices to the USB ports", Page 19 and in the documentation for the USB devices.

Disconnecting cables

- ► Switch off all affected devices.
- ► Remove power plugs from the mains outlets for all devices.
- ► Unplug all data communication cables from the utility sockets.
- ► Unplug all cables from the device and peripherals.

Ports on the device

The ports are located on the front and back of the device. Not all ports are necessarily present on your device. The standard ports are marked with the symbols shown below (or similar). Detailed information on the location of the ports is provided in the manual for the mainboard.

PS/2 keyboard port, purple

Parallel port/printer (optional)

Serial port 1, turquoise

Serial port 2, turquoise

VGA monitor connection, blue

Microphone port, pink (back of device) or black (front of device)

Headphones, light green (back of device) or black (front of device)

Audio input (Line in), light blue

Audio output (Line out), light green

PS/2 mouse port, green

USB 2.0 - Universal Serial Bus, black

LAN port

USB 3.0 - Universal Serial Bus, black

SCSI connection

FireWire port

DisplayPort

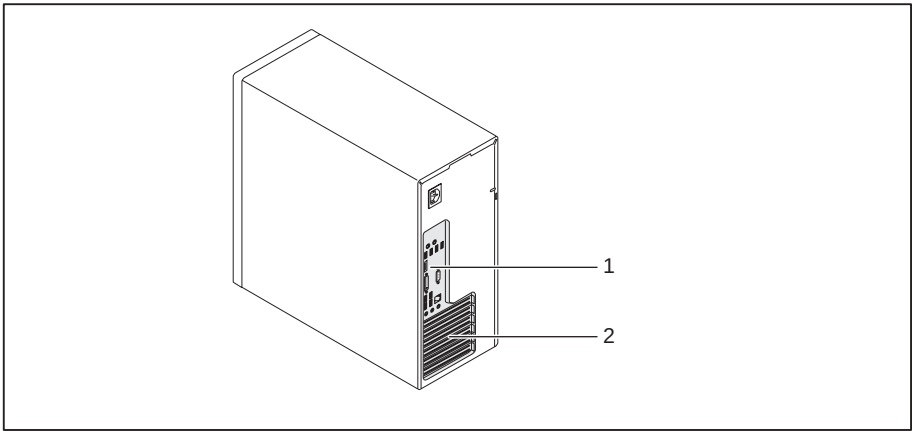
DVI-I monitor port

Some of the connected devices require special software (e.g. drivers) (refer to the documentation for the connected device and operating system).

Connecting a monitor

Depending on the configuration, you can use the monitor ports on the mainboard (1) or the monitor ports for an optional display adapter in one of the board slots (2) to connect a monitor to your device.

If you equip a device with an integrated display adapter and an optional display adapter, the integrated display adapter is initially deactivated on attaching the optional display adapter. If both display adapters are to be operated, you must first activate this function in the *BIOS setup*.



1 = Monitor ports of the mainboard (only processors with graphics core)

2 = Monitor ports of the optional display adapter

Only attach the monitor to your device when it is switched off.

► Follow the instructions contained in the monitor manual to prepare the monitor for operation (e.g. connecting cables).

► Connect the data cable to a suitable monitor port on the device (DVI-I, DisplayPort).

Connecting the mouse

You can connect a USB mouse or a PS/2 mouse to your device.

Connecting a USB mouse

► Connect the USB mouse to one of the USB ports on the device.

Connecting a PS/2 mouse

The PS/2 mouse is only detected by the device if you connect the mouse when the device is switched off and then switch the device on again.

► Switch your device off.

If you do not attach a mouse to the PS/2 mouse port, you can disable the mouse controller in the *BIOS Setup* in order to free the IRQ12 for a different application.

► Connect the PS/2 mouse to the PS/2 mouse port of the device.
► Switch your device on again.

Connecting the keyboard

You can connect a USB keyboard or a PS/2 keyboard to your device.

Connecting a USB keyboard

Use the supplied keyboard cable only.

► Plug the rectangular connector of the keyboard cable into the rectangular socket on the underside or on the rear of the keyboard.
► Insert the flat rectangular USB plug of the keyboard cable into one of the device's USB ports.

Connecting a PS/2 keyboard

Use the supplied keyboard cable only.

The PS/2 keyboard is only detected by the device if you connect the keyboard when the device is switched off and then switch the device on again.

► Switch your device off.
► Plug the rectangular connector of the keyboard cable into the rectangular socket on the underside or on the rear of the keyboard.
► Plug the round plug of the keyboard cable into the keyboard port on the device.
► Switch your device on again.

Connecting external devices to the parallel (optional) or serial port

External devices can be connected to the parallel or serial port (e.g. a printer or a modem).

- ► Connect the data cable to the external device.
- ► Depending on the device, connect the data cable to the parallel port or the serial port.

For an exact description of how to connect external devices to the corresponding port, please refer to the documentation of the external device.

Port settings

You can change the port settings (e.g. address, interrupt) in the *BIOS Setup*.

Device drivers

The devices connected to the parallel or serial port require drivers. Your operating system already includes many drivers. If the required drive is missing, install it. Current drivers are usually available on the Internet or will be supplied on a data carrier.

Connecting external devices to the USB ports

You can connect a wide range of external devices to the USB ports (e.g. printer, scanner, modem or keyboard).

USB devices are hot-pluggable. This means you can connect and disconnect USB cables while your device is switched on.

Additional information can be found in the documentation for the USB devices.

- ► Connect the data cable to the external device.
- ► Connect the data cable to one of the USB ports on your device.

Device drivers

The external USB devices you connect to the USB ports usually require no driver of their own, as the required software is already included in the operating system. However, if the external USB device requires its own software, please install it from the data carrier provided with the USB device.

To ensure the transmission capacity of USB 2.0, the cable from the external USB device to the USB port of your device must not be longer than 3 m.

Switching on for the first time: installing the software

Once the installation has been started the device must not be switched off, unless the installation has been completed.

During installation, the device may only be rebooted when you are requested to do so!

The installation will otherwise not be carried out correctly and the contents of the hard disk must be completely restored.

If the device is integrated into a network, the user and server details as well as the network protocol are required during the software installation.

Contact your network administrator if you have any questions about these settings.

When you switch on the device for the first time, the supplied software is installed and configured. Plan a reasonable amount of time for this, as this process must not be interrupted.

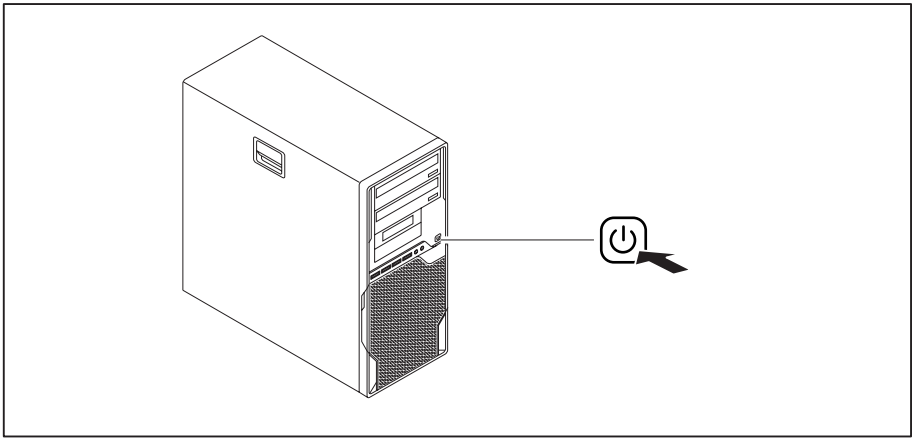
You may need the licence number for Windows during the installation. The licence number is located on a sticker on your device.

Switching on monitor and device

In order to avoid overheating, do not cover the ventilation areas of the monitor or the device.

- ► Switch the monitor on (see the operating manual for the monitor).
- ► Switch the device on. To do this, follow the instructions below.

Switching on the device



- ► Press the ON/OFF switch on the front of the device.
- ↳ The power indicator lights up and the device starts.

Installing the software

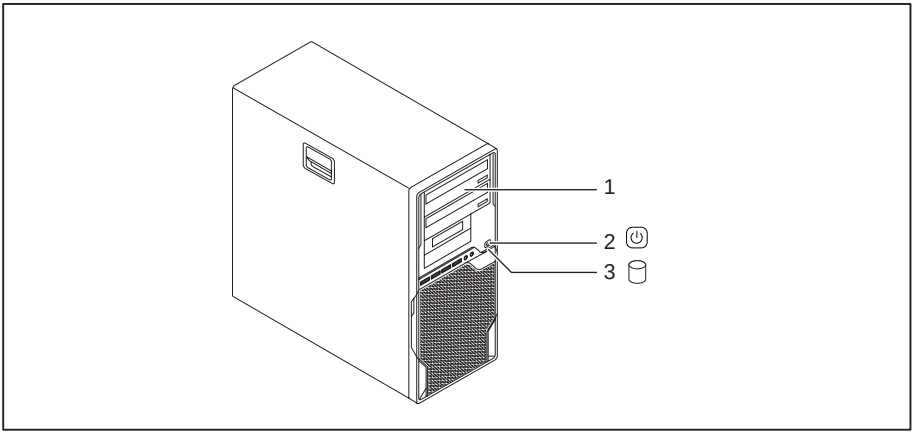
- ► During installation, follow the on-screen instructions.
- ► If anything is unclear regarding the data you are asked to input, read the online Help in your operating system.

i

You will find more information on the system, as well as drivers, utilities and updates on the "Drivers & Utilities" DVD and on the Internet under "http://ts.fujitsu.com/support/".

Operation

Indicators on the device



No.	indicator	Description
1	Drive indicators	The indicator lights up when the CD-ROM or DVD drive of the device is accessed. You must never under any circumstances remove the CD/DVD while the indicator is lit.
2	Power-on indicator	• The indicator is illuminated: The device is switched on. • The indicator is flashing: The device is in energy-saving mode. After being switched on with the ON/OFF switch, the device powers up or returns to the state it was in before it entered energy-saving mode. • The indicator is not illuminated: The device is disconnected from the mains or is ready. If the device is ready it can be switched on with the ON/OFF switch.
3	Hard disk indicator	The indicator lights up when the hard disk drive in the device is being accessed.

In energy-saving mode the device must not be disconnected from the mains supply, as data loss may occur.

Switch the device on

► If necessary, switch the monitor on (see the operating manual for the monitor).

► Press the ON/OFF switch on the front of the device.

↳ The power indicator lights up and the device starts.

Switching off the device

► Shut down the operating system in a defined manner. In Windows: via the *Start* menu and the *Turn Off Computer* function.

or

► Briefly press the ON/OFF switch.

► If the operating system does not automatically switch the device into energy-saving mode or switch it off, press the ON/OFF switch until the device switches off. Warning, this could lead to a loss of data!

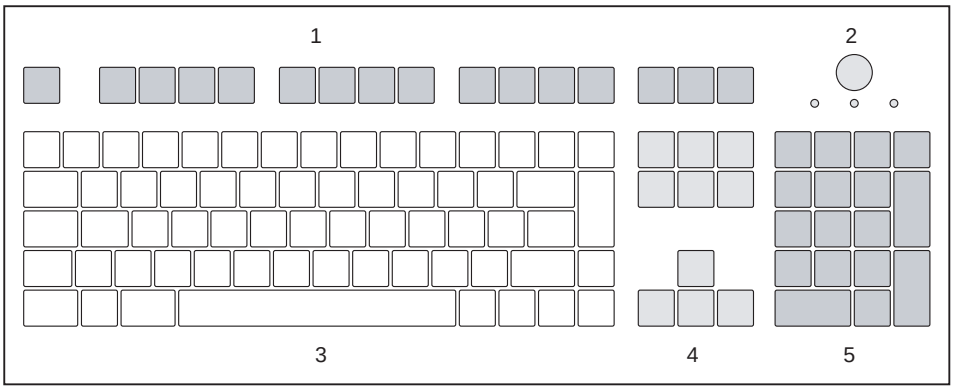
↳ If the device is switched off, the device consumes a minimum of energy.

The ON/OFF switch does not disconnect the device from the mains voltage. To completely disconnect the mains voltage, remove the power plug from the power socket.

► If necessary, switch the monitor off (see the operating manual for the monitor).

Keyboard

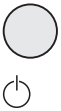
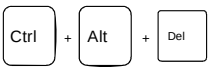
The illustrated keyboard is an example and may differ from the model you use.



1 = Function keys
2 = On/off switch (optional)
3 = Alphanumeric keypad
4 = Cursor keys
5 = Numeric keypad (calculator keypad)

Important keys and keyboard shortcuts

The description of the following keys and keyboard shortcuts applies to Microsoft operating systems. Details of other keys and keyboard shortcuts can be found in the documentation for the relevant application program.

Key / key combination	Description
	**On/off switch (optional)** Depending on the setting in the *BIOS Setup*, the device can be switched on or off with this switch. Some operating systems allow you to configure additional functions of the ON/OFF switch in the Control Panel. With some keyboards the ON/OFF switch can only be used with an ACPI (Advanced Configuration and Power Management Interface). Otherwise the key is inoperative. The mainboard must support this function.
	Enter key confirms the highlighted selection. The Enter key is also referred to as the "Return" key.
	Start key calls up the Windows *Start* menu.
	Menu key calls up the menu for the marked item (Windows).
	Shift key enables upper-case letters and the upper key symbols to be displayed.
	Alt Gr key produces a character shown on the bottom right of a key (e.g. the @ sign on the Q key).
	Num Lock key By pressing the Num Lock key you switch between the upper- and lower-case levels of the calculator keypad. When the Num Lock indicator is lit the numeric keypad and arithmetic keys are active. When the Num Lock indicator is not lit the cursor control functions on the Numeric keypad are active.
	Ctrl key performs a special operation when pressed in conjunction with another key. The Ctrl key is also called the "Control" or "Control key".
	**Windows security/Task-Manager** This key combination opens the Windows Security/Task Manager window.

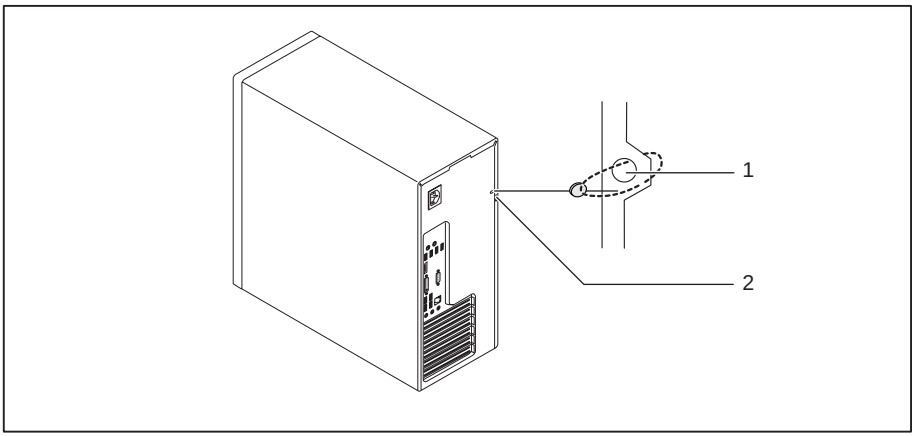
Settings in BIOS Setup

In *BIOS Setup*, you can set the system functions and the hardware configuration of the device. When the PC is delivered, the default entries are valid (see "BIOS Setup" manual or manual for the mainboard). You can customise these settings to your requirements in the *BIOS Setup*.

Property and data protection

Software functions and mechanical locking offer a broad range of functions for protecting your device and your personal data from unauthorised access. You can also combine these functions.

Anti-theft protection and lead-sealing



1 = Holes for padlock

2 = Fixture for Kensington Lock

Anti-theft protection

You can protect your device from theft

- with the fixture for the Kensington Lock (1) and a Kensington MicroSaver. Please consult the manual for your Kensington Lock.
- with the holes (2) and a padlock and chain which you have connected to a fixed object beforehand.

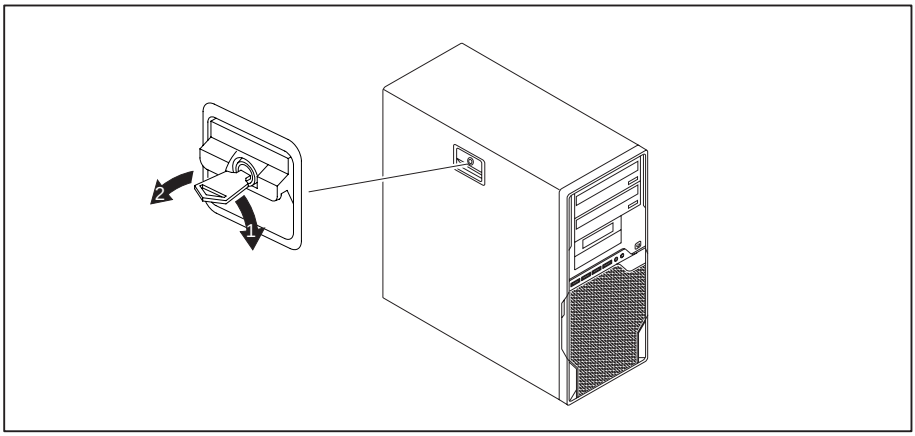
Lead-sealing

To prevent unauthorised persons from opening the casing, the casing can be lead-sealed. To do this, feed the sealing chain through the holes (2) and seal the chain with the lead seal.

Mechanical casing lock (optional)

With the casing lock you can mechanically lock the casing to prohibit unauthorised persons from opening it. The keys can be found on the rear panel of your device.

If you use a casing with a casing lock, the safety guard in front of the drives is also secured against unauthorised opening.



Locking the casing

► Turn the key in the direction of the arrow (1).

Unlocking the casing

► Turn the key in the direction of the arrow (2).

BIOS setup security functions

The *Security* menu in *BIOS Setup* offers you various options for protecting your personal data against unauthorized access, e.g.:

- Prevent unauthorized access to *BIOS Setup*
- Prevent unauthorised system access
- Prevent unauthorised access to the settings of boards with their own BIOS
- Activate virus warnings
- Protect BIOS from overwriting
- Protect the device from being switched on by an external device

You can also combine these functions.

You will find a detailed description of the *Security* menus and how to assign passwords in the manual for the mainboard or in the "BIOS Setup" manual.

Access authorisation via SmartCard

In systems equipped with a SmartCard reader, access can be restricted to those users who have a corresponding SmartCard.

Operating the SmartCard reader (optional)

► Connect the external SmartCard reader to your system as described in the instructions for the SmartCard reader.

↳ After the device is switched on, you will be prompted to insert your SmartCard.

Troubleshooting and tips

Refer to the safety notes in the "Safety/regulations" manual and in the "Getting started", Page 13 chapter when connecting or disconnecting cables.

If a fault occurs, try to correct it as described in the following documentation:

- in this chapter
- in the documentation for the connected devices
- in the help systems of the software used
- in the documentation for your operating system

Help if problems occur

Should you encounter a problem with your computer that you cannot resolve yourself:

► Note the ID number of your device. The ID number is found on the type rating plate on the back, the underside or the top of the casing.

► For further clarification of the problem, contact the Service Desk for your country (see the Service Desk list or go to "http://ts.fujitsu.com/support/servicedesk.html"). When you do this, please have ready the ID number and serial number of your system.

Troubleshooting

Power-on indicator remains unlit after you have switched on your device

Cause	Troubleshooting
The mains voltage supply is faulty.	► Check whether the power cable is plugged properly into the device and a grounded mains outlet.
Internal power supply overloaded.	► Pull the power plug of the device out of the mains outlet. ► Wait approx. 3 min. ► Plug the power plug into a properly grounded mains outlet again. ► Switch the device on.

The device cannot be switched off with the ON/OFF switch.

Cause	Remedy
System crash	► Keep the on/off switch pressed for at least 4 seconds until the machine switches off. Caution: This can lead to a loss of data! This procedure does not allow the operating system to shut down in an orderly way. The next time the system is started there may well be error messages.

Monitor remains blank

Cause	Remedy
Monitor is switched off.	► Switch your monitor on.
Brightness control is set to dark	► Adjust the brightness control. For detailed information, please refer to the operating manual supplied with your monitor.
Power cable not connected	► Switch off the monitor and the device. ► Check that the monitor power cable is properly connected to the monitor and to a grounded mains outlet or to the monitor socket of the device. ► Check that the device power cable is properly plugged into the device and a grounded mains outlet. ► Switch on the monitor and the device.
Monitor cable not connected	► Switch off the monitor and the device. ► Check that the monitor cable is properly connected to the device and monitor. ► Switch on the monitor and the device.
Wrong monitor has been set under Window XP	► Restart the device. ► Press F8 while the system is booting. Either the *Windows Advanced Start Options* menu or the menu for selecting the operating system appears. ► If the menu for selecting the operating system appears, press F8. ► Select*Safe Mode* or *Safe Mode with Network*. ► Go to *Start – Settings – Control Panel – Display* and the tabs *Appearance*, *Themes*, *Settings* to set the correct values for the connected monitor as described in the operating manual of the monitor.

Cause	Remedy
Incorrect setting for the monitor in Windows Vista	► Restart the device. ► Press F8 while the system is booting. Either the *Windows Advanced Start Options* menu or the menu for selecting the operating system will appear. ► If the menu for selecting the operating system appears, press the F8 key. ► Select *Safe Mode* or *Safe Mode with Network*. ► Go to *Start symbol – (Settings) – Control Panel – Appearance and Personalization – Personalization* and enter the correct values for the connected monitor as described in the operating manual of the monitor.
Wrong monitor has been set under Windows 7	► Restart the device. ► Press F8 while the system is booting. Either the *Windows Advanced Start Options* menu or the menu for selecting the operating system appears. ► If the menu for selecting the operating system appears, press F8. ► Select *Safe Mode* or *Safe Mode with Network*. ► Go to *Start – Control Panel – Appearance and Personalization – Display* to enter the correct values for the connected monitor as described in the operating manual of the monitor.

No mouse pointer displayed on the screen

Cause	Remedy
The mouse is not correctly connected.	► Shut down the operating system properly. ► Switch the device off. ► Check that the mouse cable is properly connected to the system unit. If you use an adapter or extension lead with the mouse cable, check the connections. ► Switch the device on.
The mouse controller is not enabled.	► Check in the *BIOS-Setup* whether the mouse controller is *enabled*. ► Check that the mouse driver is properly installed and is present when the application programme is started. Detailed information can be found in the user guide for the mouse and application programme.

Time and/or date is not correct

Cause	Remedy
Time and date are incorrect.	► Set the correct time and date within the operating system you are using. **or** ► Set the correct time and/or date in the *BIOS Setup*.
The lithium battery is discharged.	► If the time and date are repeatedly wrong when you switch on your device, replace the lithium battery (see "Replacing the lithium battery", Page 61).

Error messages on the screen

Error messages and their explanations are provided:

- in the technical manual for the mainboard
- in the documentation for the programs used

Installing new software

When installing programs or drivers, important files may be overwritten and modified. To be able to access the original data in the event of any problems following installation, you should backup your hard disk prior to installation.

Restoring the hard disk contents

The instructions on how to restore the content of the hard disk drive under Windows 7 can be found in the "Recovery Guide" manual.

Tips

Topic	Tip
Lack of system resources	► Close unnecessary applications. **or** ► Run the applications in a different order.
Other manuals	Further manuals are provided as PDF files on the "Drivers & Utilities" DVD.

System expansions

Repairs to the device must only be performed by qualified technicians. Incorrect repairs may greatly endanger the user (electric shock, fire risk) and will invalidate your warranty.

After consulting the Hotline/Help Desk, you may remove and install the components described in this manual yourself.

As the device has to be shut down in order to install/deinstall system hardware components, it is a good idea to print out the relevant sections of this chapter beforehand.

The following illustrations may differ slightly from your device, depending on its configuration level.

If further documentation was delivered with your device, please also read this through carefully.

In addition, before removing or installing system components, please pay attention to the following:

The device must be switched off when installing/removing the system expansions and may not be in energy-saving mode.

Remove the power plug before opening the device.

Be careful that no wires become trapped when removing or installing components.

When installing components that become very hot, make sure that the maximum permissible temperature of the components in operation is not exceeded.

An update of the BIOS may be required for a system expansion or hardware upgrade. Further information can be found in the BIOS help section or if necessary in the Technical Manual for the mainboard.

Information about boards

Take care with the locking mechanisms (catches and centring pins) when you are replacing boards or components on boards.

Note that some components on the mainboard may be very hot if the device was in use shortly before the casing was removed.

To prevent damage to the board or the components and conductors on it, please take care when you insert or remove boards. Make sure expansion boards are inserted straightly.

Never use sharp objects (screwdrivers) for leverage.

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

When handling boards fitted with ESDs, you must always 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.
- Only touch or hold the boards by the edge or, if present, at the areas marked green (Touch Points).
- Never touch pins or conductors on boards fitted with ESDs.

Opening the casing

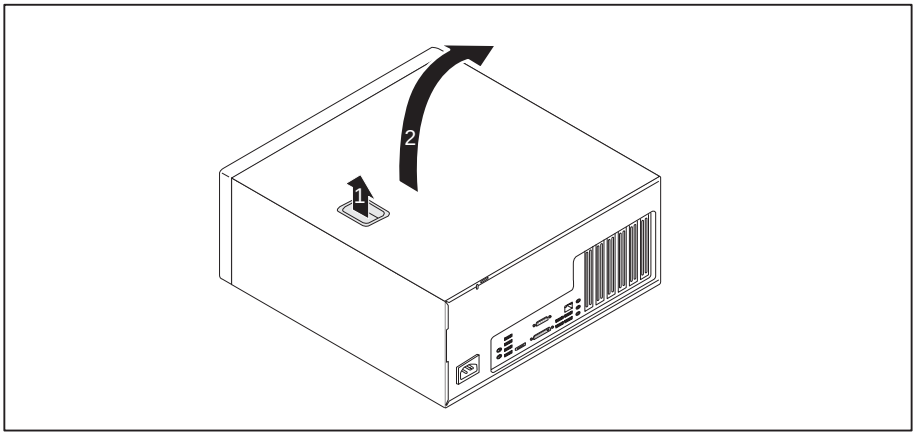
► Switch the device off. The device must not be in power-saving mode.

Please observe the safety information in "Important notes", Page 9.

Disconnect the mains plug from the mains outlet.

Only insert the power plug after you have closed the casing.

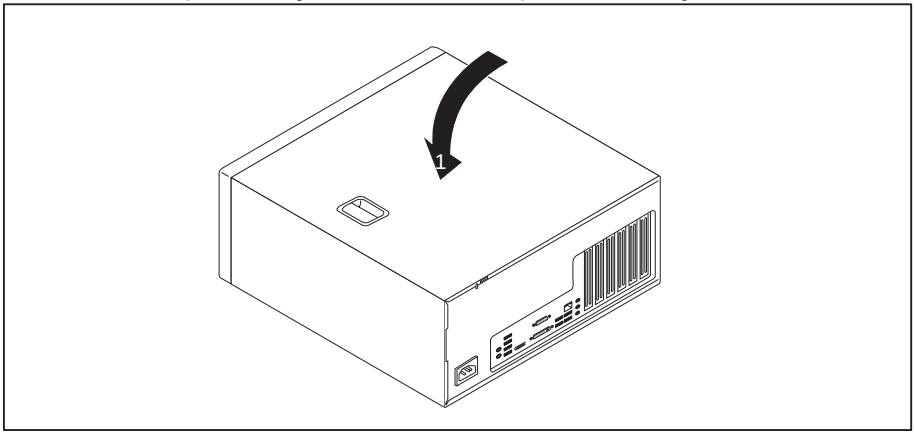
► Remove any connected wires which are in the way.
► On devices with a casing lock: Unlock the casing.
► Lay the device on its side in the manner shown.



► Pull the locking device (1) and swivel the side part in the direction of the arrow (2).

Closing the casing

► Insert the side part in the guide rail on the lower part of the casing.



► Swivel the side cover in the direction of the arrow (1) until it engages.
► On devices with a casing lock: Lock the casing.
► Reconnect the cables that you disconnected before.

Overview of drive bays and drives in your device

The casing can accommodate multiple accessible and non-accessible drives:

- two drive bays for accessible $5^1/_4$" drives
- two drive bays for accessible $3^1/_2$" drives
- Drive bays for multiple non-accessible $2^1/_2$" and $3^1/_2$" drives (hard disks):
  – four $3^1/_2$" drives (standard)
  – or: two $3^1/_2$" drives and two $2^1/_2$" drives (optional)

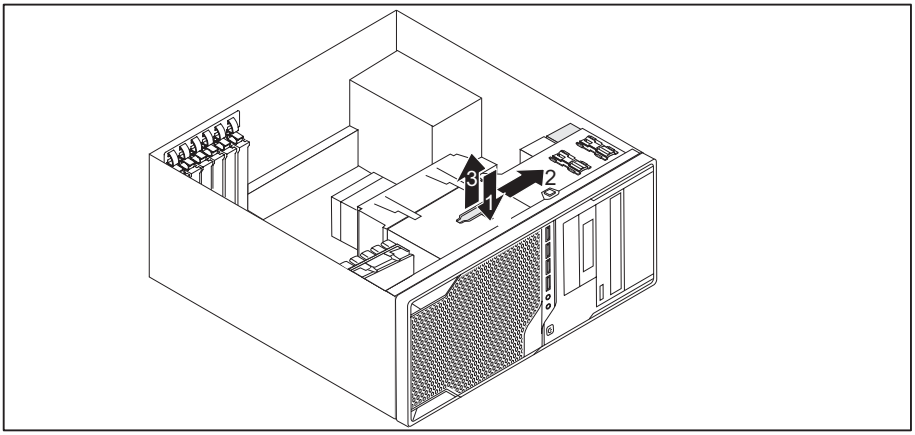
"Accessible drives" are e.g. DVD or CD ROM drives, into which a data medium can be inserted from outside. "Non-accessible drives" are for example hard disk drives.

Installing and removing the accessible 5 1/4 inch drive

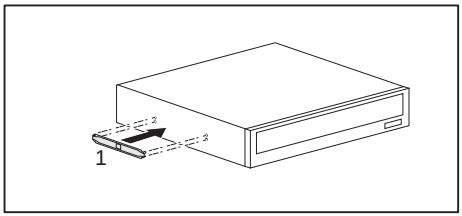
Fitting the drive cover for the 5 1/4 inch drive

- Requirement: The casing is open (see section "Opening the casing", Page 34).

To use the latch function of the accessible 5 1/4 inch drive, you must fit the corresponding drive cover before installing the drive in the casing. Proceed as follows:



► Unlock the drive cover (1).
► Push the drive metal plate upwards (2) so it is released from the catches with which it is secured.
► Lift the drive cover away from the casing (3).



Installing an accessible drive

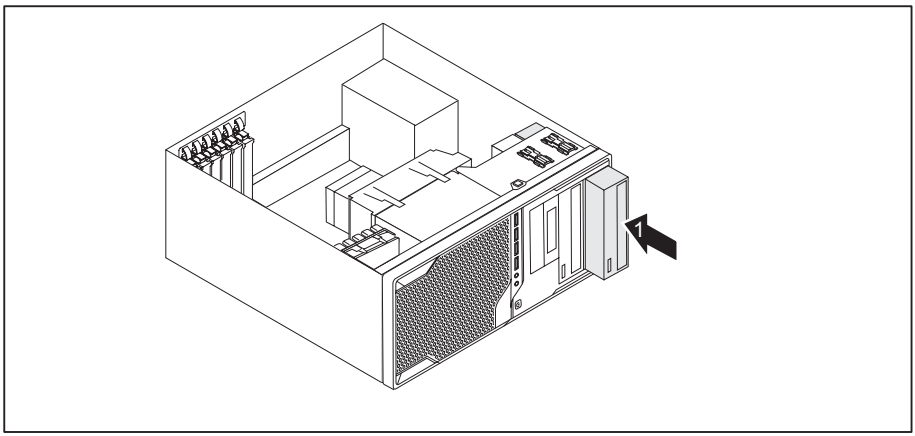
► If you are installing the drive in the upper bay and a cover (optional) is already in place, please remove it.

or

► If you are installing the drive in the lower bay, also remove the metal panel on the drive bay.

► Fit the drive cover for the 5 1/4 inch drive (see "Fitting the drive cover for the 5 1/4 inch drive", Page 36).

Do not throw away the cover. For cooling and protection against fire you must refit the cover if you remove the drive again later (see "Removing an accessible drive", Page 38).



► Slide the accessible drive together with the attached drive metal plate into the casing until it engages (1).

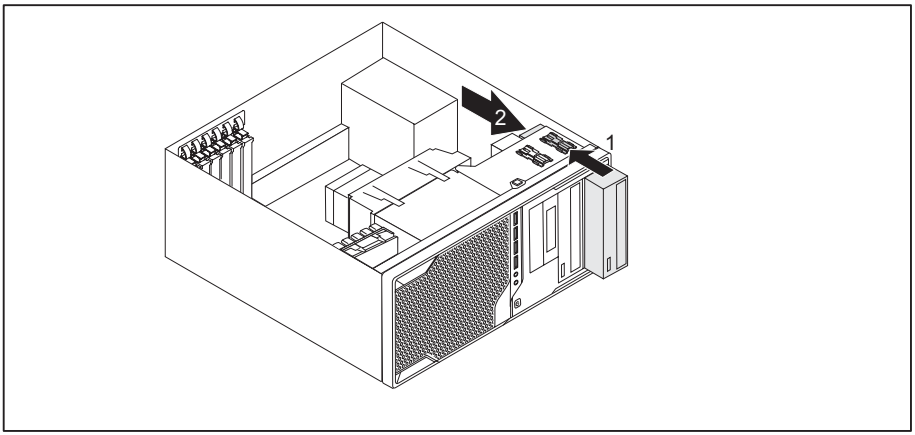
► Connect the cables to the drive. Make sure the polarity is correct.

► Close the casing (see "Closing the casing", Page 35).

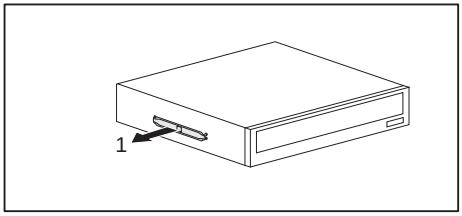
It may be necessary to modify the entry for the drive in the *BIOS Setup*.

Removing an accessible drive

- Requirement: The casing is open (see "Opening the casing", Page 34).



► Disconnect the cables connected to the drive.
► Slide the clip in the direction of the arrow (1).
► Pull the drive out of the casing in the direction of the arrow (2).



► Remove the drive cover from the drive (1).
► Place the drive cover on the casing (1).
► Slide the drive cover downwards (2) so that the drive cover clicks into the catches.
► If necessary, make the required settings on the remaining hard disk drives.
► If you are not installing a new drive, reinstall the cover (optional) which was previously removed. The drive bay must be closed off to ensure cooling, to protect against fire and to prevent the entry of foreign bodies.
► Close the casing (see "Closing the casing", Page 35).

It may be necessary to modify the entry for the drive in the *BIOS Setup*.

Installing/removing a 3½" reader in a 3½" bay (optional, SmartCard or MultiCard)

You can for instance install a SmartCard or MultiCard reader in the 3½" drive bay. The reader is mounted onto a module holder when installed in the casing.

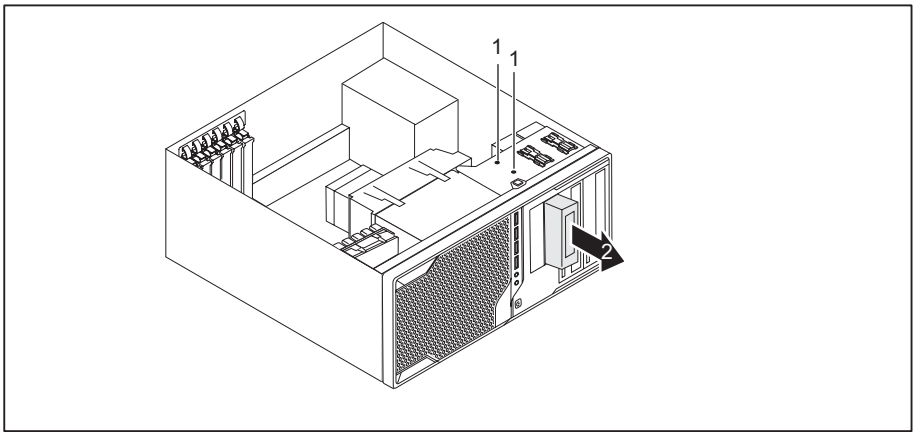
SmartCard or MultiCard readers can be mounted on a module holder (optional). If you have ordered a device with a SmartCard or MultiCard reader, the module holder, SmartCard or MultiCard reader are already built in on delivery.

If you have ordered a device without a SmartCard or MultiCard reader, a blind cover is installed instead of the module holder.

Removing the module holder

- Requirement: open the casing (see "Opening the casing", Page 34).

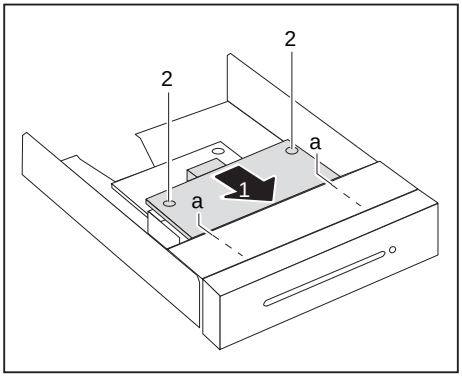
► Disconnect the cables connected to the module holder.



► Remove the screws (1) on the module holder.

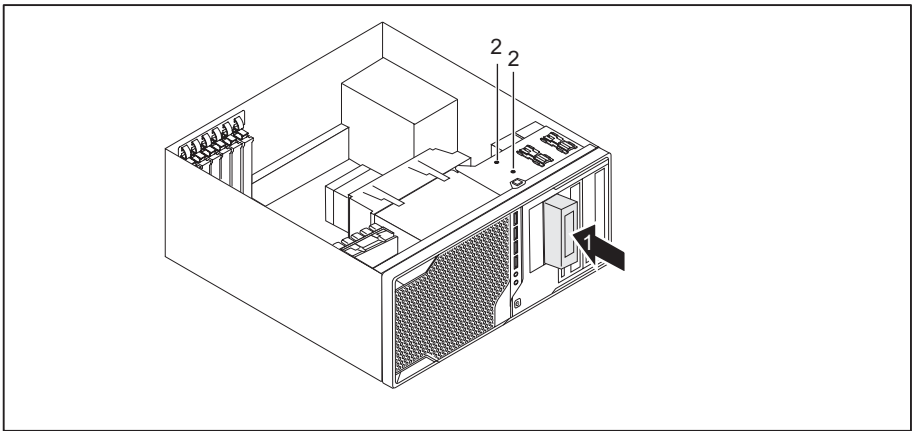
► Slide the module holder out of the casing in the direction of the arrow (2).

Screwing the reader onto the module holder



- ► With the component side facing downwards, slide the reader in the direction of arrow (1) into the guide on the module holder (a).
- ► Fasten the reader with the screws (2).

Installing a module holder with reader

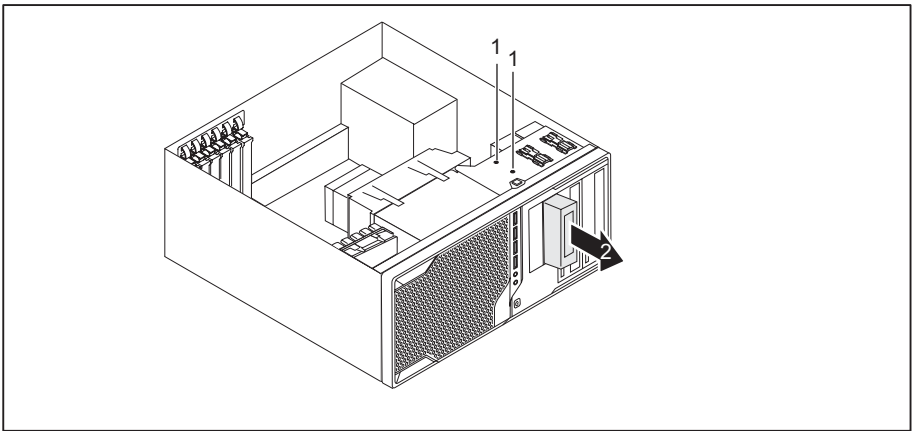


- ► Push the module holder into the casing in the direction of the arrow (1).
- ► Fasten the module holder with the screws (2).
- ► Connect the cables to the boards and the mainboard. Make sure the polarity is correct.
- ► Close the casing (see "Closing the casing", Page 35).

Removing a module holder with reader

- Requirement: The casing is open (see "Opening the casing", Page 34).

► Disconnect the cables connected to the module holder.



► Remove the screws (1).

► Slide the module holder out of the casing in the direction of the arrow (2).

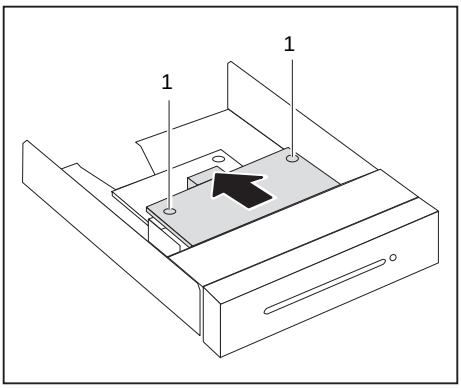
► Remove the reader from the module holder (see "Removing the reader from the module holder", Page 41) and reinstall the module holder (corresponds to "Installing a module holder with reader", Page 40).

or

► Remove the reader from the module holder (see "Removing the reader from the module holder", Page 41) and install the metal and plastic cover in the drive bay.

► Close the casing (see "Closing the casing", Page 35).

Removing the reader from the module holder



► Undo the screws (1).

► Pull the reader out of the module holder in the direction of the arrow.

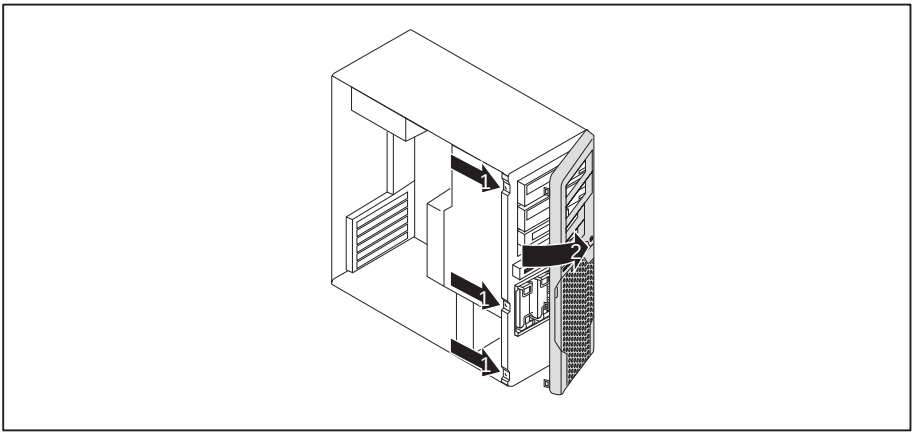
Installing and removing a WLAN module (optional)

You can install an additional WLAN module in your device.

Removing the front panel

- Requirement: open the casing (see "Opening the casing", Page 34).

To access the WLAN module bay, you first need to remove the front panel.



► Lift the locking lugs on the front panel (1).
► Fold the front panel in the direction of the arrow (2) and remove it from the casing.

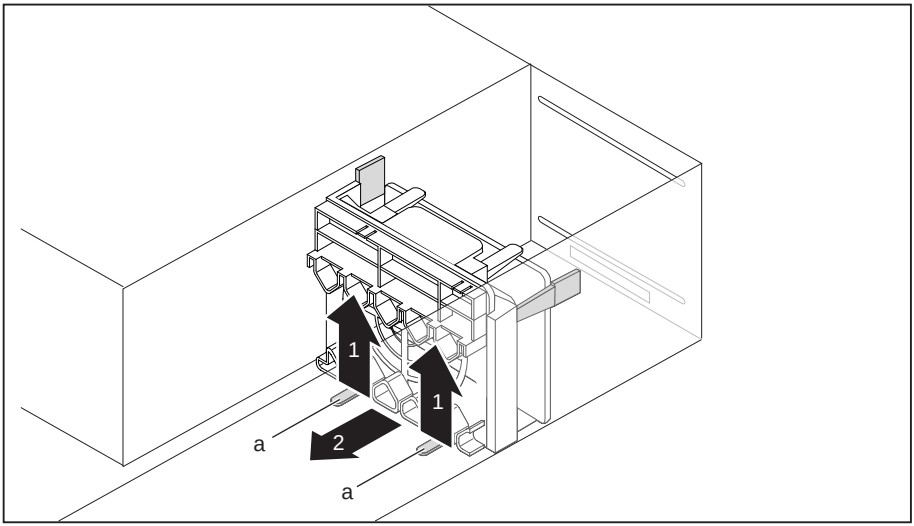
Removing the front fan

- Requirement: open the casing (see "Opening the casing", Page 34).
- Requirement: remove the front panel (see "Removing the front panel", Page 42).

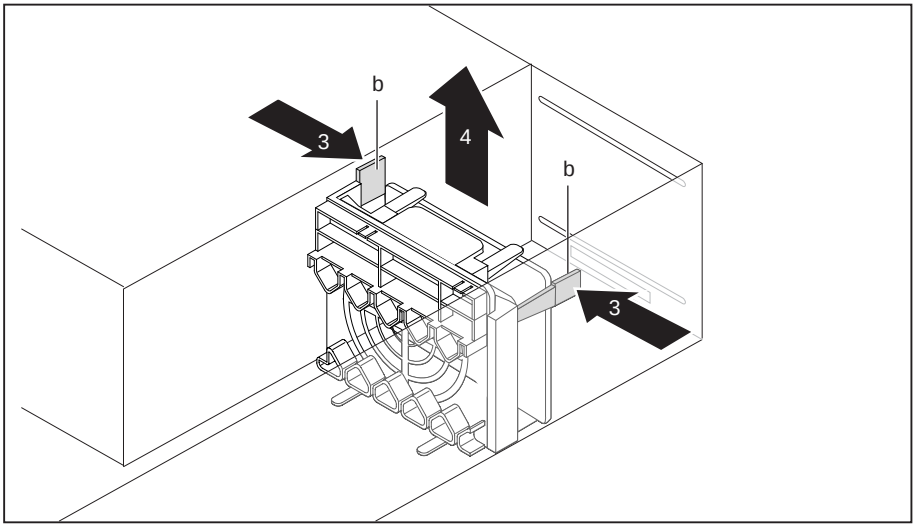
To access the WLAN module bay, you need to remove the front fan after removing the front panel.

The front fan is secured using several locking hooks that will need to be unlocked one after the other.

► Disconnect the fan cable from the mainboard.



► Push the top locking hooks (a) in the direction of the arrow (1) and tilt the front fan in the direction of the arrow (2).



► Press and hold down the lower locking hooks (b) in the direction of arrow (2) and at the same time push the fan in the direction of arrow (3).

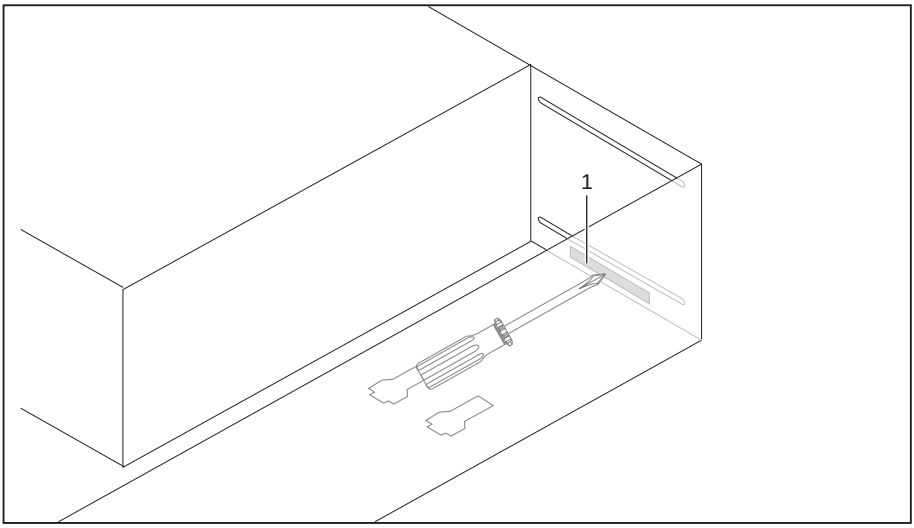
↳ The fan is unlocked.

► Remove the front fan from the casing (4).

Installing the WLAN module

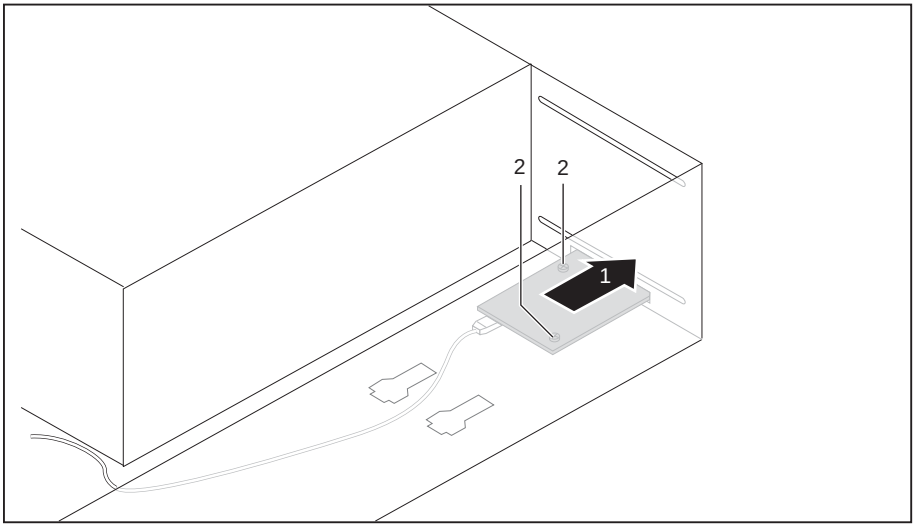
Remove the metal panel

The slot for the WLAN module is protected by a metal cover on delivery.



► Break out the pre-stamped metal cover (1) with a screwdriver.

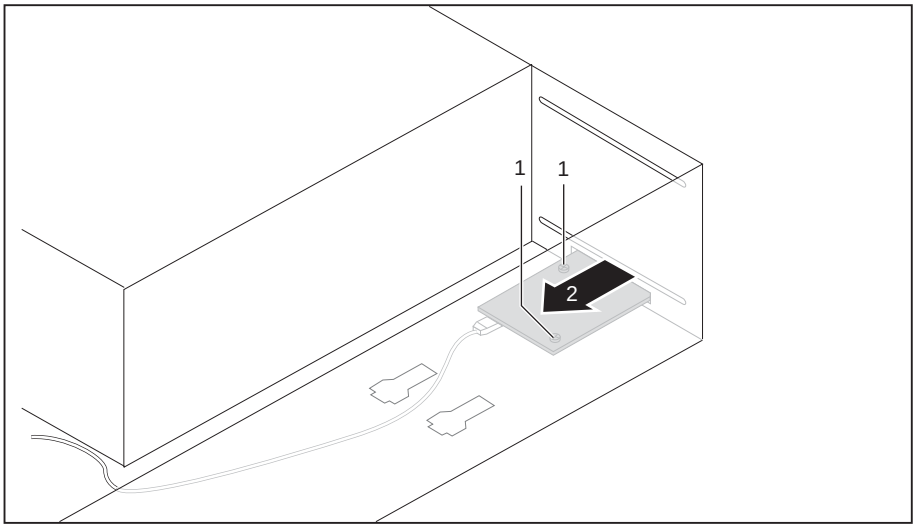
Installing the WLAN module



- ► Slide the WLAN module into the slot in the direction of the arrow (1). Ensure that the screw holes on the casing and those on the WLAN module are precisely aligned over one another.
- ► Secure the WLAN module with the screws (2).
- ► Attach the cables to the WLAN module and mainboard.

Removing the WLAN module

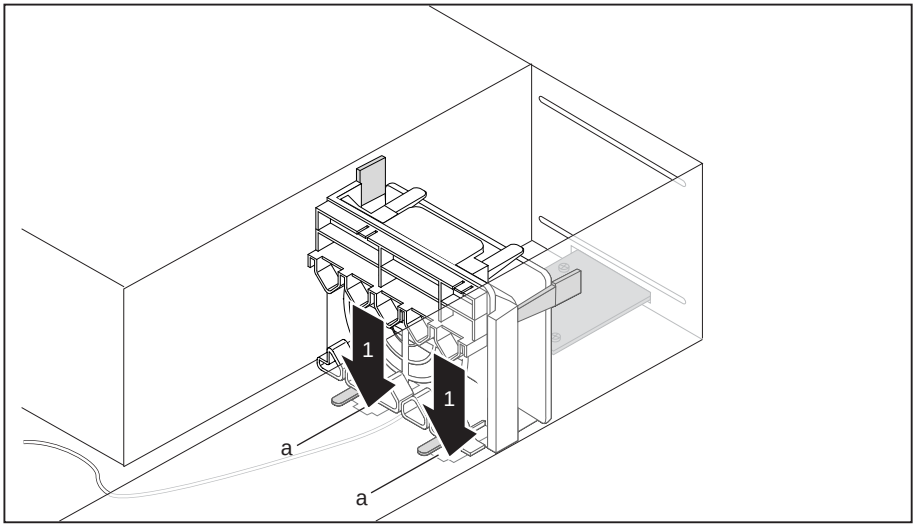
► Detach the cables from the WLAN module and mainboard.



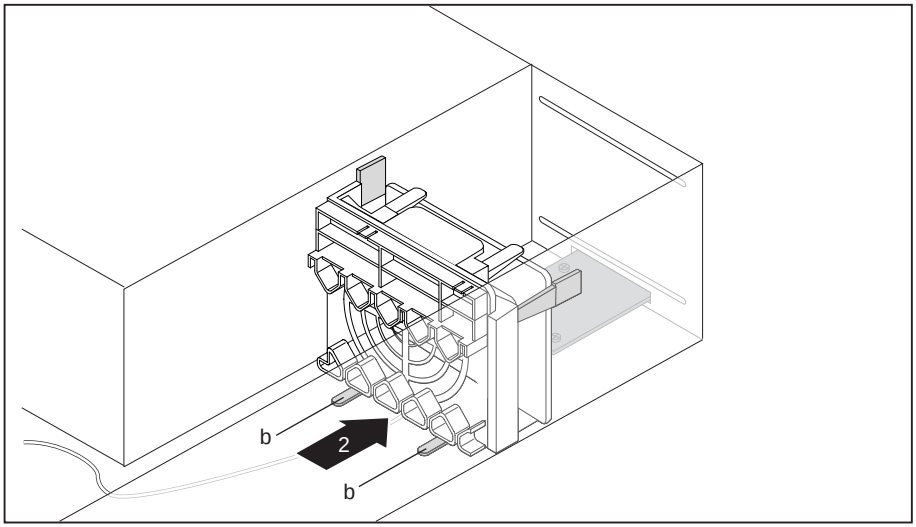
► Undo the screws (1).

► Pull the WLAN module out of the bay the direction of the arrow (2).

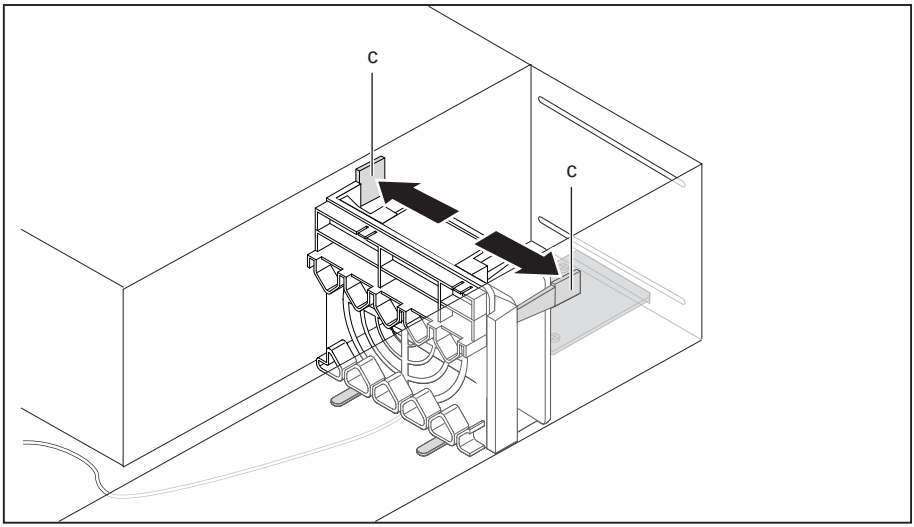
Installing the front fan



► Put the lower locking hooks into the notches (a) (1).

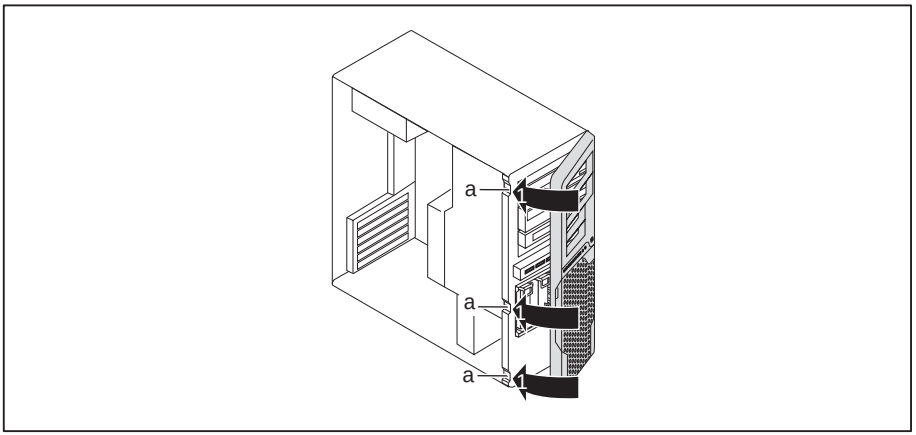


► Push the front fan in the direction of arrow (2) until the lower locking hooks (b) engage.



- ► Ensure that the upper locking hooks (c) engage again.
- ► Connect the fan cable to the mainboard.
- ► Reattach the front panel (see "Securing the front panel", Page 49).

Securing the front panel

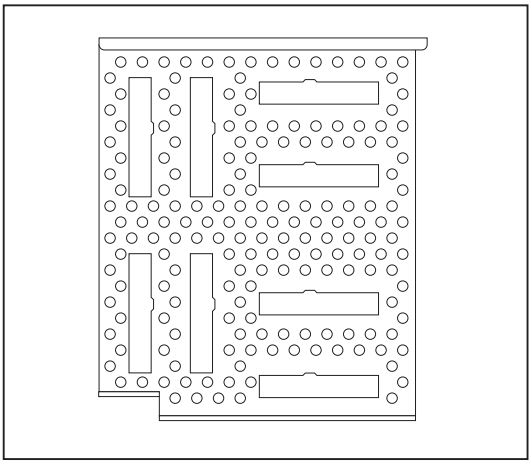


- ► Put the front cover onto the guide openings on the right of the casing.
- ► Fold the front panel in the direction of the arrow (1) until the catches (a) engage.
- ► Close the casing (see "Closing the casing", Page 35).

Installing the hard disk drive

By default, on delivery of your device, two 3½" or 2½" hard disks can be installed using the hard disk drive installation kit. At most, you can install the following hard disks:

- four $2^1/_2$ inch drives
- or: two $2^1/_2$ inch drives and two $3^1/_2$ inch drives
- or four $3^1/_2$ inch drives

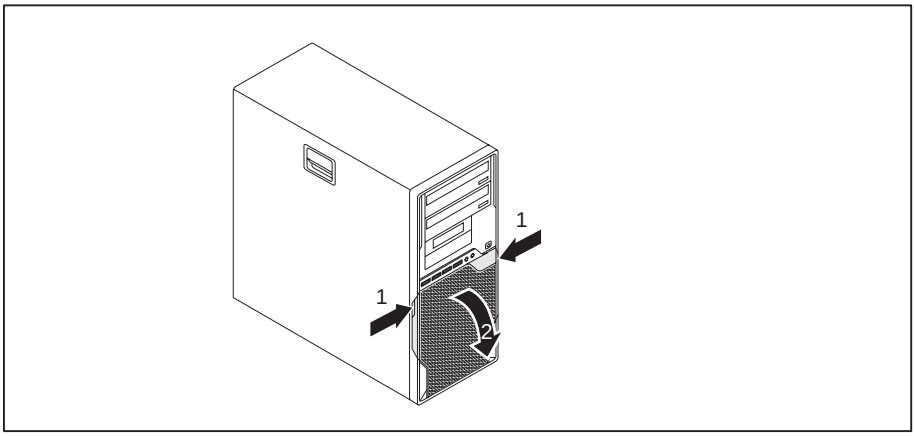


Installing hard disks

The principles for installing/removing hard disks for the device as described below are identical for all types of hard disk. Only the size and alignment of the hard disk in the casing may vary (install either horizontally or vertically depending on the hard disk type).

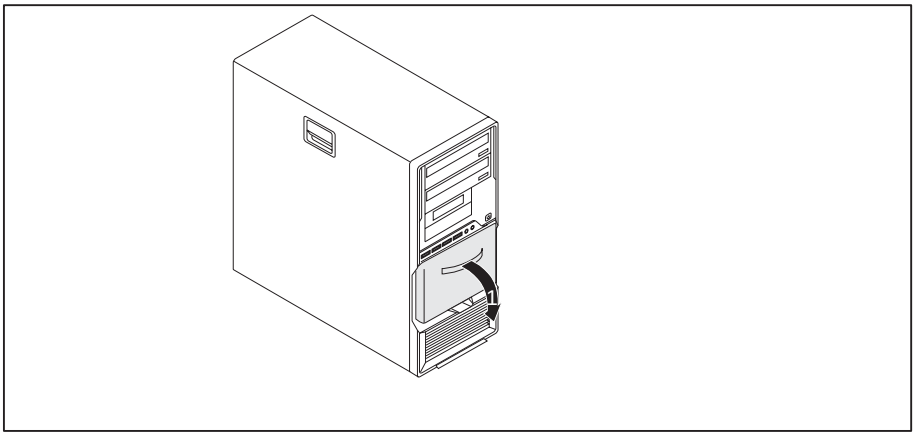
The following images illustrate the installation of a $3^1/_2$" drive.

Removing the hard disk front panel



► Press the unlocking keys on the sides of the hard disk front panel (1).
► Fold the hard disk front panel in the direction of the arrow (2) and remove it from the casing.

Removing the protective grille

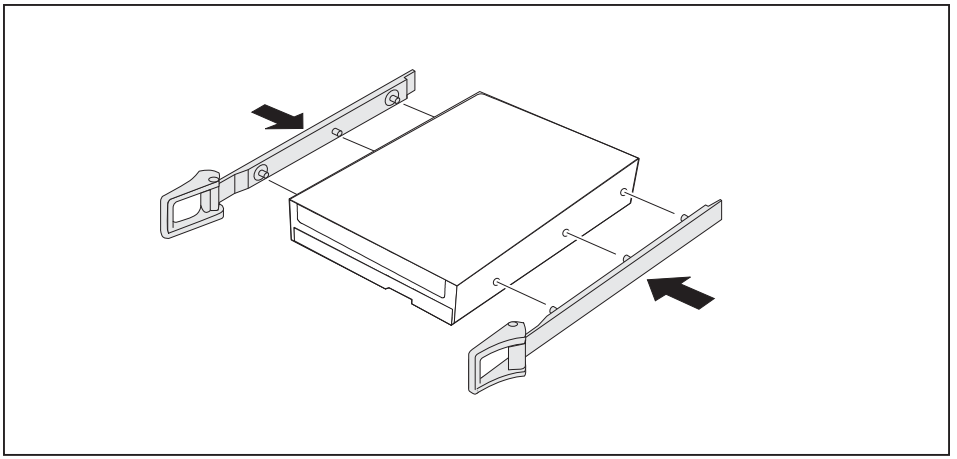


► Pull the protective grille away from the casing (1).

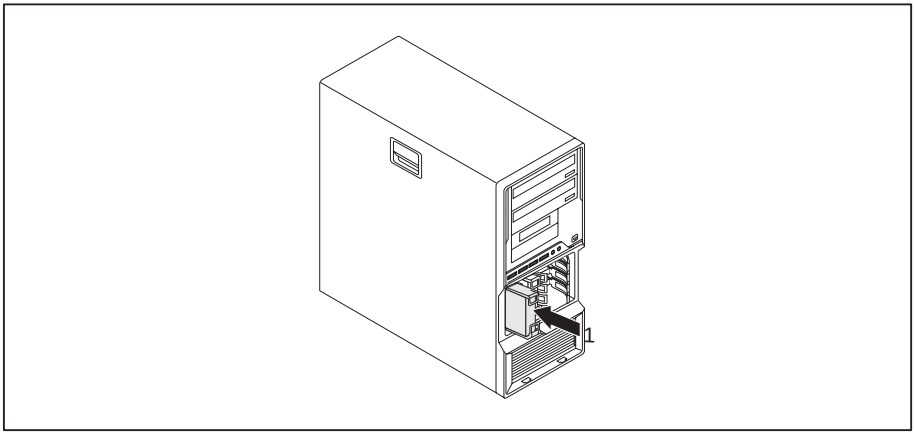
Installing a hard disk drive

- Prerequisite for devices with a casing lock: The casing is open and the side cover removed (see "Opening the casing", Page 34). If you are using a casing with a casing lock, the protective grille in front of the drives must also be secured against unauthorised opening.
- Requirement: remove the protective grille (see "Removing the protective grille", Page 51).

EasyChange rails for a second hard disk drive are mounted on the drive cage.



► Secure the EasyChange rails on the side of the hard disk by inserting the upper pins of the EasyChange rail in the corresponding holes on the hard disk.



- ► Slide the hard disk drive with the EasyChange rails into the drive cage in the direction of the arrow (1). Ensure that the label on the 3½" hard disk drive is facing the side cover to be opened. If you are installing a 2½" hard disk drive, ensure that the label is on the top.
- ► Connect the cables to the hard disk drive.

i

It may be necessary to modify the entry for the drive in the *BIOS Setup*.

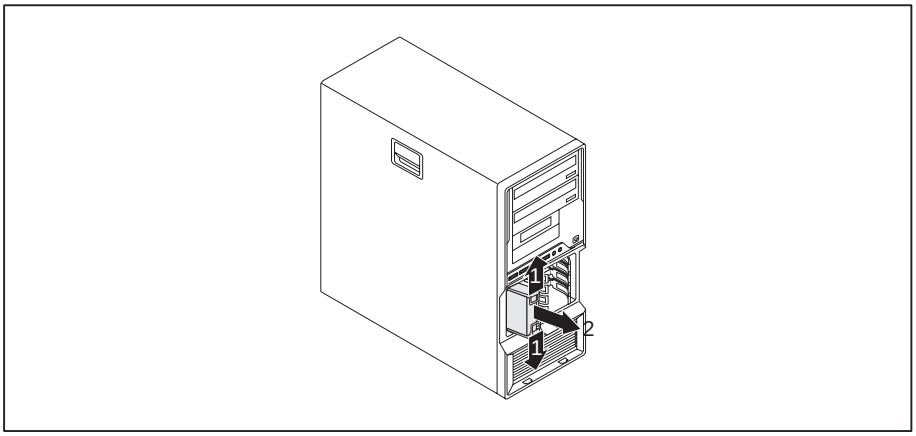
Removing a hard disk

The principles for installing/removing hard disks for the device as described below are identical for all types of hard disk. Only the size and alignment of the hard disk in the casing may vary (install either horizontally or vertically depending on the hard disk type).

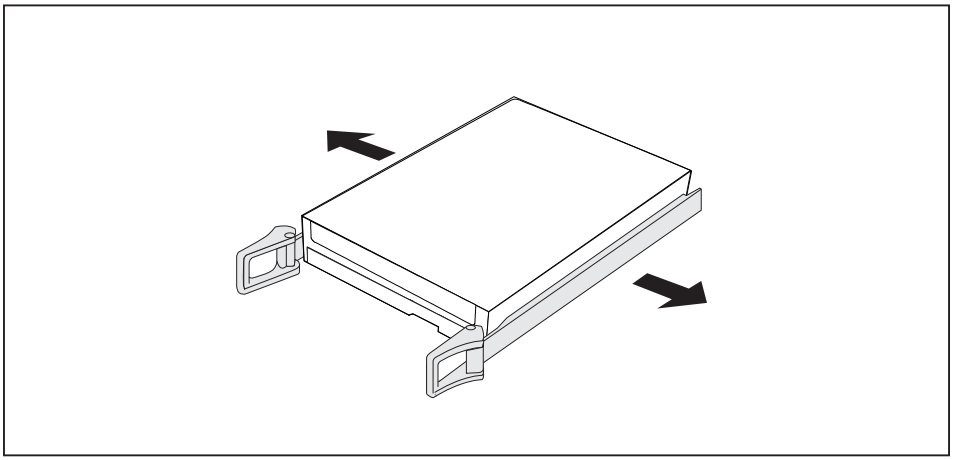
The following images illustrate the installation of a 3 1/2" drive.

Removing the hard disk drive

- ► On devices with a casing lock: Open the casing (see "Opening the casing", Page 34).
- ► Remove the hard disk front panel (see "Removing the hard disk front panel", Page 51).
- ► Remove the protective grille (see "Removing the protective grille", Page 51).



► Press the EasyChange rails mounted on the hard disk (1) together slightly and pull the hard disk drive out of the drive cage in the direction of the arrow (2).

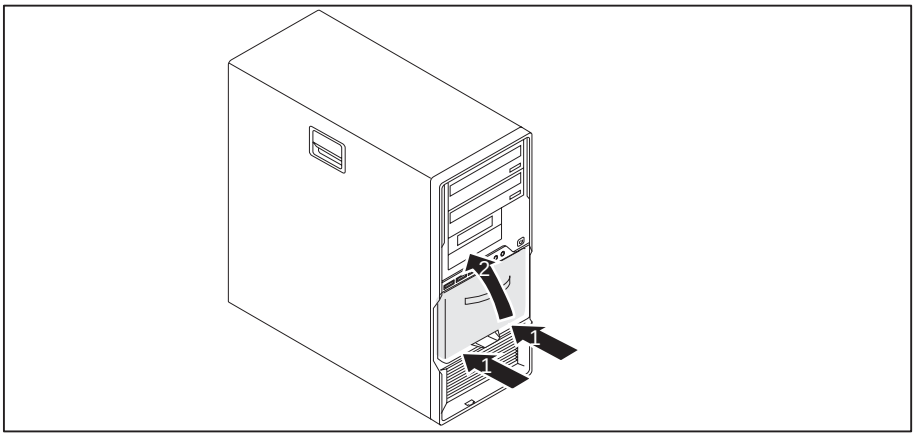


► Pull the EasyChange rails off the hard disk drive.
► If you no longer need the EasyChange rails, secure them again at their location in the drive cage.

i

It may be necessary to modify the entry for the drive in the *BIOS Setup*.

Securing the protective grille

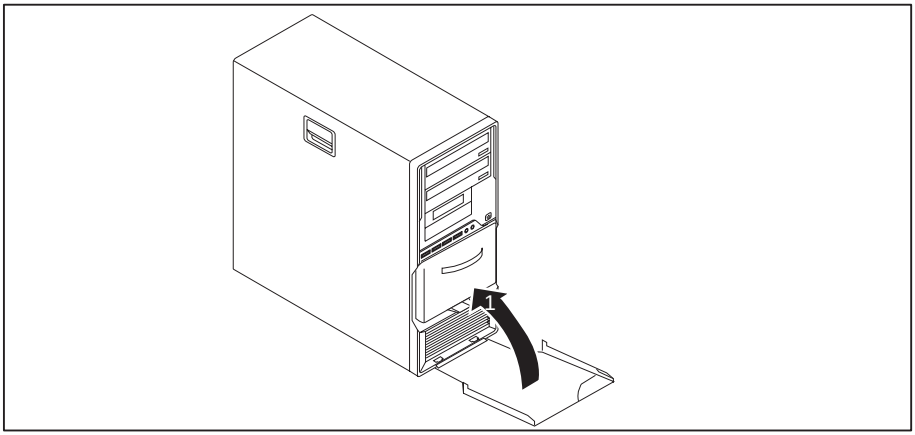


► Put the protective grille into the metal plates on the casing (1) and fold it in the direction of the arrow (2).

↳ The protective grille is secured.

► Reattach the front panel to the casing (see "Securing the hard disk front panel", Page 55).

Securing the hard disk front panel



► Position the hard disk front panel in the guide openings on the bottom of the casing as illustrated.

► Fold the hard disk front panel in the direction of arrow (1) until you feel it engage.

Installing and removing a board

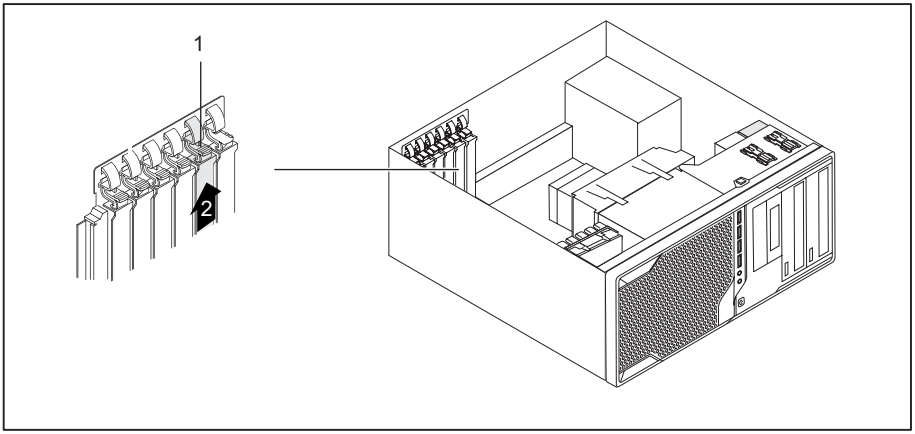
You can install additional modules in order to increase the performance of your machine.

The number, position and arrangement of the board slots on the mainboard can be found in the manual for the mainboard. Boards may already be installed on shipment.

Installing a board

If possible, always install display adapters in the second slot from the right.

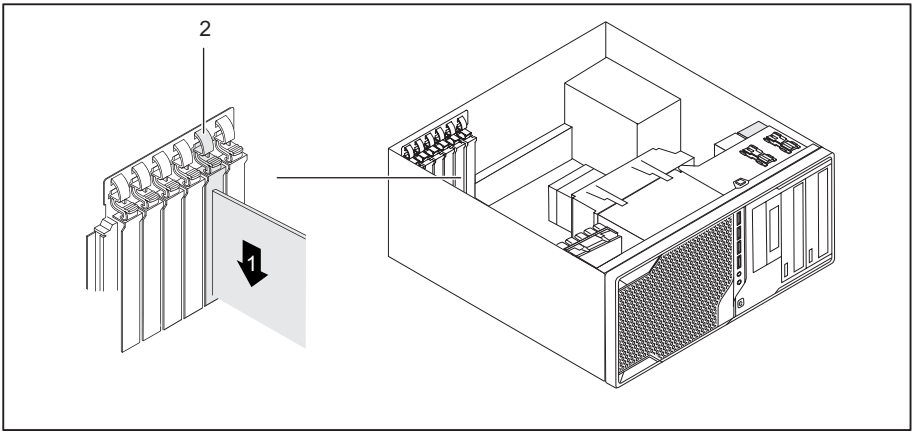
► Open the casing (see "Opening the casing", Page 34).



► Push the retaining clip (1) towards the slot cover to unlock it, then move it towards the back panel of the device.

► Pull the slot cover out of the slot in the direction of the arrow (2).

Do not throw away the slot cover. For cooling, protection against fire and in order to comply with EMC regulations, you must refit the slot cover if you remove the board.

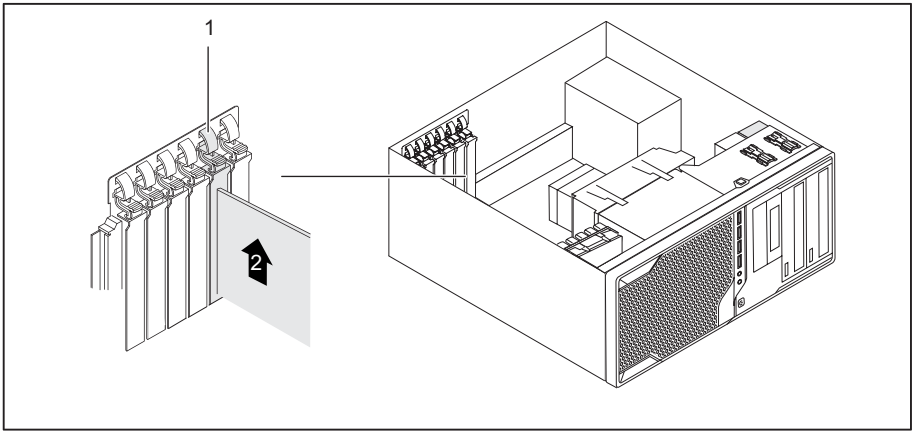


- ► Push the board into the slot (1).
- ► Swivel the retaining clamp back again until you feel it click into place (2).
- ► Connect the cables to the board.
- ► For display adapters with an additional power connection (< 65 W): attach the display adapter power cable to the power supply.
- ► Close the casing (see "Closing the casing", Page 35).

If you have installed or removed a board, please check the relevant slot settings in the *BIOS Setup*. If necessary, change the settings. Further information is provided in the board documentation.

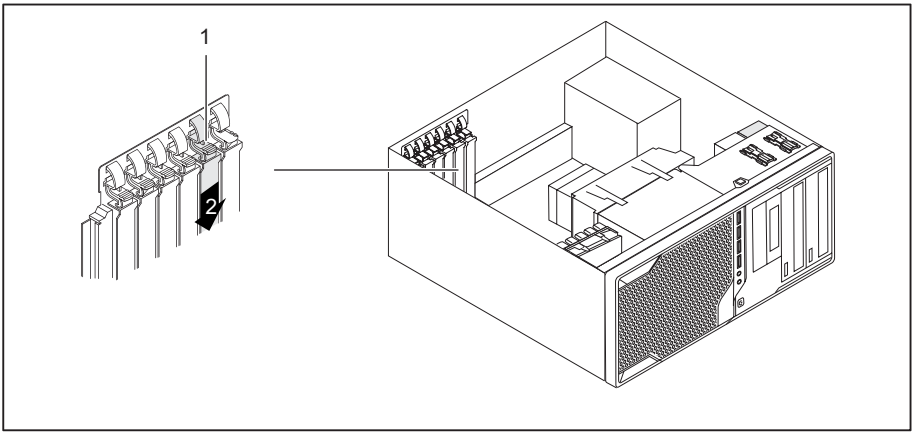
Removing a board

► Open the casing (see "Opening the casing", Page 34).
► Disconnect the cables connected to the board.



► Push the retaining clip (1) towards the slot cover to unlock it, then move it towards back panel of the device.
► Pull the board out of the slot in the direction of the arrow (2).
► Place the board in suitable packaging.

For cooling, protection against fire, and in order to comply with EMC (electromagnetic compatibility) regulations, you must refit the slot cover.



- ► Slide the slot cover into the slot (1).
- ► Press on the retaining clip until it you feel it engage (2).
- ► Close the casing (see "Closing the casing", Page 35).

If you have installed or removed a PCI board, please check the relevant PCI slot settings in the *BIOS Setup*. If necessary, change the settings. Further information is provided in the PCI board documentation.

Installing and removing processor cooling devices

Removing the heat sink

The shape and position of the heat sink are device-dependent.

- ► Open the casing (see "Opening the casing", Page 34).
- ► Disconnect the cable of the fan (FAN1) from the mainboard.
- ► Undo the screws on the heat sink.
- ► Lift the heat sink out of the casing.

↳ You can now replace the processor.

Installing the heat sink

- ► Open the casing (see "Opening the casing", Page 34).
- ► Reinstall the heat sink so that the air flow is fed towards the back of the casing (see arrow on the heat sink).
- ► Tighten the screws.
- ► Connect the fan cables to the mainboard.

Never attach or detach fans during operation. This can cause problems controlling the mainboard fan.

Replacing the processor

- ► Open the casing (see "Opening the casing", Page 34).
- ► Remove the heat sink (see "Removing the heat sink", Page 59).
- ► Replace the processor as described in the manual for the mainboard.
- ► Install the heat sink again (see "Installing the heat sink", Page 60).
- ► Close the casing (see "Closing the casing", Page 35).

Mainboard expansions

Details on how to upgrade the main memory or the processor of your device can be found in the manual for the mainboard.

Upgrading main memory

- ► Open the casing (see "Opening the casing", Page 34).
- ► Upgrade the main memory according to the description in the manual for the mainboard.
- ► Close the casing (see "Closing the casing", Page 35).

Replacing the lithium battery

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

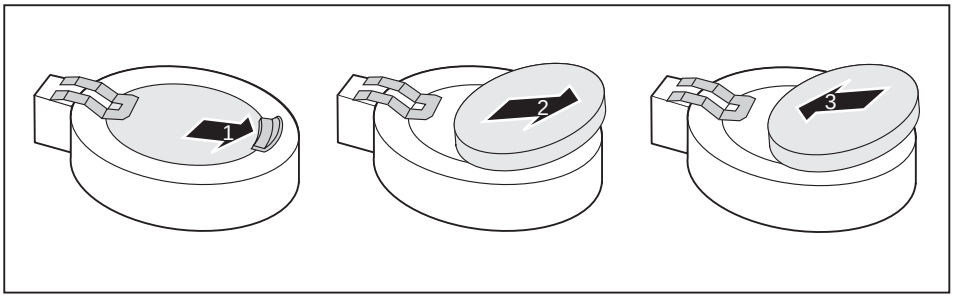
Incorrect replacement of the lithium battery may lead to a risk of explosion!

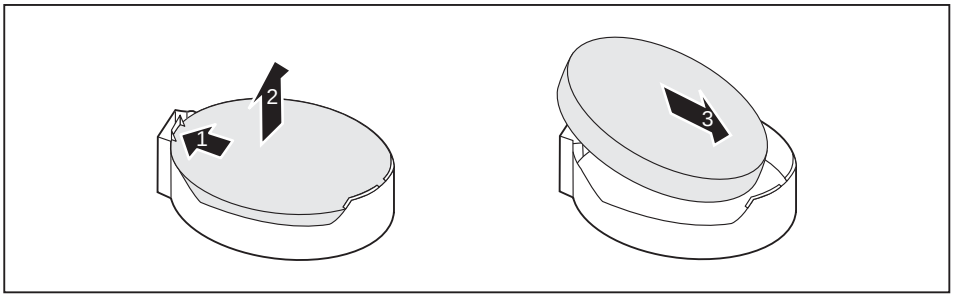
The lithium battery may be replaced only with an identical battery or with a type recommended by the manufacturer.

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

Ensure that you observe the correct polarity when replacing the lithium battery!

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





- ► If necessary, remove any boards already connected.
- ► Press the catch in the direction of the arrow (1).
- ↳ The battery jumps out of the holder slightly.
- ► Remove the battery (2).
- ► Push the new lithium battery of the identical type into the holder (3) and press it down until it engages.

Technical data

Electrical data	
Safety standards complied with:	IEC 60950-1, EN 60950-1, UL 60950 CSA 22.2 No.60950-1
Protection class:	I
Rated voltage range	100 V – 240 V
Rated frequency	50 Hz – 60 Hz
Max. rated current Celsius W520, 100 V – 240 V	 3.5 A - 1.5 A
Dimensions	
Width/depth/height:	186 mm/481 mm/430 mm
Weight	
in basic configuration:	approx. 11 kg
Ambient conditions	
Environment class 3K2 Environment class 2K2	DIN IEC 721 part 3-3 DIN IEC 721 part 3-2
Temperature	
Operation (3K2)	10 °C .... 35 °C
Transportation (2K2)	–25 °C .... 60 °C
The formation of condensation is not permitted while the device is in operation ! Clearance required to ensure adequate ventilation:	
without air vents with air vents	min. 10 mm min. 200 mm

The data sheets of these devices contain further technical data. The data sheets can be found on our website "http://ts.fujitsu.com".

Index

A
Access permission, SmartCard 27
Alphanumeric keypad 23
Anti-theft protection 25
Audio input 16
Audio output 16

B
Battery 61
BIOS Setup 25
  security functions 26
BIOS Setup,
  configuration 25
  settings 25
  system settings 25
Board
  installing 56
  removing 58
Board,
  installing 56
  removing 56
Button,
  ON/OFF switch 24

C
Cable
  connecting 15
  disconnecting 15
Casing
  Mechanical lock 26
Casing lock 26
Casing mechanical lock 26
Casing,
  closing 35
  Lead-sealing 25
  opening 34
CE marking 11
Chain 25
Components
  installing/removing 32
Connecting a PS/2 keyboard 18
Connecting,
  keyboard 18
  mouse 18
  PS/2 keyboard 18
  PS/2 mouse 18
  USB keyboard 18
Contents of delivery 13
Cord
  see Cable 15
Ctrl+Alt+Del 24
Cursor keys 23

D
Data protection 25
Device
  Connections 16
  setting up 14
Device drivers
  Parallel port 19
Device drivers,
  Serial port 19
Device,
  Anti-theft protection 25
  closing 35
  Lead-sealing 25
  opening 34
  switching off 23
  switching on 21–22
  transporting 9–10
  upgrades 32
Devices
  connecting 19
Devices,
  connecting 19
Disposal 10
Drivers & Utilities DVD 10

E
Electromagnetic compatibility 11
Energy saving 10
Ergonomic
  Workstation 14
External devices
  connecting 19
  Ports 16
External devices,
  connecting 19

F
Function keys 23

G
Getting started 13

H
Headphones 16

I
Important notes 9
Installing,
software 20–21
switching on for the first time 20

K
Kensington Lock 25
Keyboard 23
Keyboard port 16
keyboard shortcuts 24
Keyboard shortcuts 24
Keyboard,
alphanumeric keypad 23
connecting 18
cursor keys 23
function keys 23
numeric keypad 23
port 18
Keys 24
Ctrl 24
Ctrl+Alt+Del 24
Keys,
Alt Gr 24
Control 24
Ctrl key 24
cursor keys 23
Enter 24
Enter key 24
menu key 24
Num Lock 24
Return 24
shift 24
shift key 24
Start key 24

L
LAN port 16
Lead-sealing 25
Line in 16
Line out 16
Lithium battery 60
Lithium battery,
replacing 61
Lock 26
Low voltage directive 11

M
Main memory 60
upgrading 60
Mainboard
Upgrades 60
Mains adapter,
connecting 14
Microphone jack 16
Monitor port 16
Monitor,
switching off 23
switching on 21–22
Mouse port 16
Mouse,
connecting 18

N
Note
safety 9
Notes
CE marking 11
important 9
Numeric keypad 23

O
ON/OFF switch 24
Overview
Device 5

P
Packaging 13
Packaging,
unpacking 13
Parallel port 16, 19
Connecting devices 19
Settings 19
Ports 7, 16
Preparing for first use, overview 13
Preparing for use,
overview 13
Printer 16
Processor 60
Property protection 25
PS/2 mouse port 16
PS/2 mouse,
connecting 18
port 18

R
Recycling 10
Replacing,
lithium battery 61
Replacing, lithium battery 61
Retransportation 9–10

S
Safety information 9
Security functions
BIOS Setup 26
Security functions,
SmartCard 27
Security measures 25
Serial port 16, 19
Connecting devices 19
Serial port,
Settings 19
Servicing 32
Setup,
see BIOS Setup 25
SmartCard reader,
operating 27
Software,
installing 20–21
System expansion 32
System settings,
BIOS Setup 25
System unit, see Device 10

T
Transportation 9–10

U
Universal Serial Bus 16
Upgrades
Mainboard 60
Upgrades,
device 32
USB devices,
connecting 19
USB port 18
USB port,
connecting devices 19
connecting keyboard 18
connecting the mouse 18
User Documentation DVD 10

W
Workstation 14