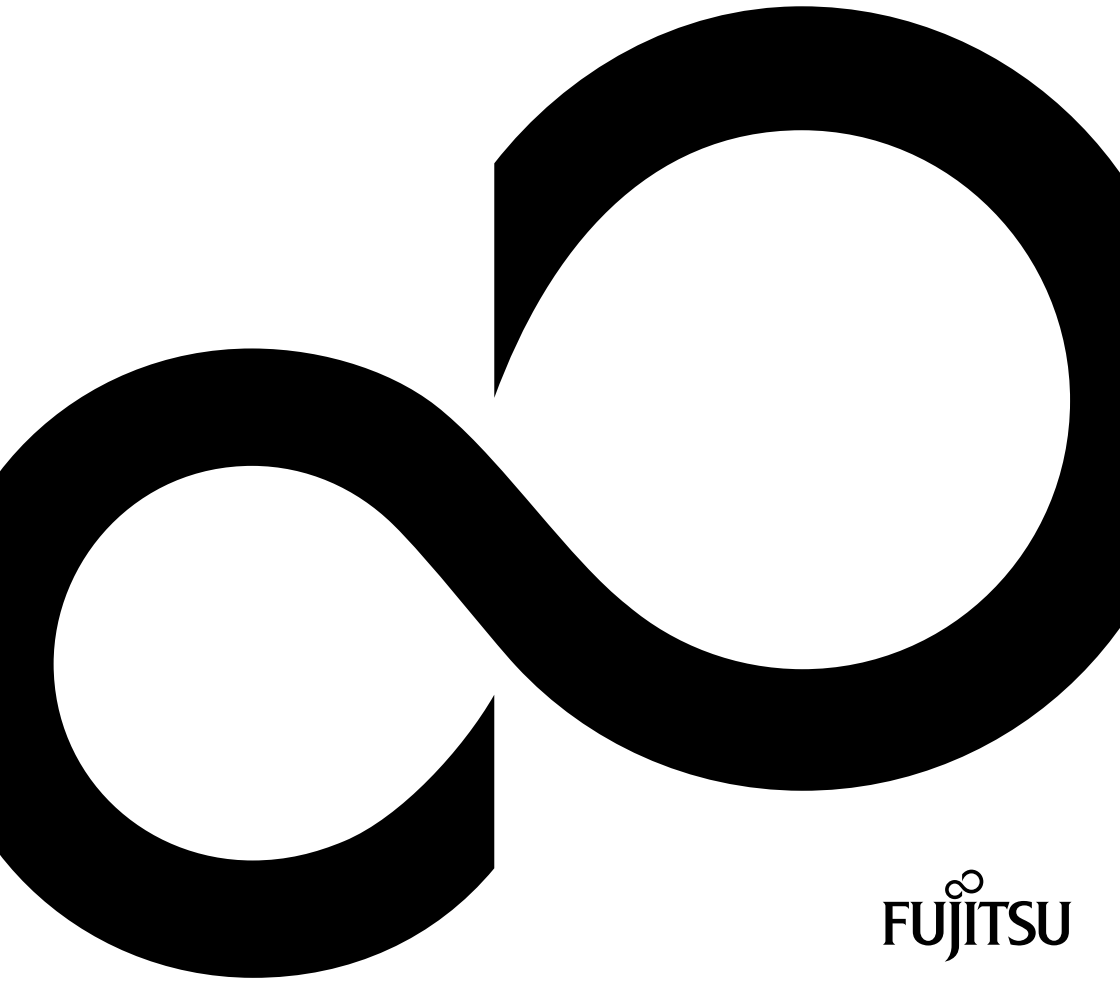


ESPRIMO E4xx / E5xx



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Latest information about our products, useful tips, updates etc. is available on our website: ["http://www.fujitsu.com/fts/"](http://www.fujitsu.com/fts/)

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Should you have any technical questions, please contact:

- our Hotline/Service Desk (see Service Desk list or from the Internet at: ["http://support.ts.fujitsu.com/contact/servicedesk"](http://support.ts.fujitsu.com/contact/servicedesk))
- Your sales partner
- Your sales office

We hope you enjoy using your new Fujitsu system!



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ESPRIMO E4xx / E5xx

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Your **ESPRIMO**

... is available with various configuration levels which differ in terms of hardware and software equipment. You can install additional drives (for example a DVD drive) and other boards.

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).

Further information on this device is provided:

- in the "Quick Start Guide" poster
- in the "Safety/regulations" manual
- in the "Warranty" manual
- in the operating manual for the monitor
- in the manual for the mainboard
- in your operating system documentation
- 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. You can of course also print out a copy of the manual if you prefer.

Validity of the Reference Manual

This Reference Manual is valid for the following systems:

- ESPRIMO E410
- ESPRIMO E420
- ESPRIMO E520

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.
<i>This font</i>	indicates <ul style="list-style-type: none"> • terms and texts used in a software interface, e.g.: Click on <i>Save</i> • names of programs or files, e.g. <i>Windows</i> or <i>setup.exe</i>.
"This font"	indicates <ul style="list-style-type: none"> • 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://www.fujitsu.com/fts/" • Names of CDs, DVDs and titles or designations for other materials, e.g.: "CD/DVD Drivers & Utilities" or "Safety/Regulations" manual
	indicates a key on the keyboard, e.g: 
This font	indicates terms and texts that are emphasised or highlighted, e.g.: Do not switch off the device

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 specification](#)", [Page 55](#) 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.

The main switch (if present) and the ON/OFF switch do not disconnect the device from the mains voltage. To completely disconnect from the mains voltage, remove the power plug from the power socket.

Only operate the device with the casing closed.

Replace the lithium battery on the mainboard in accordance with the instructions in "[Replacing the lithium battery](#)", [Page 54](#).

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. Before operating the device, wait until it is absolutely dry and has reached approximately the same temperature as the installation site.

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

You can find information on these subjects on the "Drivers & Utilities" DVD or on our website (["http://www.fujitsu.com/fts/about/fts/environment-care/"](http://www.fujitsu.com/fts/about/fts/environment-care/)).

CE marking

The shipped version of this device complies with the requirements of European Union directives 2004/108/EC "Electromagnetic compatibility", 2006/95/EC "Low voltage directive" and 2009/125/EC "Ecodesign".

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.

The CE marking valid for your device can be found on the device label.

Explanation: CE nnnn (!) ; nnnn defines the type of CE marking and the exclamation mark indicates a device with radio components.

You can find more information and declarations of conformity on the Internet at: ["http://globalsp.ts.fujitsu.com/sites/certificates"](http://globalsp.ts.fujitsu.com/sites/certificates).

This equipment can be used in the following countries:

Belgium	Bulgaria	Denmark	Germany
Estonia	Finland	France	Greece
UK	Ireland	Iceland	Italy
Croatia	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

DOC (INDUSTRY CANADA) NOTICES

Notice to Users of Radios and Television:

This class B digital apparatus complies with Canadian ICES-003.

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 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. 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.

FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment.

The transmitters in this device must not be co-located or operated in conjunction with any other antenna or transmitter.

To prevent radio interference to the licensed service, this device is intended to be operated indoors and away from windows to provide maximum shielding. Equipment (or its transmit antenna) that is installed outdoors is subject to licensing.

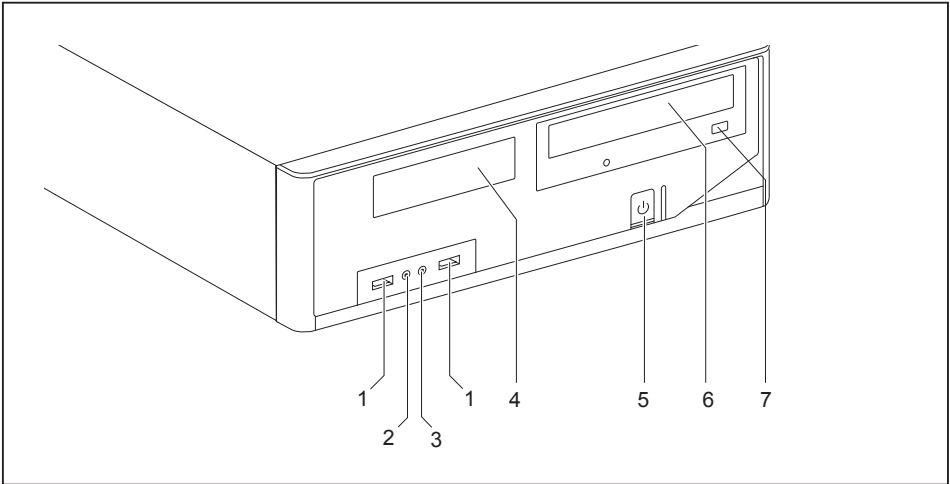
Users are not authorized to modify this product. Any modifications invalidate the warranty.

This equipment may not be modified, altered, or changed in any way without signed written permission from Fujitsu. Unauthorized modification will void the equipment authorization from the FCC and Industry Canada and the warranty.

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 = USB ports

2 = Headphone port

3 = Microphone port

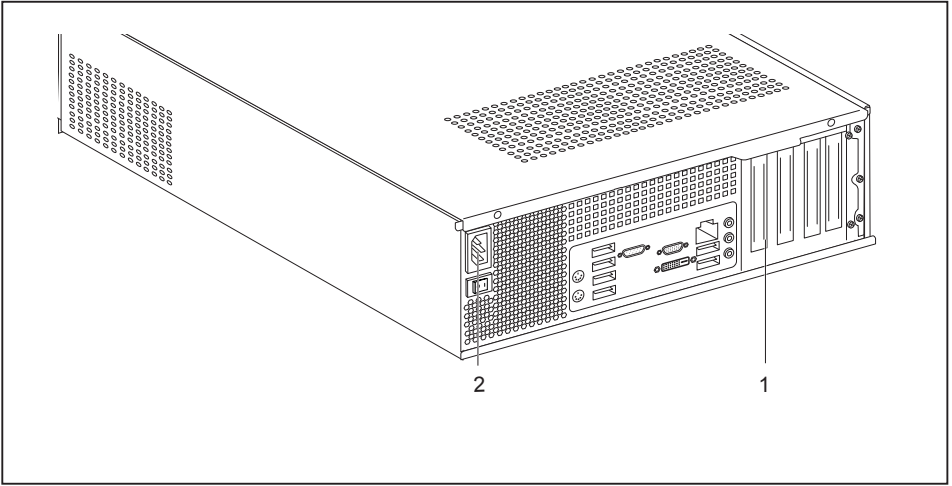
4 = 3 1/2 inch module bay

5 = ON/OFF switch

6 = Optical drive (optional)

7 = Insert/eject button (CD/DVD)

Rear



1 = Slot covers

2 = Alternating voltage socket (AC IN)

Getting started



Please observe the safety information in the ["Important notes", Page 7](#) 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 31](#) chapter.

Setting up the device

You can set up and operate the device in either a vertical or horizontal position.



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

Use the device simply in the horizontal operating position. With the aid of suitable feet, it is also possible to use the device in the vertical operating position..

We recommend that you place your device on a surface with good anti-slip qualities. In view of the multitude of 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, bothersome vibrations and noises may occur. To prevent this, a distance of at least 10 mm / 0.39 inch should be maintained from other devices on casing sides without ventilation surfaces.

To ensure the casing receives adequate ventilation, when setting up the device make sure that there is sufficient clearance around it as indicated in the chapter ["Technical specification", Page 55](#).

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

Do not stack several devices on top of each other.

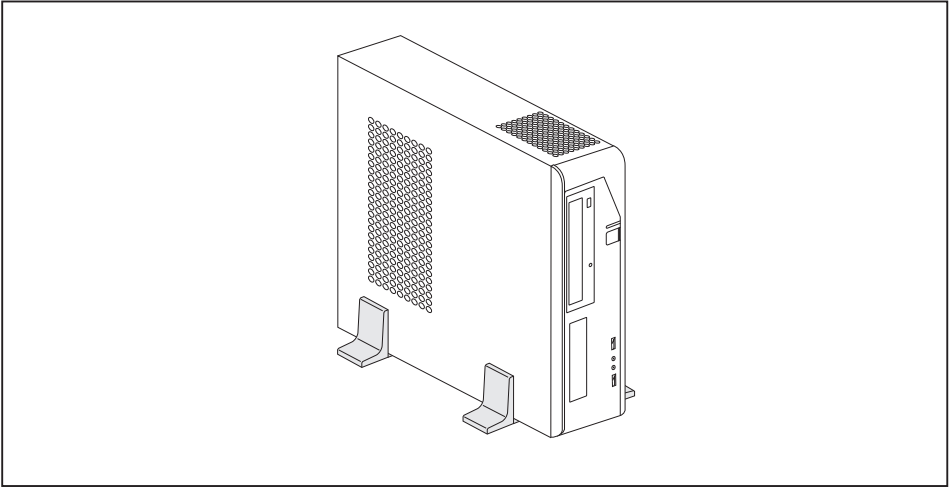
A minimum distance of 200 mm / 7.87 inch from the device must be observed for ventilation areas.

Do not expose the device to extreme ambient conditions (see ["Technical specification", Page 55](#), "Ambient conditions"). Protect the device against dust, humidity and heat.

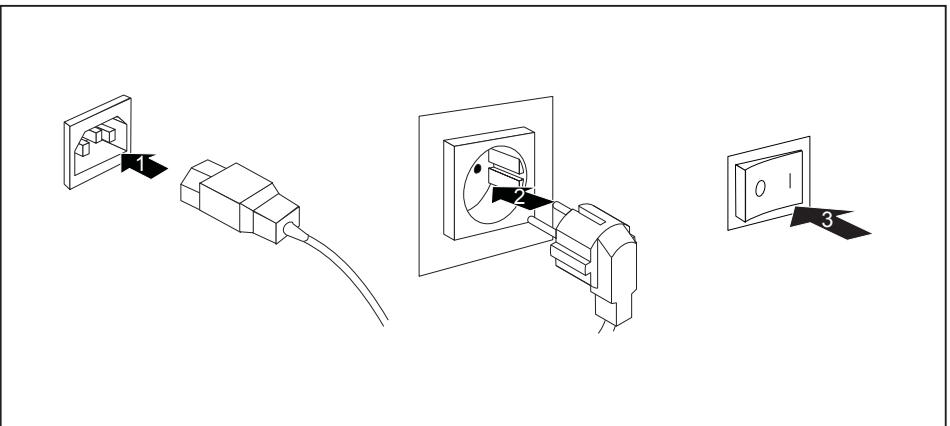
Vertical operating position (optional)



The set-up direction is compulsory: The ON/OFF switch must be at the top to ensure sufficient ventilation.



Connecting the device to the mains supply



- ▶ Connect the power cable to the device (1).
- ▶ Plug the power plug into a grounded mains outlet (2).
- ▶ Switch the device on with the main switch at the rear (3).

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.

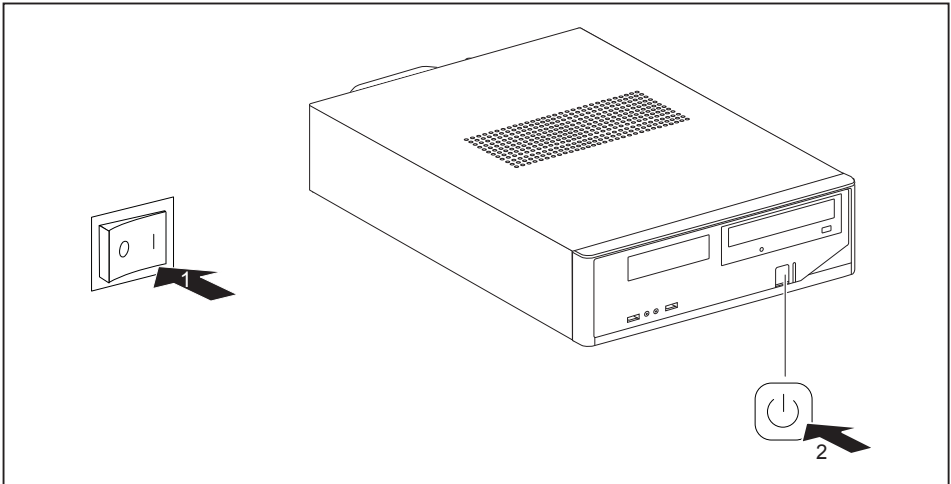
You may need the licence number for Windows during the installation. The licence number is located on a label on your device.

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.



- ▶ Press the main switch on the back of the device (1).
 - ▶ Press the ON/OFF switch on the front of the device (2).
- ↳ The power-on indicator lights green and the device is started.

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.



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

You can find information and help on the Windows operating system functions on the Internet at "<http://windows.microsoft.com>".

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. Never unplug a cable by pulling the cable itself.

Connect and disconnect the cables in the order described below.

Connecting the cables

- ▶ Turn off all power and equipment switches.
- ▶ Remove all power plugs from the grounded mains outlets.
- ▶ Connect all the cables to the device and the external devices. Please make sure that you always observe the safety notes provided in ["Important notes", Page 7](#).
- ▶ Plug all data communication cables into the appropriate sockets.
- ▶ 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 21](#) and in the documentation for the USB devices.

Disconnecting the cables

- ▶ Switch off all affected devices.
- ▶ Remove all power plugs from the grounded mains outlets.
- ▶ Unplug all data communication cables from the appropriate sockets.
- ▶ Disconnect all of the cables from the device and from the external devices.

Ports on the device

The ports are located on the front and back of the device. The ports available on your device depend on the configuration level you have selected. 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 motherboard.

	Serial interface, turquoise		Microphone jack
	VGA monitor port, blue		Audio input (Line In)
	Headphones port		Audio output (Line Out)
	USB - Universal Serial Bus, black USB 3.0 - Universal Serial Bus, blue		LAN port
	PS/2 mouse port, green		PS/2 keyboard port, purple
	DVI monitor port		DisplayPort



Some of the connected devices require special drivers (see the documentation for the connected device).

Connecting a monitor

- ▶ Follow the instructions contained in the monitor manual to prepare the monitor for operation (e.g. connecting cables).
- ▶ Connect the data cable of the monitor into the monitor port of your device.



The monitor power cable may only be connected to the monitor socket of the device if the monitor current consumption is less than 1 A at 240 V or 2 A at 100 V. The values for the monitor current consumption can be found in the technical data on the monitor or in the operating manual for the monitor.

- ▶ Depending on the configuration level of your device, plug the monitor power cable into the grounded mains outlet.

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 serial interface

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

- ▶ Connect the data cable to the external device.
- ▶ Connect the data cable to the corresponding serial interface.
- ↳ For an exact description of how to connect external devices to the corresponding port, please see the external device documentation.

Port settings



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

Device drivers



The devices connected to the serial interface require drivers. Your operating system already includes many drivers. If the required drive is missing, install it. The latest 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. If the device requires separate software, please note the information in the manufacturer's manual.

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 / 118,11 inch.

Operation

Switch the device on

- ▶ If necessary, switch the monitor on (see the operating manual for the monitor).
- ▶ Switch on the device using the main power switch located on the rear of the device (if present).
- ▶ Press the ON/OFF switch on the front of the device.
- ↳ The power indicator glows and the device starts.

Switching off the device

- ▶ Shut down the operating system in the proper way.
- ▶ If the operating system does not automatically switch the device into energy-saving mode or switch it off, press the ON/OFF switch. Warning, this could lead to a loss of data!
- ▶ Switch the device off at the main switch.
- ↳ The device consumes energy as follows (depending on the power supply of your device):
 - Device with alternating voltage socket, monitor socket and emergency on button: low energy
 - Device with alternating voltage socket and main power switch: no energy
 - Device with alternating voltage socket and monitor socket: low energy

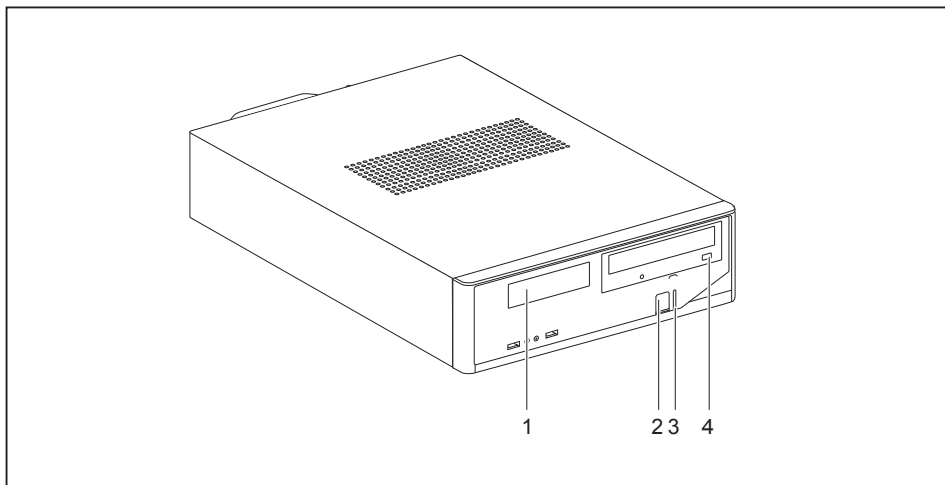


The main switch and the ON/OFF switch do not disconnect the device from the mains voltage. To completely disconnect from the mains voltage, remove the power plug from the power socket.

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

Indicators on the device

The indicators are on the front of the casing. Which indicators are available on your device depends on the configuration level you have selected.

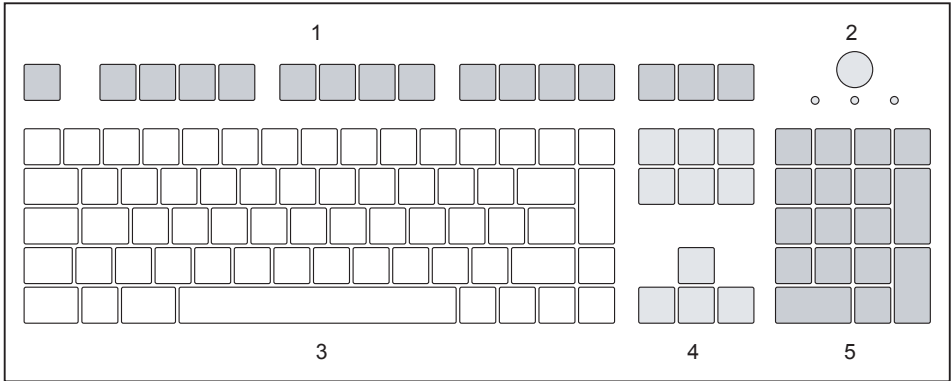


No.	Indicator	Description
1	Indicator for optional components, e.g. multiscard reader	The indicator lights up when optional components, e.g. the multiscard reader, are accessed. Never remove the multiscard while the indicator is illuminated.
2	Power-on indicator	Achtung: When energy saving mode is active, the device must not be switched off at the main power switch (if present) or disconnected from the mains, as this may result in data loss. <ul style="list-style-type: none"> 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 switched off.
3	Hard disk indicator	The indicator lights up when the hard disk drive of the device is accessed.
4	Drive indicator	The indicator lights up when the CD-ROM or DVD drive in the device is accessed. You must never under any circumstances remove the CD/DVD while the indicator is lit.

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
	<p>On/off switch (optional)</p> <p>Depending on the setting in the <i>BIOS Setup</i>, 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.</p> <p>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.</p>
	<p>Enter key</p> <p>confirms the highlighted selection. The Enter key is also referred to as the "Return" key.</p>

Key / key combination	Description
	Windows key (device-dependent: variant 1) calls up the Windows <i>Start</i> menu.
	Menu key (device-dependent: variant 1) calls up the menu for the marked item (Windows).
	Windows key (device-dependent: variant 2) Switches between the start screen and the last used application.
	Menu key (device-dependent: variant 2) Opens the menu for the active application.
	Shift key enables upper-case letters and the upper key symbols to be displayed.
Alt Gr	Alt Gr key (country-dependent) produces a character shown on the bottom right of a key (e.g. the @ sign on the  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	Ctrl key performs a special operation when pressed in conjunction with another key. The  key is also called the "Control" or "Control key".
 +  + 	Windows Security/Task Manager This key combination opens the Windows Security/Task Manager window.

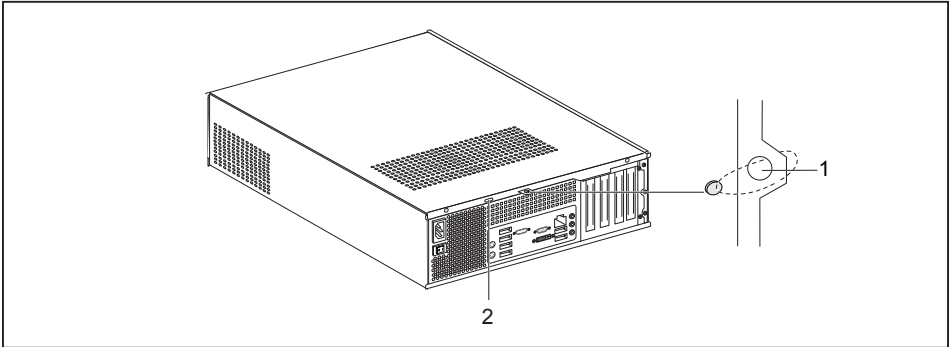
Settings in BIOS Setup

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/lead-seal

2 = Device for Security Lock

Anti-theft protection

You can protect your device from theft

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

Lead-sealing

The casing can be sealed to prevent it being opened by unauthorised persons. To do this, feed the sealing chain through the holes (1) and seal the chain with the lead seal.

Problem solutions and tips



Comply with the safety information in the "Safety" manual and the chapter "[Getting started](#)", [Page 13](#), when attaching or detaching cables.

If a fault occurs, try to rectify it in accordance with the measures described in the following documents:

- in this chapter
- in the documentation relating to the peripheral devices
- in the Help sections for the individual programs
- in the documentation for the operating system in use.

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 visit the Internet at "<http://support.ts.fujitsu.com/contact/servicedesk>"). When you do this, please have ready the identity number and serial number of your system.

Troubleshooting

Power indicator remains off after you have switched on your device

Cause	Remedy
The mains voltage supply is faulty.	<ul style="list-style-type: none"> ▶ Check that the power cable is correctly plugged into the device and into a grounded mains outlet. ▶ Check that the main switch at the rear of the monitor is set to the "I" position. ▶ Switch the device on.
Internal power supply overloaded.	<ul style="list-style-type: none"> ▶ Pull the power plug of the device out of the mains outlet. ▶ Wait for about 3 minutes. ▶ 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	<ul style="list-style-type: none"> ▶ Keep the on/off switch pressed for at least 4 seconds until the machine switches off. <p>Caution: This can lead to a loss of data!</p> <p>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.</p>

Monitor remains blank

Cause	Remedy
Monitor is switched off	<ul style="list-style-type: none"> ▶ Switch your monitor on.
Power saving has been activated (screen is blank)	<ul style="list-style-type: none"> ▶ Press any key on the keyboard. <p>or</p> <ul style="list-style-type: none"> ▶ Deactivate the screen saver. If necessary, enter the appropriate password.
Brightness control is set to dark	<ul style="list-style-type: none"> ▶ Adjust the brightness control. For detailed information, please refer to the operating manual supplied with your monitor.
Power cable not connected	<ul style="list-style-type: none"> ▶ 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	<ul style="list-style-type: none"> ▶ 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.
Incorrect setting for the monitor	<ul style="list-style-type: none"> ▶ Restart the system. ▶ Press [F8] while the system is booting. ▶ Start the system in Safe Mode. ▶ Set up the monitor as described in the documentation for your operating system and monitor.

No mouse pointer displayed on the screen

Cause	Remedy
The mouse is not correctly connected.	<ul style="list-style-type: none"> ▶ 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.	<ul style="list-style-type: none"> ▶ Check in the <i>BIOS-Setup</i> whether the mouse controller is <i>enabled</i>. ▶ 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.	<ul style="list-style-type: none"> ▶ Set the correct time and date within the operating system you are using. <p>or</p> <ul style="list-style-type: none"> ▶ Set the correct time and/or date in the <i>BIOS Setup</i>.
The lithium battery is discharged.	<ul style="list-style-type: none"> ▶ If the time and date are repeatedly wrong when you switch on your device, replace the lithium battery (see "Replacing the lithium battery", Page 54).

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

You will find the instructions for restoring the contents of the hard disk in the "Recovery Guide" manual.

Tips

Topic	Tip
Out of system resources	<ul style="list-style-type: none">▶ Close unnecessary applications. <p>or</p> <ul style="list-style-type: none">▶ 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

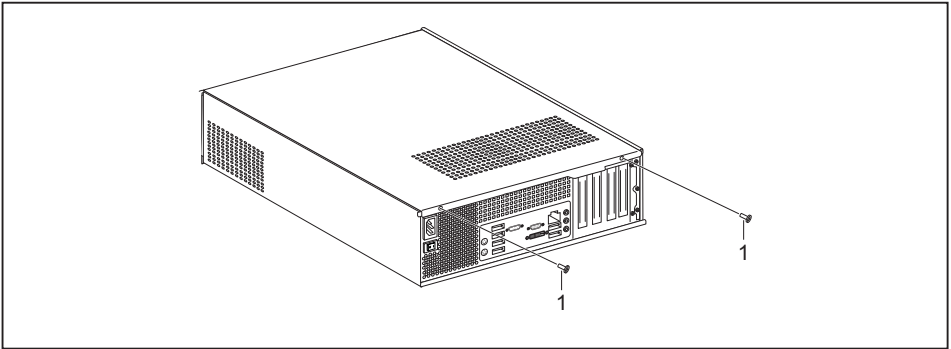
Removing a cover

- ▶ Switch the device off.

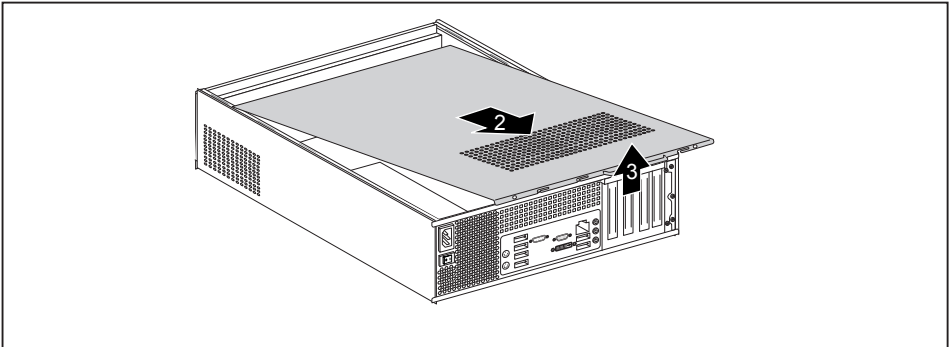
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The device must not be in the energy-saving mode!

- ▶ Remove any plugged-in wires which are in the way.

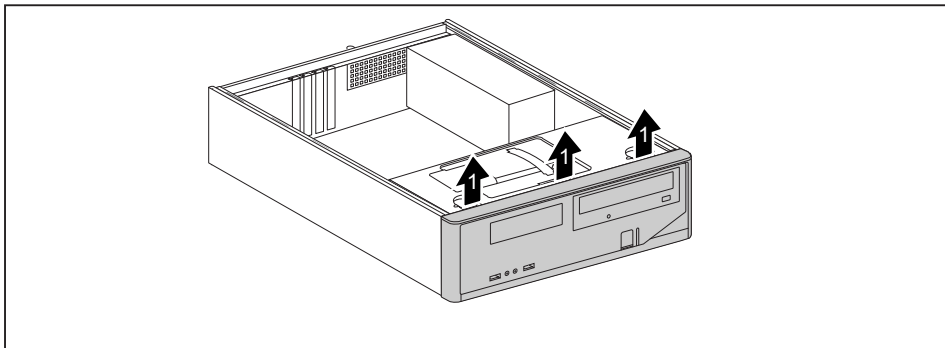


- ▶ Loosen the screws (1).

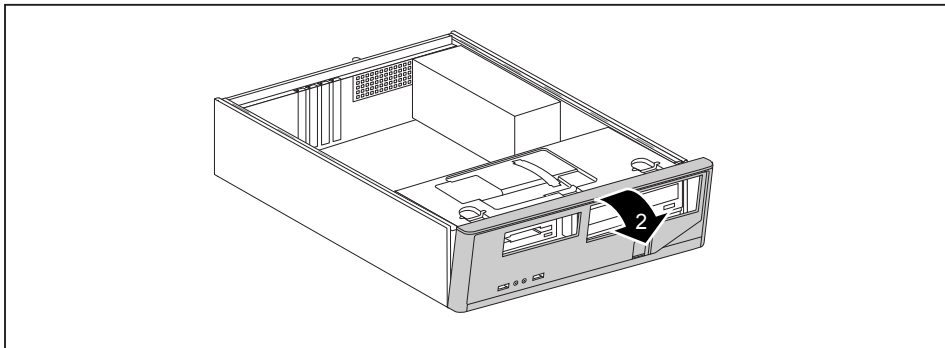


- ▶ Pull the cover a small distance in the direction indicated by the arrow (2) and remove it (3).

Removing the front panel



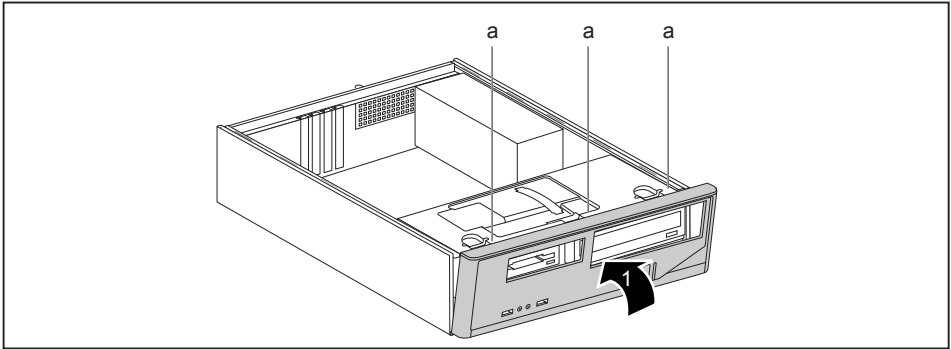
- ▶ Lift the locking lugs on the front panel (1).



- ▶ Fold the front panel in the direction of the arrow (2) and remove it from the casing.

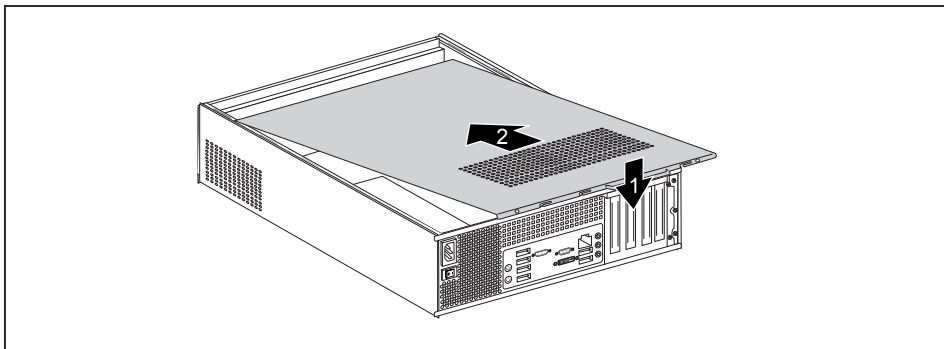
Close the casing

Securing the front panel

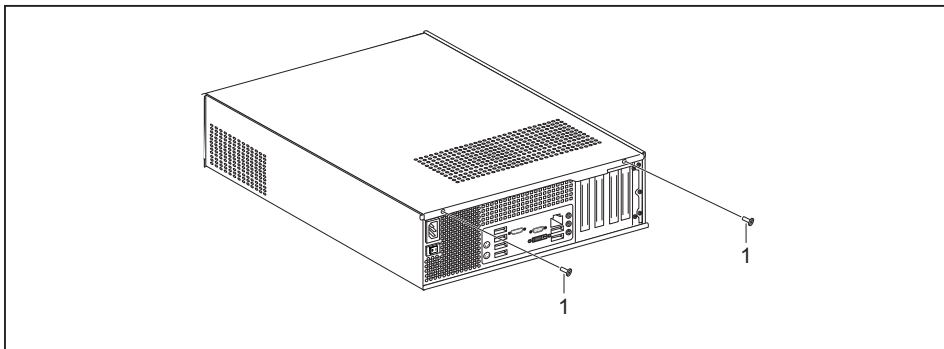


- ▶ Place the front panel with the three lower hooks in the front lower guide openings on the casing.
- ▶ Fold the front panel in the direction of the arrow (1) until the catches (a) engage.

Reattaching the cover



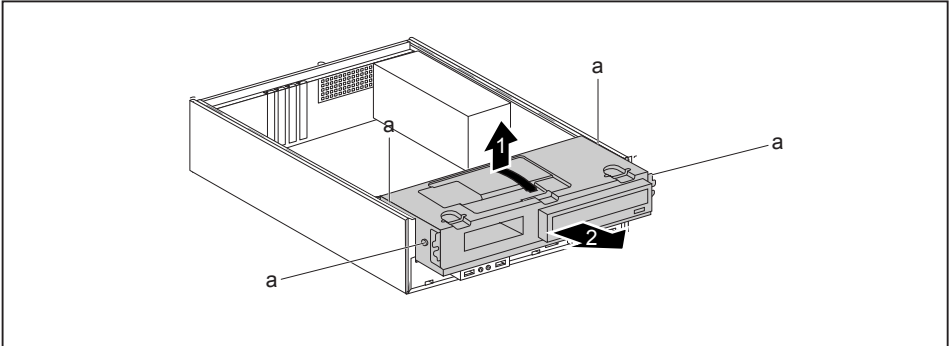
- ▶ Place the cover on the casing (1) and push it into place in the direction indicated by the arrow (2).



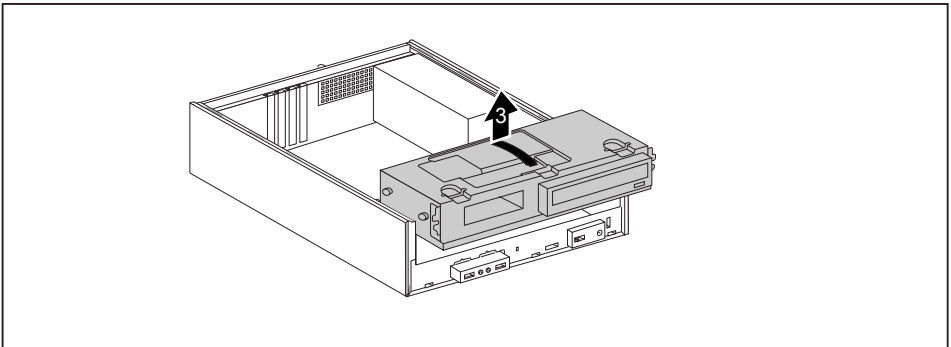
- ▶ Fasten the screws (1).
- ▶ Connect the cables to the device.

Removing the drive carrier

- ▶ Open the casing (see ["Opening the casing", Page 33](#)).
- ▶ Remove the front panel from the casing (see ["Removing the front panel", Page 34](#)).
- ▶ If drives are installed, disconnect their data cable and power supply cable plugs.



- ▶ Slightly lift the drive cage using the plastic handle (1).
- ▶ Slide the drive cage in the direction of the arrow (2) until the guides (a) are the same height as the corresponding openings in the casing.

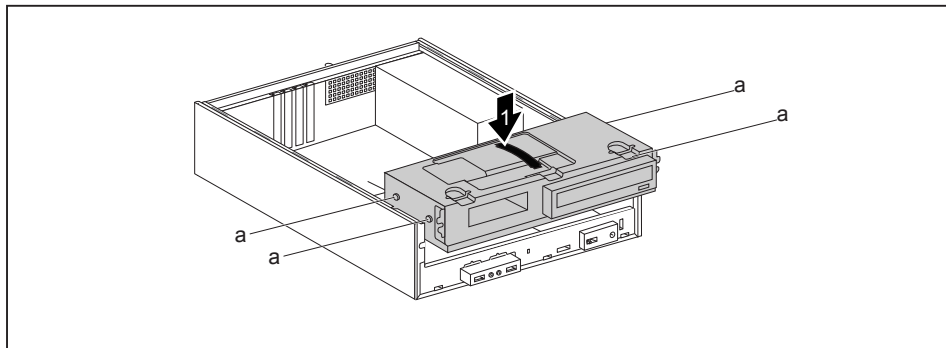


- ▶ Use the plastic handle to lift the drive cage out of the casing (3).

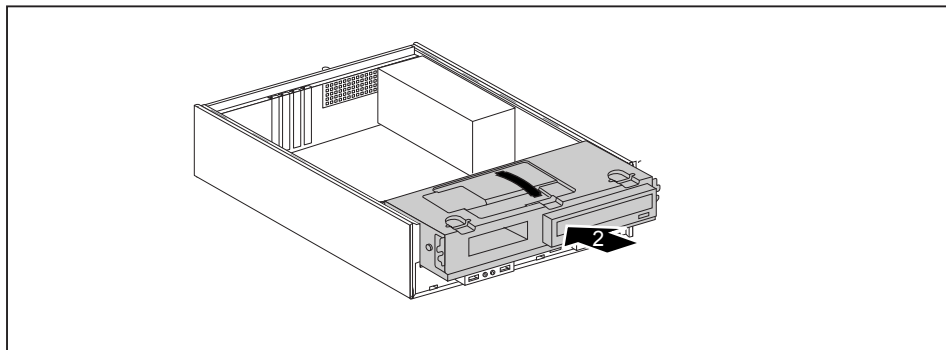
Installing the drive cage



Take care not to trap any cables when installing the drive cage.



- ▶ Insert the drive cage on the plastic handle into the casing (1). When doing so, ensure that the guides (a) are at the height of the corresponding openings on the casing.



- ▶ Push the drive cage into the casing in the direction of the arrow (2).
- ▶ Connect the cables to the drive cage.
- ▶ Secure the front panel on the casing again (see ["Securing the front panel", Page 35](#)).
- ▶ Close the casing (see ["Close the casing", Page 35](#)).

Installing and removing drives

The casing can accommodate a total of three drives:

- one accessible 5 1/4 inch drive
- an accessible or non-accessible 3 1/2 inch drive or 2 1/2 inch drive
- a non-accessible drive

"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.

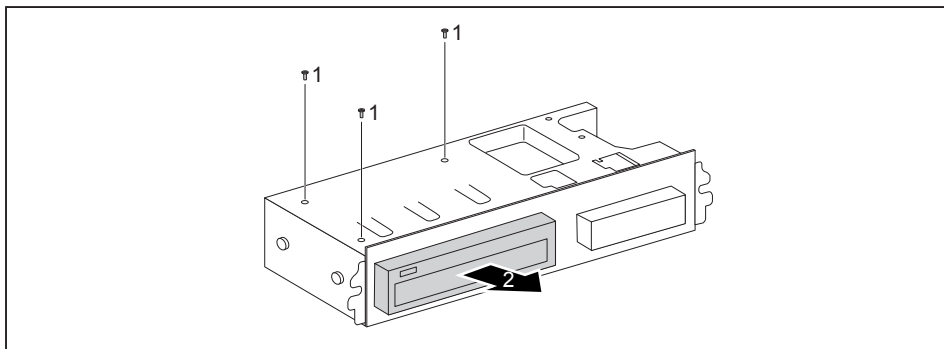
Removing and installing accessible drives



The number of screws used to attach the drives varies according to the type of drive fitted and may not necessarily match the depiction below.

Removing an accessible 5 1/4 inch drive (e.g. DVD drive)

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Remove the front panel (see chapter ["Removing the front panel", Page 34](#)).
- ▶ Remove the drive cage (see chapter ["Removing the drive carrier", Page 37](#)).
- ▶ Turn the drive cage over.



- ▶ Undo the screws (1).
- ▶ Pull the drive out of the drive cage in the direction of the arrow (2).
- ▶ If necessary, make the required settings on the remaining hard disk drives.
- ▶ If you are not planning to install a new drive, install the corresponding drive cover in the front panel (if available). To do this, insert the drive cover from behind into the front panel and press the latches gently into their respective retainers.
- ▶ Install the drive cage (see chapter ["Installing the drive cage", Page 38](#)).
- ▶ Secure the front panel on the casing (see chapter ["Securing the front panel", Page 35](#)).
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).



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

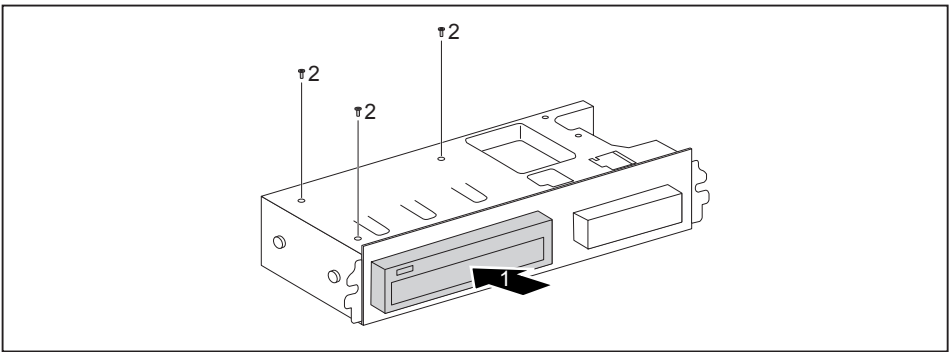
Installing an accessible 5¹/₄ inch drive (e.g. DVD drive)

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Remove the front panel (see chapter ["Removing the front panel", Page 34](#)).
- ▶ Remove the drive cover if one is fitted. To do this, press the corresponding drive cover lightly out forwards and pull the drive cover forward out of the front panel.



Do not throw away the covers. If you remove the drive again, you must reinstall the covers (cooling, fire protection or EMC regulations to be complied with).

- ▶ Remove the drive cage (see chapter ["Removing the drive carrier", Page 37](#)).
- ▶ Turn the drive cage over.
- ▶ Take the new drive out of its packaging.



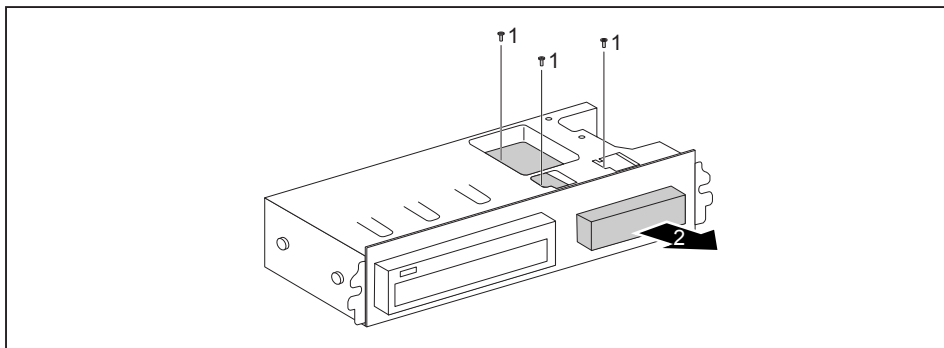
- ▶ Slide the new drive into the drive cage (1). Make sure that the screw holes of the drive cage and of the drive are aligned.
- ▶ Fasten the screws (2).
- ▶ Install the drive cage (see chapter ["Installing the drive cage", Page 38](#)).
- ▶ Plug the data and the power supply connectors into the drive. Make sure the polarity is correct.
- ▶ Secure the front panel on the casing (see chapter ["Securing the front panel", Page 35](#)).
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).



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

Removing an accessible 3 1/2 inch drive (multicard reader) or an inaccessible 3 1/2 inch drive (hard disk)

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Remove the front panel (see chapter ["Removing the front panel", Page 34](#)).
- ▶ Remove the drive cage (see chapter ["Removing the drive carrier", Page 37](#)).
- ▶ Disconnect all cables connected to the drive (data cable, power supply cable).
- ▶ Turn the drive cage over.



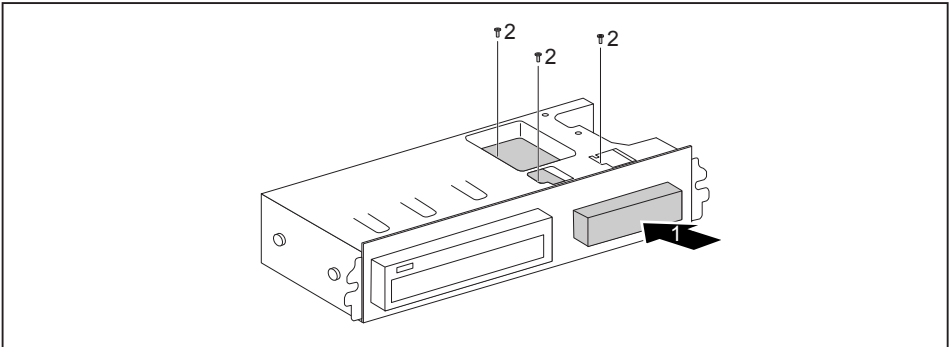
- ▶ Remove the screws (1).
- ▶ Pull the drive out of the drive cage in the direction of the arrow (2).
- ▶ Install the drive cage (see chapter ["Installing the drive cage", Page 38](#)).
- ▶ Secure the front panel on the casing (see chapter ["Securing the front panel", Page 35](#)).
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).



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

Installing an accessible 3¹/₂ inch drive (multicard reader) or a inaccessible 3¹/₂ inch drive (hard disk)

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Remove the front panel (see chapter ["Removing the front panel", Page 34](#)).
- ▶ Remove the drive cover if one is fitted. To do this, press the corresponding drive cover lightly out forwards and pull the drive cover forward out of the front panel.
- ▶ Remove the drive cage (see chapter ["Removing the drive carrier", Page 37](#)).
- ▶ Turn the drive cage over.



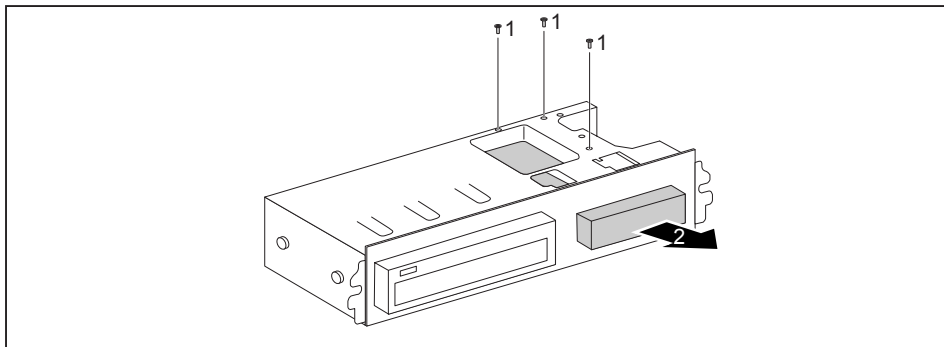
- ▶ Slide the drive into the casing (1). Make sure that the screw holes of the drive cage and of the drive are aligned.
- ▶ Fasten the drive into place with the screws (2).
- ▶ Install the drive cage (see chapter ["Installing the drive cage", Page 38](#)).
- ▶ Plug the data and the power supply connectors into the drive. Make sure the polarity is correct.
- ▶ Secure the front panel on the casing (see chapter ["Securing the front panel", Page 35](#)).
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).

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

Removing an accessible 2 1/2 inch drive or an inaccessible 2 1/2 inch drive

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Remove the front panel (see chapter ["Removing the front panel", Page 34](#)).
- ▶ Remove the drive cage (see chapter ["Removing the drive carrier", Page 37](#)).
- ▶ Disconnect all cables connected to the drive (data cable, power supply cable).
- ▶ Turn the drive cage over.



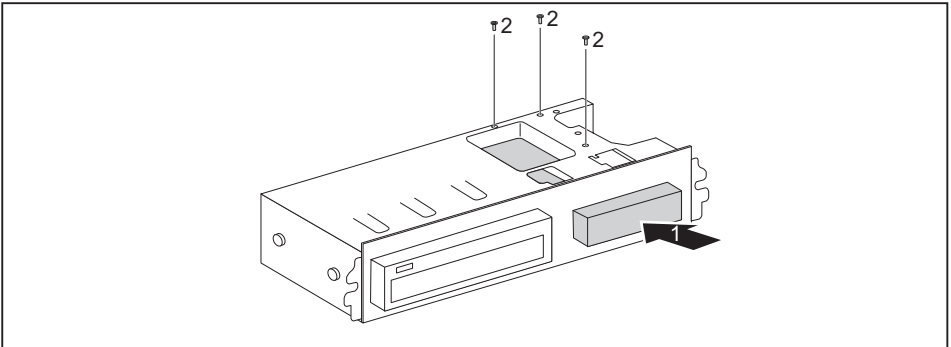
- ▶ Remove the screws (1).
- ▶ Pull the drive out of the drive cage in the direction of the arrow (2).
- ▶ Install the drive cage (see chapter ["Installing the drive cage", Page 38](#)).
- ▶ Secure the front panel on the casing (see chapter ["Securing the front panel", Page 35](#)).
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).



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

Installing an accessible 2 1/2 inch drive or an inaccessible 2 1/2 inch drive

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Remove the front panel (see chapter ["Removing the front panel", Page 34](#)).
- ▶ Remove the drive cover if one is fitted. To do this, press the corresponding drive cover lightly out forwards and pull the drive cover forward out of the front panel.
- ▶ Remove the drive cage (see chapter ["Removing the drive carrier", Page 37](#)).
- ▶ Turn the drive cage over.



- ▶ Slide the drive into the casing (1). Make sure that the screw holes of the drive cage and of the drive are aligned. The screw positions are identified with "HDD 2.5".
- ▶ Fasten the drive into place with the screws (2).
- ▶ Install the drive cage (see chapter ["Installing the drive cage", Page 38](#)).
- ▶ Plug the data and the power supply connectors into the drive. Make sure the polarity is correct.
- ▶ Secure the front panel on the casing (see chapter ["Securing the front panel", Page 35](#)).
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).

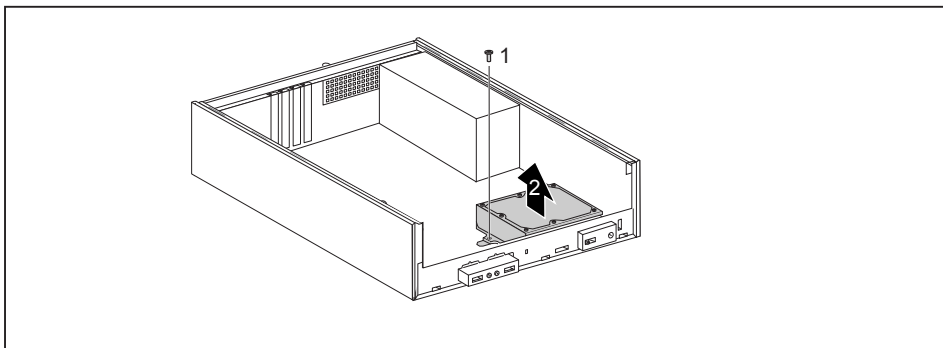


It may be necessary to modify the entry for the drive in the BIOS Setup.

Removing a hard disk drive

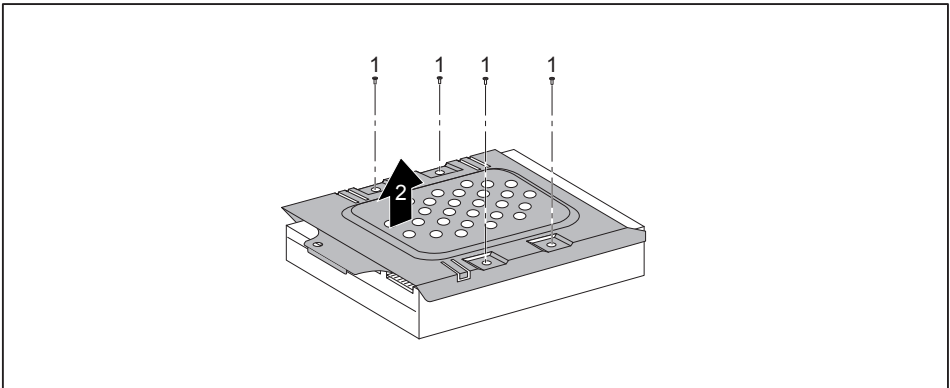
Removing the hard disk drive cage

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Remove the front panel (see chapter ["Removing the front panel", Page 34](#)).
- ▶ Remove the drive cage (see chapter ["Removing the drive carrier", Page 37](#)).
- ▶ Disconnect the cables from the mainboard.



- ▶ Undo the screw (1).
- ▶ Take the hard disk drive cage out of the casing (2).

Releasing the hard disk drive cage from the hard disk drive



- ▶ Undo the screws (1).
- ▶ Remove the hard disk drive cage from the hard disk drive (2).
- ▶ Install the drive cage (see chapter ["Installing the drive cage", Page 38](#)).
- ▶ Secure the front panel on the casing (see chapter ["Securing the front panel", Page 35](#)).
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).



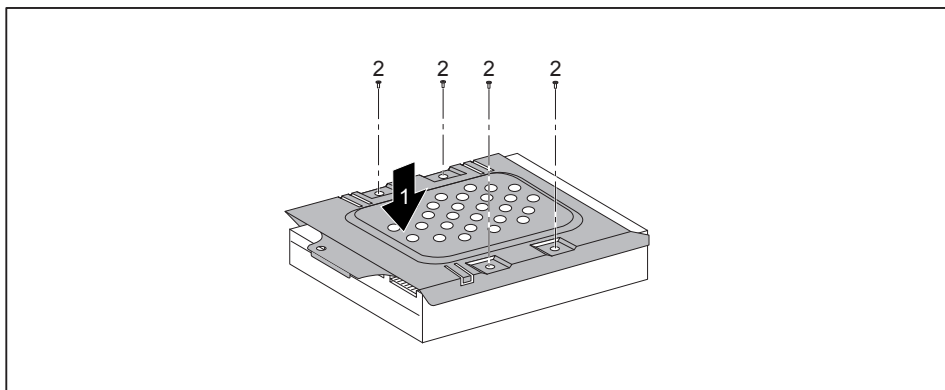
It may be necessary to modify the entry for the drive in the BIOS Setup.

If you are not planning to install a new hard disk drive, secure the screws in the threaded bores on the underside of the hard disk drive cage so that they are not lost.

Installing a hard disk drive

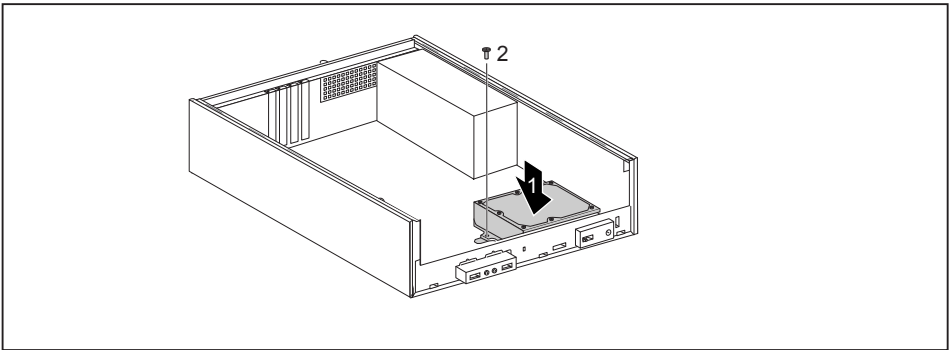
Secure the hard disk drive cage on the hard disk drive

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Remove the front panel (see chapter ["Removing the front panel", Page 34](#)).
- ▶ Remove the drive cage (see chapter ["Removing the drive carrier", Page 37](#)).
- ▶ Take the new hard disk drive out of its packaging.



- ▶ Place the hard disk drive cage on the hard disk drive (1).
- ▶ Fasten the screws (2).

Installing the hard disk drive cage



- ▶ Insert the hard disk drive cage into the casing (1).
- ▶ Tighten the screw (2).
- ▶ Plug in the cables on the hard disk.
- ▶ Install the drive cage (see chapter ["Installing the drive cage", Page 38](#)).
- ▶ Connect the cables to the drive cage.
- ▶ Secure the front panel on the casing (see chapter ["Securing the front panel", Page 35](#)).
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).

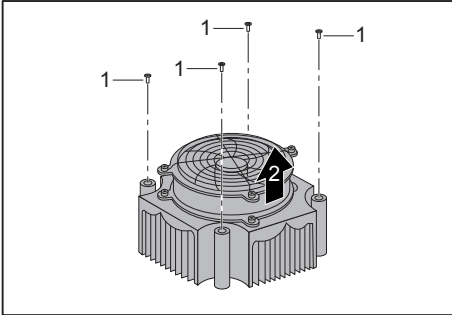


It may be necessary to modify the entry for the drive in the BIOS Setup.

Installing and removing heat sinks

Removing the heat sink

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).
- ▶ Disconnect the fan cables from the mainboard.

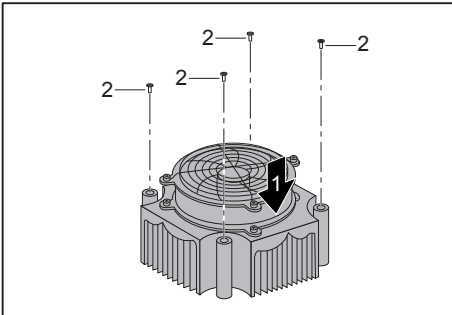


- ▶ Undo the screws (1).
- ▶ Remove the heat sink from the casing (2).

- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).

Installing the heat sink

- ▶ Remove the cover (see chapter ["Removing a cover", Page 33](#)).



- ▶ Insert the heat sink into the casing (1). To do this, correctly align the screw holes on the heat sink with the screw holes on the mainboard.
- ▶ Fasten the screws (2).

- ▶ Connect the fan cables to the mainboard.
- ▶ Install the cover on the casing again (see chapter ["Reattaching the cover", Page 36](#)).

Assembling and dismantling low-profile units

For every slot there is a slot cover provided. If no board is installed, the slot cover protects the slot.

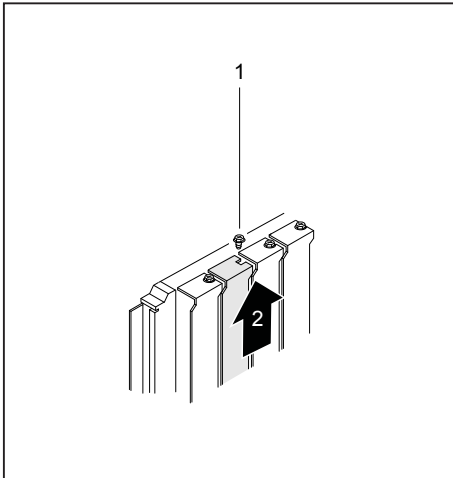


When you install a board, do not discard the corresponding slot cover.

For cooling, protection against fire and in order to comply with EMC regulations, you must refit the slot cover if you remove the board.

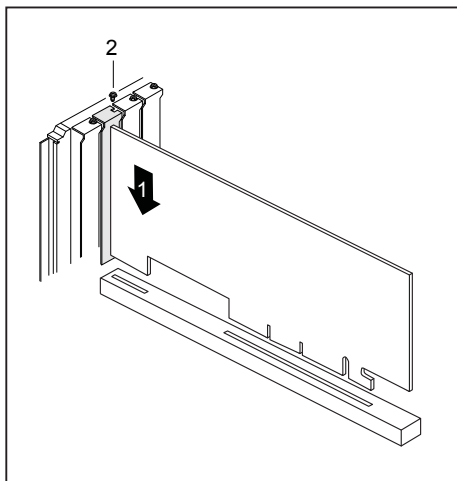
Removing a slot cover

- ▶ Open the casing (see ["Opening the casing", Page 33](#)).



- ▶ Undo the screw (1).
- ▶ Pull the slot cover out of the slot (2).

Installing a board



- ▶ Push the board into the slot (1) until it engages.
- ▶ Tighten the screw (2).

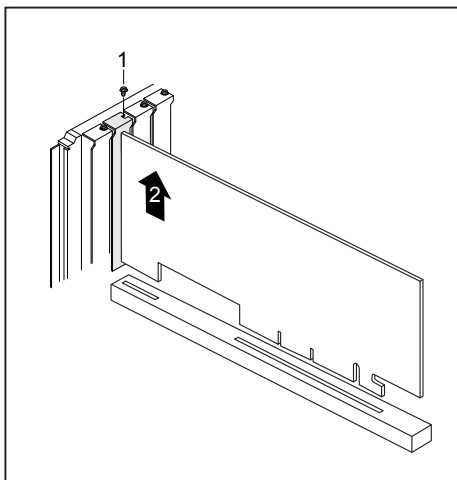
- ▶ If necessary, connect the cables to the board.



If you have installed or removed a 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.

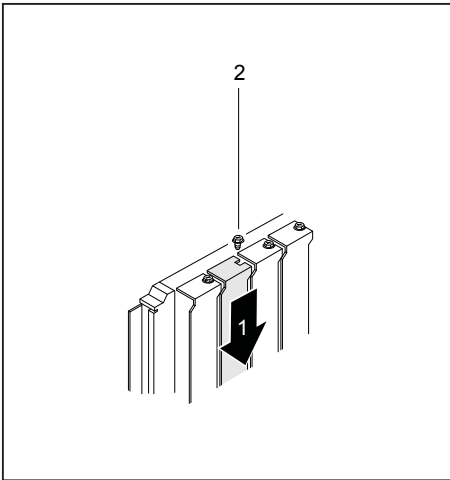
Removing boards

- ▶ If necessary, disconnect the cables which are connected to the board.



- ▶ Loosen the screw (1).
- ▶ Pull the board out of the slot (2).
- ▶ Place the board in suitable packaging.

Reinstalling a slot cover



- ▶ Push the slot cover into the slot (1).
- ▶ Tighten the screw (2).

- ▶ Close the casing (see ["Close the casing", Page 35](#)).



If you have installed or removed a 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.

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 33](#)).
- ▶ Upgrade the memory according to the description in the manual for the mainboard.
- ▶ Close the casing (see ["Close the casing", Page 35](#)).

Processor, replacing

- ▶ Open the casing (see ["Opening the casing", Page 33](#)).
- ▶ Upgrade the processor according to the description in the manual for the mainboard.
- ▶ Close the casing (see ["Close 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.



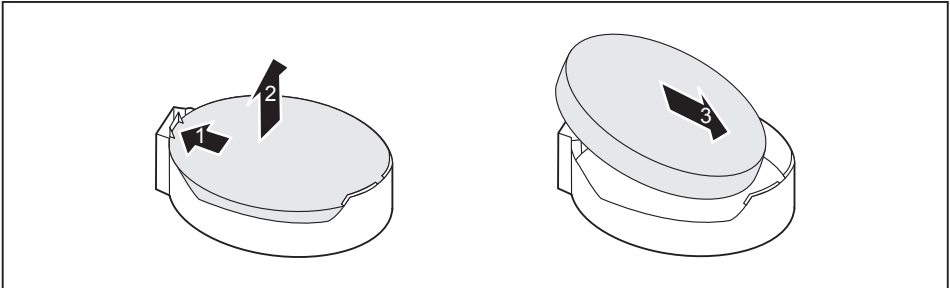
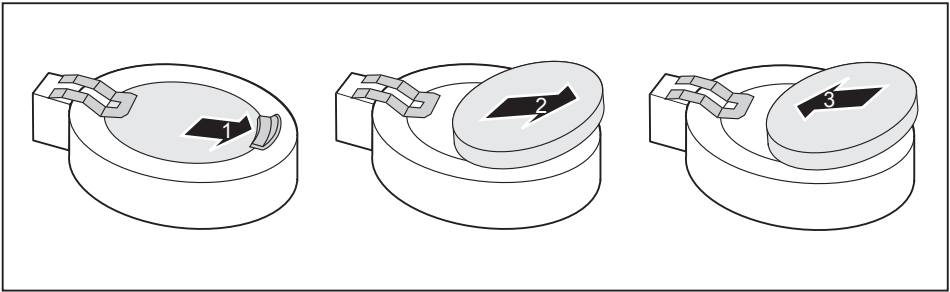
Incorrect replacement of the lithium battery may lead to a risk of explosion!

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.

Make sure that you observe the correct polarity when replacing the lithium battery. The plus pole must be on the top!

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



- ▶ 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 specification

Electrical data	ESPRIMO E410	ESPRIMO E520
Safety standards complied with:	IEC 60950, EN 60950, 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:	3.0 A – 1.5 A	
Dimensions		
Width/depth/height:	328 mm x 405 mm x 105 mm/ 12.91 inch x 15.94 inch x 4.13 inch	
Weight		
in basic configuration:	approx. 8 kg / 17.63 lbs	
Environmental conditions		
Environment class (3K2):	DIN IEC 721 part 3-3	
Environment class (2K2):	DIN IEC 721 part 3-2	
Temperature:		
Operating (3K2):	15 °C 35 °C / 59 °F ... 95 °F	
Transportation (2K2):	–25 °C 60 °C / – 13 °F ... 140 °F	
The formation of condensation is not permitted while the device is in operation !		
Clearance required to ensure adequate ventilation:		
without air vents	min. 10 mm / 0.39 inch	
with air vents	min. 200 mm / 7.87 inch	



The data sheet for this device provides further technical data. The data sheet can be found on our website ["http://www.fujitsu.com/fts"](http://www.fujitsu.com/fts).

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