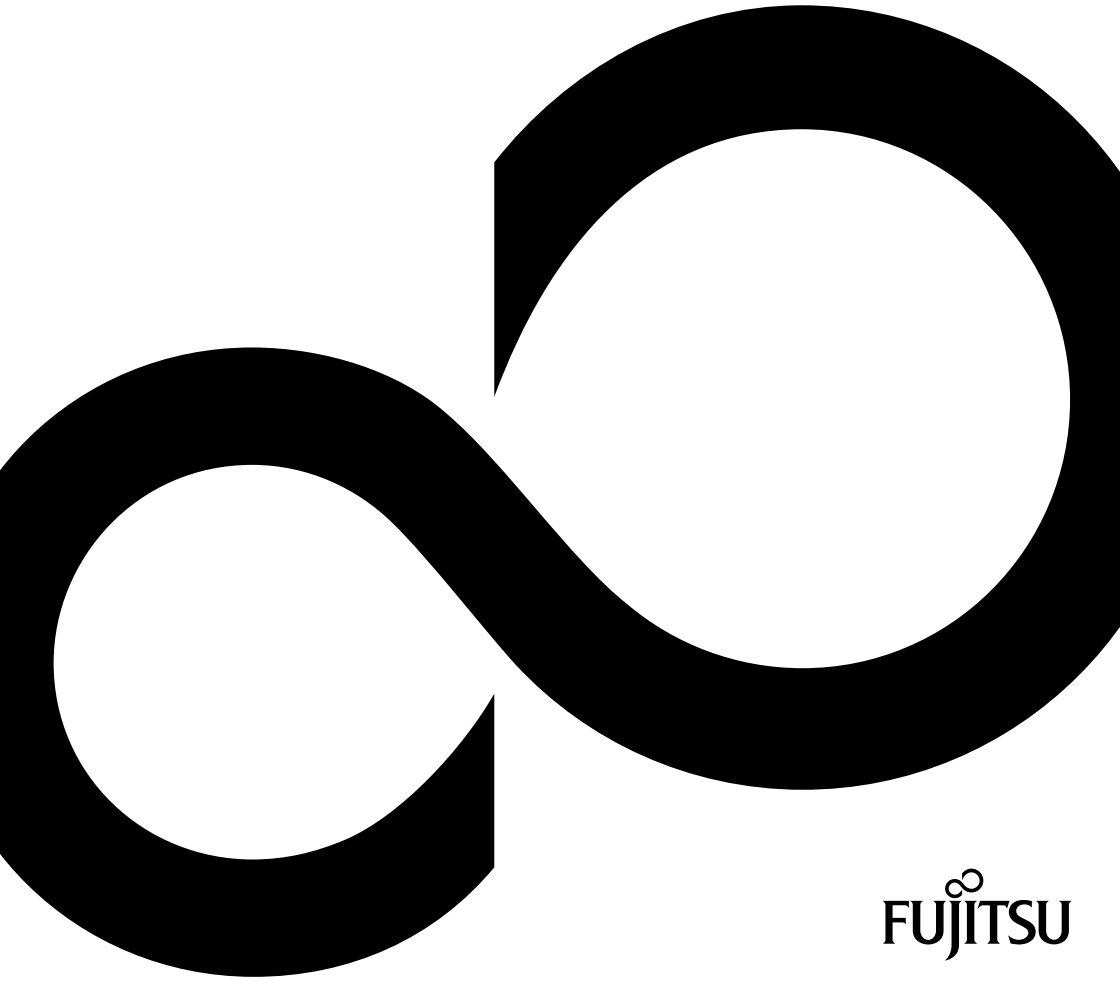
LIFEBOOK P770



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- Your sales partner
- Your sales office

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LIFEBOOK P770

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Innovative technology

... and ergonomic design make your device a reliable and convenient companion.

The device boots very quickly, is ready for immediate use and offers a particularly long operating time because of its high capacity battery.

With the user-friendly "BIOS Setup Utility" you can control your notebook's hardware and better protect your system against unauthorised access by using the powerful password properties.

Information on the connections and user components of your notebook can be found in "Ports and controls", Page 9.

Further information

The Windows drivers for your device can be found on our Internet site. The factory installation of your device does not support any other operating system. Fujitsu Technology Solutions accepts no liability whatsoever if any other operating system is used.

Software oriented components of these instructions refer to Microsoft products, if they come within the scope of the delivery.

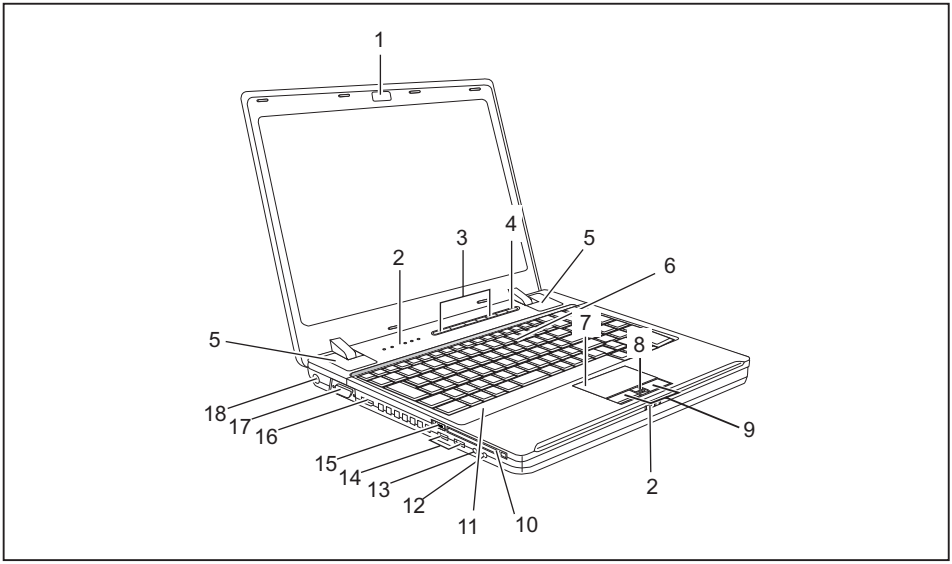
If you install other software products, pay attention to the operating instructions of the manufacturer.

Notational conventions

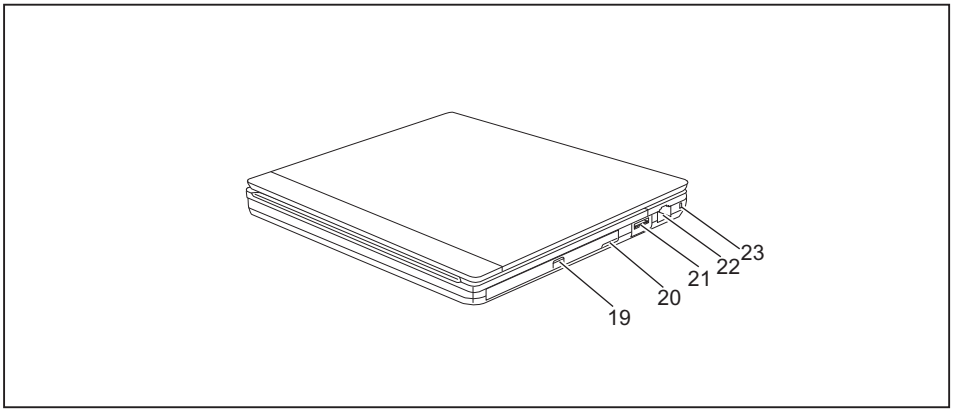
	Pay particular attention to text marked with this symbol. Failure to observe these warnings could pose a risk to health, damage the device or lead to loss of data. The warranty will be invalidated if the device becomes defective through failure to observe these warnings.
	Indicates important information 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 of other materials, e.g.: "CD/DVD Drivers & Utilities" or "Safety" 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 controls

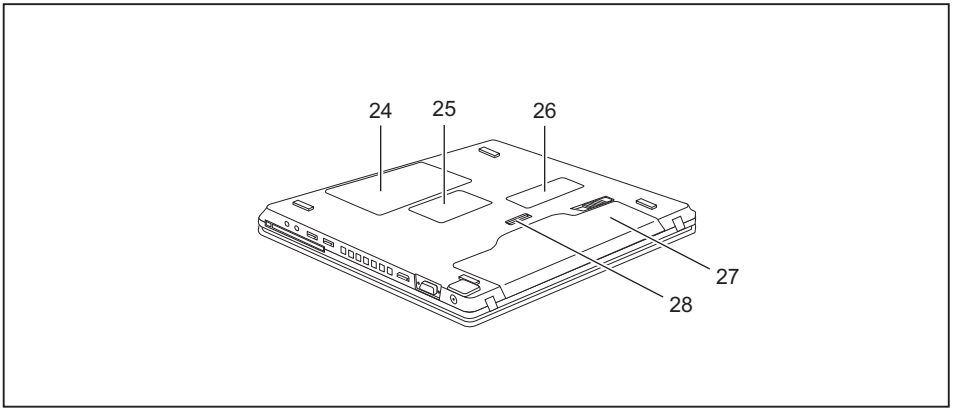
This chapter presents the individual hardware components of your device. It gives an overview of the indicators and ports of the device. Please familiarise yourself with these components before you start to work with the device.



1 = WebCam
2 = Status indicators
3 = Application buttons
4 = ON/OFF switch
5 = Loudspeakers
6 = Keyboard
7 = Touchpad
8 = Fingerprint sensor
9 = Touchpad buttons
10 = ExpressCard slot
11 = Microphone
12 = Headphone port
13 = Microphone port
14 = USB ports
15 = ON/OFF switch for radio components
16 = HDMI port
17 = VGA monitor port
18 = DC input connector (DC IN)



19 = Optical drive
20 = Memory card slot
21 = USB port
22 = LAN port
23 = Kensington Lock



24 = Hard disk
25 = Memory service compartment
26 = Minicard module, e.g. UMTS
27 = Rechargeable battery
28 = PortReplicator port

Important notes

This chapter contains essential safety information which must be followed when working with your notebook. Other notes also provide useful information which will help you with your notebook.

Safety notes

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

Please pay special attention to the sections in the manual marked with the symbol on the left.

When connecting and disconnecting cables, observe the relevant notes in this operating manual.

Read the information on the ambient conditions in the "Technical data", Page 77 and "First-time setup of your device", Page 15 before preparing your notebook for use and switching it on for the first time.

When cleaning the device, please observe the relevant notes in the section "Cleaning the notebook", Page 14.

Pay attention to the additional safety notes for devices with wireless components provided in the "Safety" manual.

Please refer to the notes in the chapter "Removing and installing components during servicing", Page 60.

This notebook complies with the relevant safety regulations for data processing equipment. If you have questions about using your notebook in a particular area, please contact your sales outlet or our Hotline/Service Desk.

Additional safety notes for devices with radio components

If a radio component (Wireless LAN, Bluetooth, UMTS) is integrated in your notebook, you must be sure to observe the following safety notes when using your notebook:

- Switch off the radio components when you are in an aircraft or driving in a car.
- Switch off the radio components when you are in a hospital, an operating room or near a medical electronics system. The transmitted radio waves can impair the operation of medical devices.
- Switch off the radio components when you let the device get near flammable gases or into hazardous environments (e.g. petrol station, paintshops), as the transmitted radio waves can cause an explosion or a fire.

For information on how to switch radio components on and off, see chapter "Switching the wireless components on and off", Page 42.

Energy saving

Switch the notebook off when it is not in use. Switch off external, connected devices if you are not using them. If you use the energy saving functions, the notebook uses less energy. You will then be able to work for longer before having to recharge the battery.

Energy efficiency is increased and the environmental impact is reduced. You save money while protecting the environment.

Energy saving under Windows

► Make use of the power management features (see ""Using the power-management features", Page 36").

Travelling with your notebook

Please observe the points listed below when travelling with your notebook.

Before you travel

- ► Back up important data stored on your hard disk.
- ► Switch off the radio component for data security reasons. With data traffic via a wireless connection, it is also possible for unauthorised third parties to receive data.

Information on activating data encryption is provided in the documentation for your radio component.

- ► If you wish to use your notebook during a flight, first check with the flight attendants if it is OK to do so.

When travelling in other countries

- ► If you are travelling abroad, check that the mains adapter can be operated with the local mains voltage. If this is not the case, obtain the appropriate mains adapter for your notebook. Do not use any other voltage converter!
- ► Check whether the local mains voltage and the power cable are compatible. If this is not the case, buy a power cable that matches the local conditions.
- ► Enquire with the corresponding government office of the country you will be travelling in as to whether you may operate the radio component integrated in your notebook there (see also "CE marking", Page 78).

Notebook: transporting

Protect the notebook from severe shocks and extreme temperatures (e.g. direct sunlight in a car).

- ► If your device has an optical drive, remove all data media (e.g. CD, DVD) from the drives.
- ► Switch the notebook off.
- ► Unplug the mains adapter and all external devices from the power socket.
- ► Disconnect the mains adapter cable and the data cables for all external devices.
- ► Close the LCD screen.
- ► To protect against damaging jolts and bumps, use a notebook carrying case to transport your notebook.

Cleaning the notebook

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

Only use cleaning products designed for computers. Normal household cleaners and polishes can damage the markings on the keyboard and the device, the paintwork or the notebook itself.

Ensure that no liquid enters the notebook.

The LCD screen very sensitive to scratches. Only clean the display surface with a very soft, slightly damp cloth.

► Switch the notebook off.

► In order to prevent accidentially switching the device on, remove the power cable from the mains adaptor and remove the battery (see "Removing and installing the battery", Page 31).

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

To clean the keyboard and the touchpad, if available, you can use disinfectant wipes.

Ensure that no liquid enters the device.

First-time setup of your device

Please read the chapter "Important notes", Page 11.

If your device is equipped with a Windows operating system, the necessary hardware drivers and supplied software are already pre-installed.

Before you switch on the device for the first time, connect it to the mains voltage using the mains adapter, see "Mains adapter connecting", Page 16. The mains adapter must be connected during the entire installation process.

A system test is performed when your device is first switched on. Various messages can appear. The display may remain dark for a short time or may flicker.

Please follow the instructions on the screen.

NEVER switch off your device during the first-time setup process.

On delivery, the battery can be found in the battery compartment or in the accessories kit. The battery must be charged if you want to operate your device using the battery.

When used on the move, the built-in battery provides the device with the necessary power. You can increase the operating time by using the available energy-saving functions.

For instructions on how to connect external devices (e.g. mouse, printer) to your device, please refer to the operating manual for your device.

Unpacking and checking the device

Should you discover any damage that occurred during transportation, notify your local sales outlet immediately!

- ► Unpack all the individual parts.
- ► Check your device for any visible damage which may have occurred during transportation.

You may need the packaging in the future, if you need to transport your device.

Selecting a location

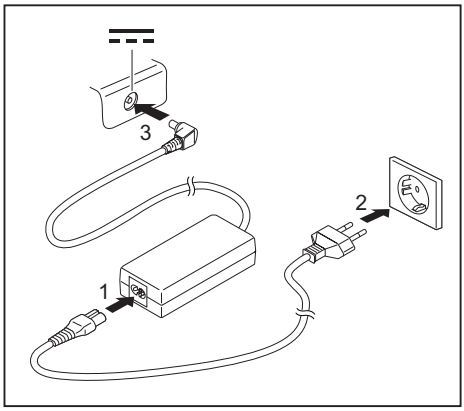
Select a suitable location for the device before setting it up. Follow the instructions below when doing so:

- Never place the device or the mains adapter on a heat-sensitive surface. The surface could be damaged as a result.
- Never place the device on a soft surface (e.g. carpeting, upholstered furniture, bed). This can block the air vents and cause overheating and damage.
- The underside of the device heats up during normal operation. Prolonged contact with the skin may become unpleasant or even result in burns.
- Place the device on a stable, flat, non-slippery surface. Please note that the rubber feet of the device may mark certain types of delicate surfaces.
- Keep other objects at least 100 mm away from the device and its mains adapter to ensure adequate ventilation.
- Never cover the ventilation slots of the device.
- Do not expose the device to extreme environmental conditions. Protect the device from dust, humidity, and heat.

Mains adapter connecting

Observe the safety precautions in the enclosed "Safety" manual.

The supplied power cable conforms to the requirements of the country in which you purchased your device. Make sure that the power cable is approved for use in the country in which you intend to use it.



- ► Connect the power cable (1) to the mains adapter.
- ► Plug the mains cable (2) into a mains outlet.
- ► Connect the mains adapter cable (3) to the DC jack (DC IN) of the device.

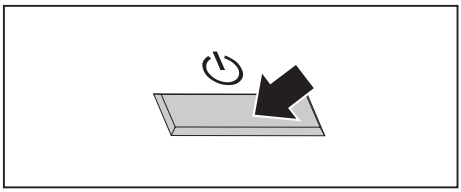
Switching on the device for the first time

On devices with ON/OFF switch for wireless components: Slide the ON/OFF switch for wireless components to the ON position before switching on the device.

When you switch on the device for the first time, the supplied software is installed and configured. Because this procedure must not be interrupted, you should set aside enough time for it to be fully completed and connect the device to the mains using the mains adapter.

During the installation process, DO NOT restart the device unless you are requested to do so!

To make it easier to use your device for the first time, the operating system is pre-installed on the hard disk.



► Switch on your device.

► During installation, follow the instructions on screen.

If a Windows operating system is installed on your device, you will find more information on the system and drivers, help programmes, updates, manuals etc. on the device or on the Internet at "http://ts.fujitsu.com/support".

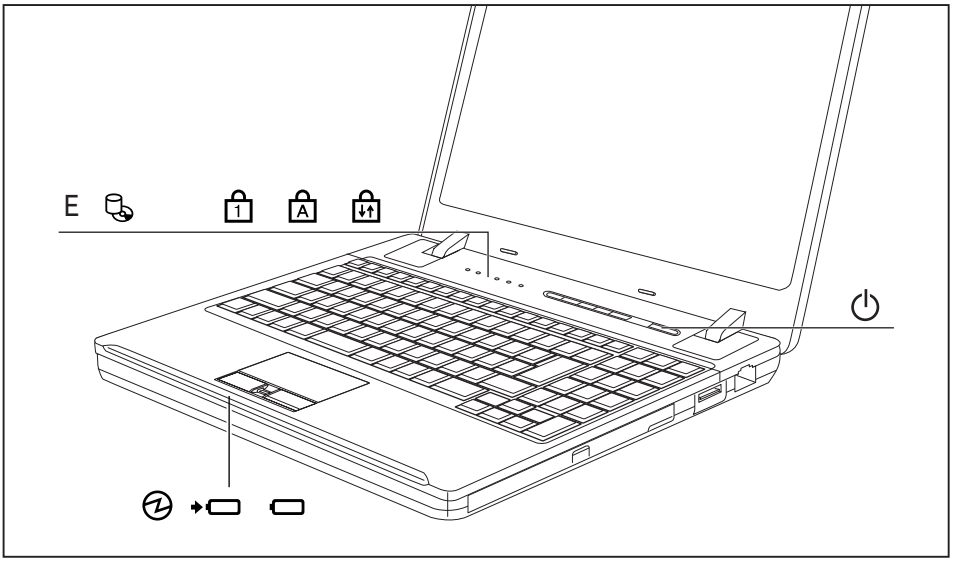
Working with the notebook

This chapter describes the basics for operating your notebook. Please read the chapter entitled "Connecting external devices", Page 54 for instructions on how to connect devices such as a mouse and a printer to the notebook.

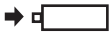
Please refer to the notes in "Important notes", Page 11.

Status indicators

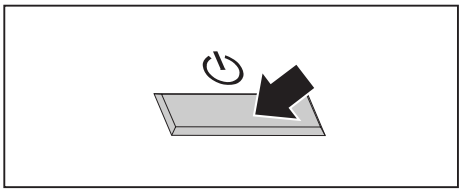
The status indicators provide information about the status of the power supply, the drives and the keyboard functions.



Key	Description
	Power-on indicator/standby (status indicator and ON/OFF switch) • Indicator is illuminated: The notebook is switched on. • Indicator flashes: The notebook is in standby mode. • Indicator is off: The notebook is switched off.

Key	Description
	**Batter charging indicator / Mains connection** The state of charge of the battery is shown by the battery indicator. • Indicator is illuminated (green): The battery is charged or no battery has been inserted. • The indicator lights up orange: the mains adapter is connected and the battery is being charged. • Indicator flashes orange: the mains adapter is connected but the battery cannot be charged as the battery is too hot or cold for charging. The charging process is continued as soon as the battery reaches a permissible temperature again. • Indicator flashes red: An error has occured. • The indicator is not illuminated: the mains adapter is not connected.
	Battery indicator • Indicator is illuminated (green): The battery is charged to between 50% and 100% of its maximum capacity. • The indicator lights up orange: The battery is charged to between 13% and 49% of its maximum capacity. • The indicator lights up red: The battery is charged to between 0% and 12% of its maximum capacity. • Indicator flashes red: An error has occured.
	Energy saving functions indicator • Indicator is illuminated: None of the energy saving functions have been activated. • Indicator is not illuminated: The energy saving functions have been deactivated.
	Drive indicator Indicator is illuminated: One of the drives (e.g. hard disk, CD/DVD) is being accessed.
	Num Lock indicator Indicator is illuminated: The Num key has been pressed. The virtual numerical keypad is activated. You can output the characters indicated on the upper right of the keys.
	Caps Lock indicator Indicator is illuminated: The Caps Lock key has been pressed. All the characters you type will appear in upper case. In the case of overlay keys, the character printed on the upper left of the key will appear when that key is pressed.
	Scroll Lock indicator Indicator is illuminated: the key combination Fn + Scr has been pressed. The effect that this key has varies between applications.

Switching on the notebook



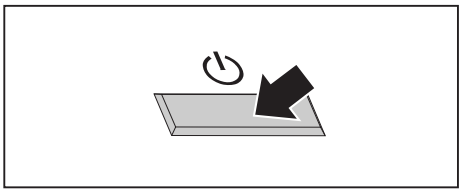
↳ The power-on indicator is lit.

► Open the LCD screen.

► Press the ON/OFF switch for about one second to switch the notebook on.

Notebook: switching off

Back up your data and close all applications before you switch off your device. Otherwise data might be lost.



► Shut down the operating system properly (e.g. in Windows via the *Start* menu by clicking *Start Symbol – Shut Down – OK*).

► If the notebook is not switched off automatically, press the ON/OFF switch for approx. five seconds.

► Close the LCD screen.

Keyboard

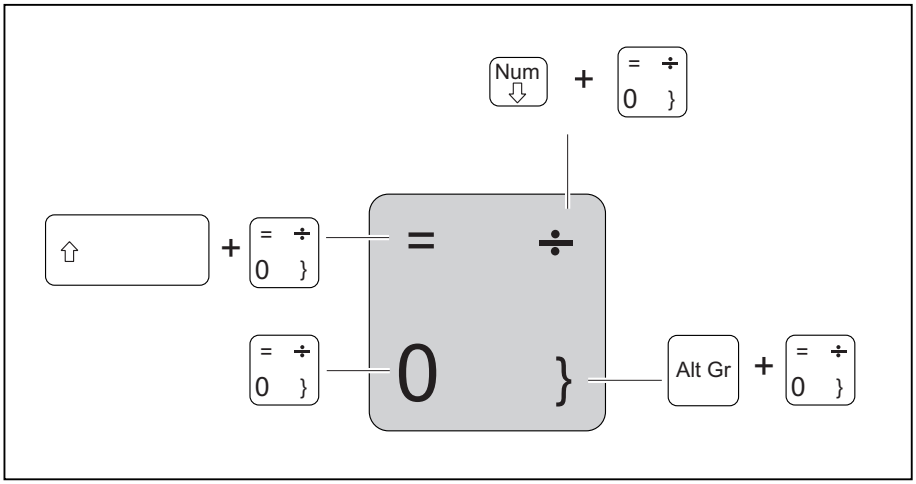
The keyboard of your notebook is subject to continuous wear through normal use. The key markings are especially prone to wear. The key markings are liable to wear away over the life of the notebook.

The keyboard has been designed to provide all the functions of an enhanced keyboard. Some enhanced keyboard functions are mapped with key combinations.

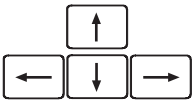
The following description of keys refers to Windows. Additional functions supported by the keys are described in the relevant manuals supplied with your application programs.

The figure below shows how to access the different characters on keys with overlaid functions. The example applies when the Caps Lock key has not been activated.

The illustrations shown below may differ from your actual device.



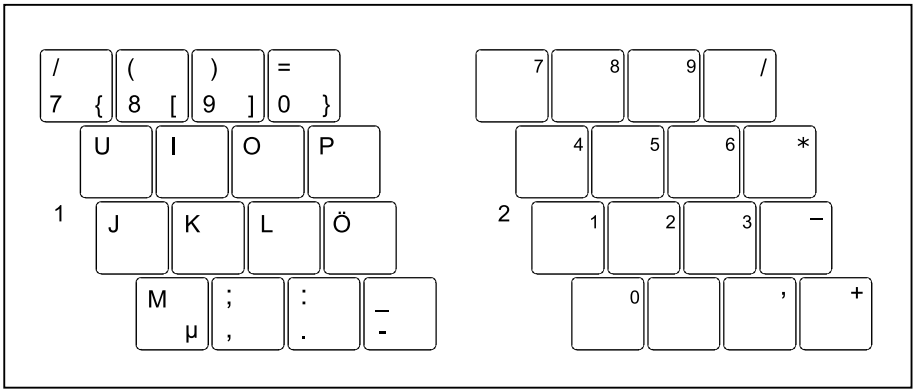
Key	Description
←	**Backspace key** The Backspace key deletes the character to the left of the cursor.
⇤⇥	**Tab key** The Tab key moves the cursor to the next tab stop.

Key	Description
	Enter key (return) The Enter key terminates a command line. The command you have entered is executed when you press this key.
	Caps Lock key The Caps Lock key activates the Caps Lock mode, and the corresponding icon is displayed in the Windows information area. In Caps Lock mode, all of the characters you type appear in upper case. In the case of overlay keys, the character printed on the upper left of the key will appear when that key is pressed. To cancel the Caps Lock function, simply press the Caps Lock key again.
	Shift key The Shift key causes uppercase characters to appear. In the case of overlay keys, the character printed on the upper left of the key appears when that key is pressed.
	Fn button The Fn key enables the special functions indicated on overlay keys (see "Key combinations", Page 24).
	**Cursor keys** The cursor keys move the cursor in the direction of the arrow, i.e. up, down, left, or right.
	Start key The Start key opens the Windows Start menu.
	Menu key The Menu key invokes the menu for the marked item.

Virtual numeric keypad

To provide the convenience of a numeric keypad, your keyboard is equipped with a virtual numeric keypad. The special keys of the virtual numeric keypad are recognisable by the numbers and symbols printed in the upper right corner of each key. If you have switched on the virtual numeric keypad, you can output the characters shown on the upper right of the keys.

The keyboard layout shown below may differ from your actual device.



1 = Valid characters when the Num key is not activated

2 = Valid characters when the Num is activated

Further information about the status indicators can be found in chapter "Status indicators", Page 18.

Key combinations

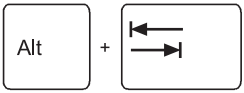
The following description of key combinations applies to Windows operating systems. Some of the following key combinations may not function in other operating systems or with certain device drivers.

Other key combinations are described in the relevant manuals supplied with your application programs.

Key combinations are entered as follows:

- ► Press the first key in the combination and keep it pressed.
- ► While holding the first key down, press the other key or keys in the combination.

Combination	Description
Fn + F3	**Switching the loudspeakers on and off** This key combination switches your notebook's loudspeakers off and on.
Fn + F4	**Switching the touchpad and touchpad buttons on/off** This key combination switches the touchpad and the touchpad buttons on or off.
Fn + F6	**Decrease screen brightness** This key combination decreases the brightness of the screen.
Fn + F7	**Increase screen brightness** This key combination increases the brightness of the screen.
Fn + F8	**Decrease volume** This key combination reduces the volume of the internal loudspeakers.
Fn + F9	**Increase volume** This key combination increases the volume of the internal loudspeakers.
Fn + F10	**Toggle output screen** Use this key combination to select which screen(s) is/are used for display if an external monitor is connected. Screen output is possible: • only on the notebook's LCD screen • on the LCD screen of the notebook and the external monitor at the same time • only on the external monitor This setting is useful if you would like a high resolution and a high refresh rate on an external monitor.

Combination	Description
	**Switch between open applications** Use this key combination to switch between several open applications.
	Windows security/Task-Manager This key combination opens the Windows security/Task-Manager window.
	Back tab This key combination moves the cursor back to the previous tab stop.

Key combinations using the Windows keys are detailed in the manual for your operating system.

Country and keyboard settings

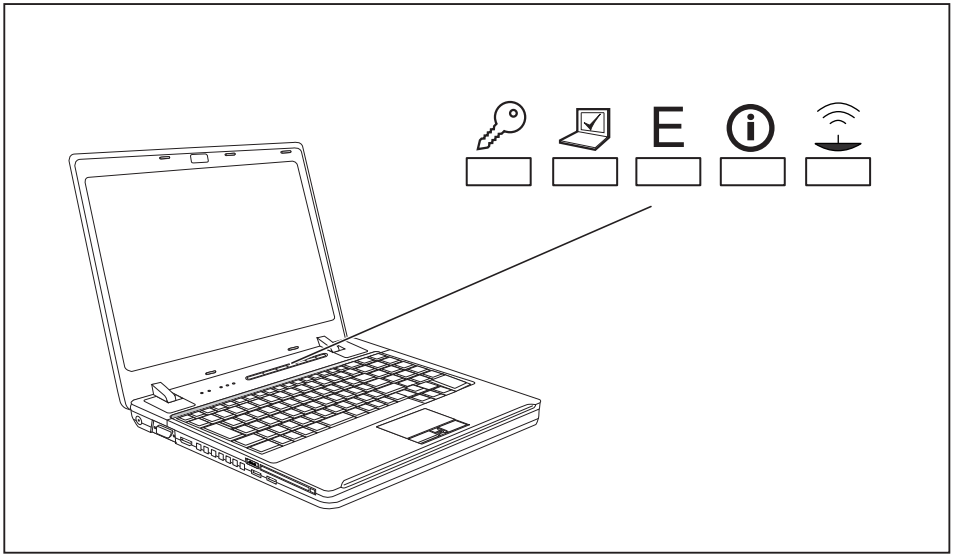
If you want to change the country and keyboard settings, proceed as follows:

► Enter the settings by clicking *Start – (Settings) – Control Panel – Time, Regional and Language Options*.

Application keys

Your notebook is equipped with five application keys.

All application buttons are freely programmable, see "Programming the application keys", Page 27.



Button	Description
	Lock Workstation key This key allows you to lock your workstation.
	Mobility Center key This button starts the Mobility Center.
	E key The E key is a simple way of activating and deactivating power management functions (e.g. reduce screen brightness), see "Using the power-management features", Page 36.
	I key With the I key, you can obtain further information about your notebook.
	Wireless Components key This application key is used to start the *WirelessSelector* software. The wireless components that have been activated in the *BIOS Setup* can be switched on and off individually.

Programming the application keys

With the *Application Panel* you can assign various functions to the application keys.

Windows XP

You will find the *Application Panel* under *Start - (Settings) - Control Panel - Additional Control Panel Options - Application Panel.*

Windows Vista and Windows 7:

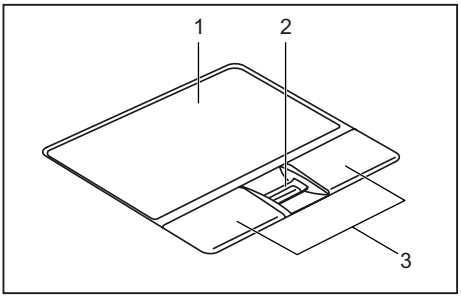
You will find the *Application Panel* under *Start symbol - Programs - Lifebook Application Panel*.

Touchpad and touchpad buttons

Keep the touchpad clean. Protect it from dirt, liquids and grease.

Do not use the touchpad if your fingers are dirty.

Do not rest heavy objects (e.g. books) on the touchpad or the touchpad buttons.



1 = Touchpad

2 = Fingerprint sensor

3 = Touchpad buttons

The touchpad enables you to move the mouse pointer on the screen.

The touchpad buttons allow you to select and execute commands. They correspond to the buttons on a conventional mouse.

You can use a key combination to disable the touchpad, to avoid accidentally moving the pointer on the screen (see also "Key combinations", Page 24).

Moving the pointer

► Move your finger on the touchpad.

↳ The pointer will move.

Selecting an item

► Move the pointer to the item you wish to select.
► Tap the touchpad once or press the left button once.
↳ The item is selected.

Executing commands

► Move the pointer to the field you wish to select.
► Tap the touchpad twice or press the left button twice.
↳ The command is executed.

Dragging items

► Select the desired item.
► Press and hold the left button and drag the item to the desired position with the finger on the touchpad.
↳ The item will be moved.

LCD screen

High-quality TFT displays are installed in notebooks from Fujitsu Technology Solutions GmbH. For technical reasons, TFT monitors are manufactured for a specific resolution. An optimal, clear picture can only be ensured with the correct resolution intended for the relevant TFT monitor. A monitor resolution which differs from the specification can result in an unclear picture.

The screen resolution of the LCD monitor of your notebook is optimally set at the factory.

The standard of production techniques today cannot guarantee an absolutely fault-free screen display. A few isolated constant lit or unlit pixels (picture elements) may be present. The maximum permitted number of pixels faults is stipulated in the international standard ISO 9241-3 (Class II).

Example:

A monitor with a resolution of 1280 x 800 has 1280 x 800 = 1024000 pixels. Each pixel consists of three subpixels (red, green and blue), so there are almost 3 million subpixels in total. According to ISO 9241-3 (class II), a maximum of 2 light and 2 dark pixels and an additional 5 light or 10 dark subpixels or a corresponding mix may be defective (1 light subpixel counts as 2 dark subpixels).

Pixel	A pixel consists of 3 subpixels, normally red, green and blue. A pixel is the smallest element that can be generated by complete functionality of the display.
Subpixel	A subpixel is a separately addressable internal structure within a pixel that enhances the pixel function.
Cluster	A cluster contains two or more defective pixels or subpixels in a 5 x 5 pixel block.

Background lighting

TFT monitors are operated with background lighting. The luminosity of the background lighting can decrease during the period of use of the notebook. However, you can set the brightness of your monitor individually.

Synchronising the display on the LCD screen and an external monitor

For more information, please refer to the chapter "Key combinations", Page 24 under "Display output, switch between".

Webcam

Depending on the software used, you can use your Webcam to take pictures, record video clips or take part in web chats.

- The picture quality depends on the lighting conditions and the software being used.
- You can only operate the webcam with a particular application (e.g. an Internet telephony program or a video conferencing program which supports a webcam).
- When using the webcam the notebook support must not wobble.
- The webcam automatically adjusts itself to the current light level. For this reason the LCD screen may flicker while the light level is adjusted.

Further information on use of the webcam and additional settings can be found in the help function of the program which uses the webcam.

If you wish to carry out a function test with your webcam, you can use the corresponding test software available at "http://ts.fujitsu.com/support/".

Rechargeable battery

When not plugged into a mains socket, the notebook runs on its built-in battery. You can increase the life of the battery by caring for the battery properly. The average battery life is around 500 charge/discharge cycles.

You can extend the battery life by taking advantage of the available energy saving functions.

Charging, caring for and maintaining the battery

The notebook battery can only be charged, when the ambient temperature is between 5°C and max. 35°C.

You can charge the battery by connecting the notebook to the mains adapter (see "Mains adapter connecting", Page 16).

You can increase the life of your battery by allowing it to fully discharge before recharging it again. To do this, leave your notebook turned on while operated by the battery. Once the battery is running low, you will hear a warning alarm. If you do not connect the mains adapter within five minutes of the warning alarm described above sounding, your notebook will automatically switch off.

monitoring the battery charging level

Windows also has a "Battery status meter" in the taskbar for monitoring the battery capacity. When you place the mouse pointer on the battery symbol, the system displays the battery status.

Battery storage

Keep the battery pack between 0°C and +30°C. The lower the temperature at which the batteries are stored, the lower the rate of self-discharge.

If you will be storing batteries for a longer period (longer than two months), the battery charge level should be approx. 30 %. To prevent exhaustive discharge which would permanently damage the battery, check the level of charge of the battery at regular intervals.

To be able to make use of the optimal charging capacity of the batteries, the battery should be completely discharged and then fully recharged.

If you do not use the batteries for long periods, remove them from the notebook. Never store the batteries in the device.

Removing and installing the battery

Only use rechargeable batteries approved by Fujitsu Technology Solutions for your notebook.

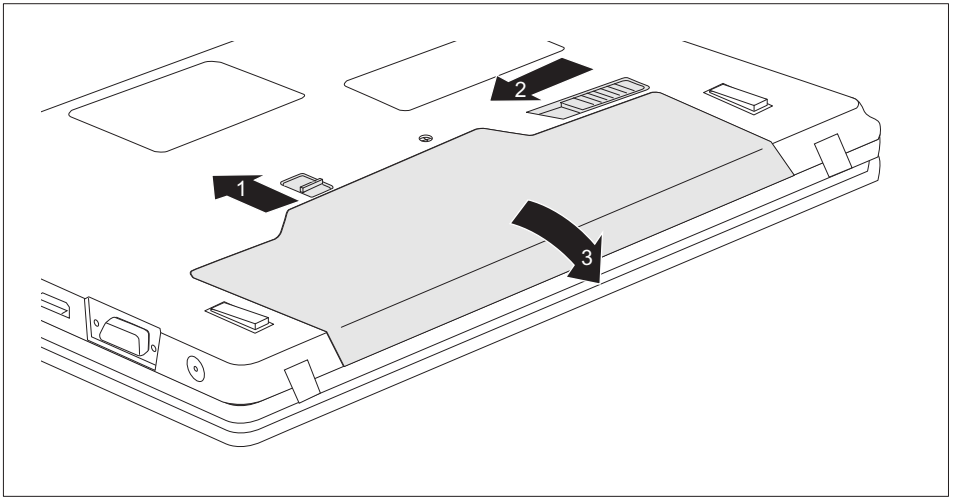
Never use force when fitting or removing a battery.

Make sure that no foreign bodies get into the battery connections.

Never store a battery for longer periods in the discharged state. This can make it impossible to recharge.

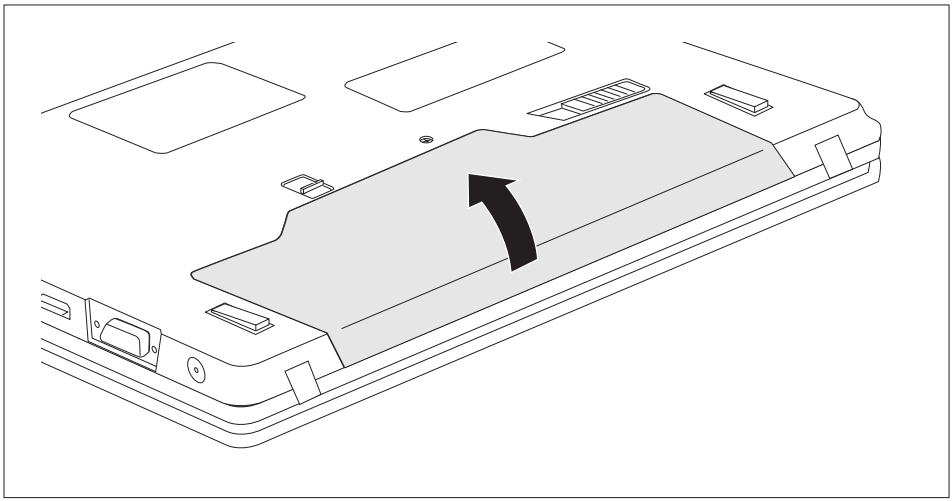
Removing a battery

► Prepare for removal, see chapter "Preparing to remove components", Page 61.



► Slide the release button in the direction of the arrow (1) and hold it in place.
► Slide the release button in direction of the arrow (2).
► Remove the battery from the battery compartment (3).

Installing a battery



► Position the battery at the edge.
► Carefully push the battery into the battery compartment until it can be felt to engage.
► Complete the removal, see chapter "Finishing component removal", Page 66.

Optical drive

This product contains a light emitting diode, classified in accordance with IEC 8251:1993: LASER CLASS 1, and must therefore not be opened.

Handling data carriers

Observe the following guidelines when handling data carriers:

- Avoid touching the surface of a data carrier. Only handle data carriers by their edges.
- Always store data carriers in their cases. This will protect the data carrier against being covered in dust, scratched or damaged in any other way.
- Protect your data carriers against dust, mechanical vibrations and direct sunlight.
- Avoid storing a data carrier in areas subject to high temperatures or humidity.

You may use both 8-cm and 12-cm data carriers in the optical drive.

When using a data carrier of lesser quality, vibrations and reading errors may occur.

CD/DVD indicator

The CD/DVD indicator flashes when a data carrier is inserted. The indicator goes out when the drive is ready for reading. The indicator lights up when the drive is being accessed. You may only remove the data carrier when the indicator is unlit.

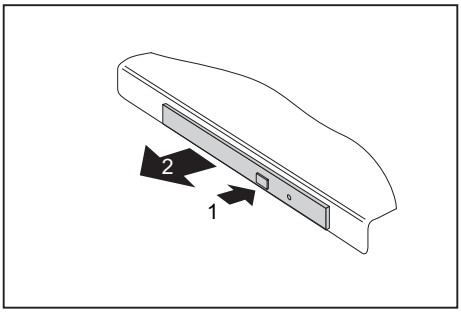
i

If the CD/DVD indicator does not go out after a data carrier has been inserted, but instead continues to flash, this means that the drive cannot access the data carrier.

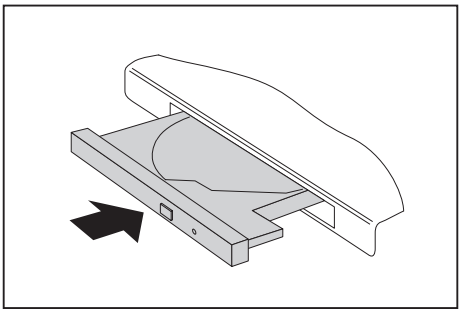
Either the data carrier is damaged or dirty or you are using a data carrier that the drive cannot read.

Inserting or removing a data carrier

The notebook must be switched on.



► Push the insert/eject button (1).
↳ The drive tray will open.
► Gently pull the drive tray (2) completely out.



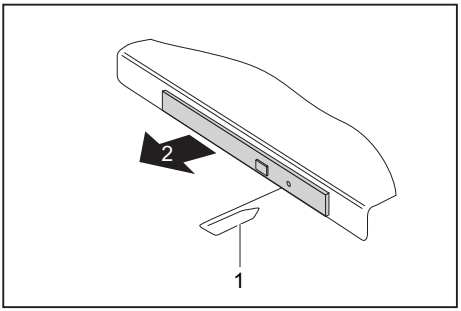
► Place the data carrier in the drive tray with the printed side facing upwards.

or

► Remove a data carrier that has been inserted.
► Push in the drive tray until you feel it lock into place.

Manual removal (emergency removal)

In the event of a power failure or damage to the drive, you can remove the data carrier manually.



- ► Switch your notebook off.
- ► Push a pen or a piece of wire (such as a paperclip) firmly into the opening (1).
- ↳ The drive tray is ejected. You can now pull the drive tray (2) out of the drive.

Using the power-management features

The notebook uses less power when the available power-management features are used. You will then be able to work longer when using the battery before having to recharge it.

Power efficiency is increased and environmental pollution reduced. By choosing the best power options, you can make significant savings and at the same time help protect the environment.

When you fold down and close the LCD screen, depending on the setting in Windows, the notebook automatically enters a power saving mode.

We recommend the following settings:

Function	On external power	On battery power
Turn off monitor	After 10 minutes	After 5 minutes
Turn off hard disk(s)	After 15 minutes	After 10 minutes
Energy saving (S3)	After 20 minutes	After 15 minutes
Hibernate mode (S4)	After 1 hour	After 30 minutes

- ► Select the power management functions in your Control Panel.
- ► Select the Screen Saver in your Control Panel.

or

- ► Right-click on the desktop. Switch on the screen saver by clicking *Personalization – Change screen saver*.

If you need further information about an option, you can get help with most settings by pressing F1 to open the Microsoft Help.

When the notebook is in power-saving mode, the following must be remembered:

During power saving mode, open files are held in the main memory or in a swap file on the hard disk.

Never turn off your notebook while it is in a power saving mode. If the built-in battery is nearly flat, close the open files and do not go into power saving mode.

If you do not intend to use your notebook for a long period of time:

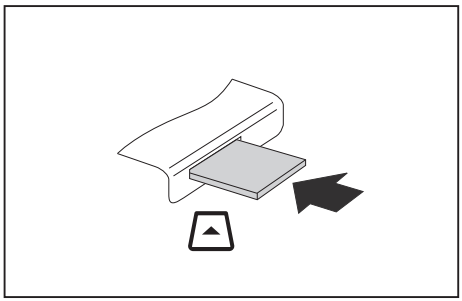
- ► Exit power saving mode if necessary via the mouse or keyboard or by switching on the notebook.
- ► Close all opened programs and completely shut down the notebook.

Memory cards

Your notebook is equipped with an integrated memory card reader.

Observe the manufacturer's instructions when handling the memory cards.

Inserting the memory card



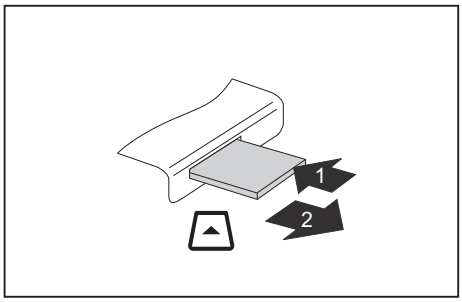
- ► Carefully slide the memory card into the slot. The label should be facing upward. Do not apply excessive force, as otherwise the delicate contact surfaces could be damaged.
- ↳ Depending on the particular type used, the memory card may protrude slightly from the slot.

Removing the memory card

In order to protect your data, always follow the correct procedure for removing the card outlined below.

You can stop the memory card via the corresponding icon in the task bar:

- ► Left-click on the icon.
- ► Select the card you want to stop and remove.
- ► Press the Enter key.
- ↳ Wait for the dialogue box which tells you that it is now safe to remove the memory card.



- ► On devices with card locking: Press on the storage card (1).
- ↳ The storage card is released and can now be removed.
- ► Pull the storage card out of the slot (2).

ExpressCards

An ExpressCard slot enables operation of an ExpressCard/34 or ExpressCard/54.

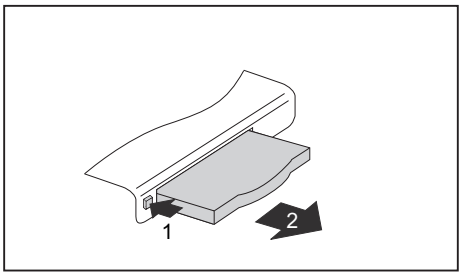
Consult the documentation supplied by the ExpressCard's manufacturer and follow the instructions provided.

Never use force when installing or removing an ExpressCard.

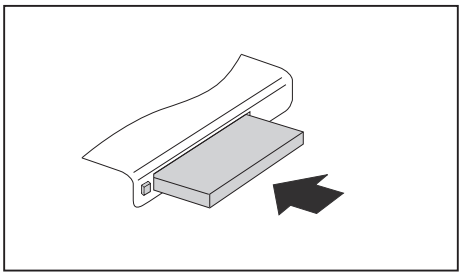
Make sure that no foreign objects enter the ExpressCard slot.

Inserting the card

Keep the placeholder for the slot in a safe place. When you remove the card again you must reinstall the placeholder. This prevents foreign bodies from getting into the slot.



- ► If the eject button (1) is recessed, press it once so that it disengages. Now press the eject button again so that the placeholder protrudes slightly from the notebook.
- ► Pull the card placeholder out of the slot (2).



- ► Insert the card into the slot guide with the connection contacts first.
- ► Gently push the card into the slot either until it will go no further or you feel it engage. Do not use excessive force.

  Depending on the type, the card may protrude slightly from the slot.

Please see the documentation relating to the card for driver installation instructions.

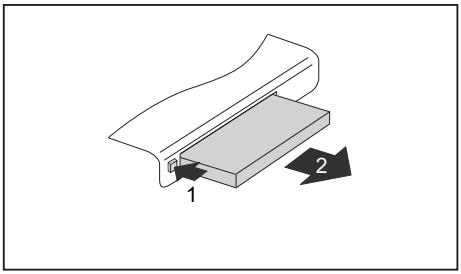
Removing the card

Always remove the card according to the rules described below, to ensure that none of your data is lost.

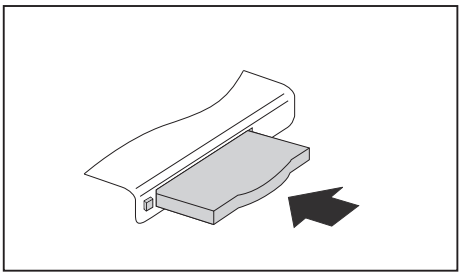
You can stop the card using the corresponding icon in the task bar:

- ► Left click on the icon to safely remove hardware, located in the taskbar.
- ► Select the card you want to stop and remove.
- ► Press the "Enter" key.

↳ Wait for the dialog box which tells you that it is now safe to remove the card.



- ► If the eject button is lowered, you must first cause the eject button to release from the notebook casing. To do this, press the eject button until it pops out. Press the eject button (1) so that the card protrudes a little from the notebook.
- ► Pull the card out of the slot (2).



- ► Insert the card placeholder into the slot guide.
- ► Carefully slide the placeholder for the card as far as it will go into the slot. Do not use excessive force.

Loudspeakers and microphones

Information on the exact position of the speakers and microphone can be found in "Ports and controls", Page 9.

Please refer to chapter "Key combinations", Page 24 for information on setting the volume and also enabling/disabling the loudspeakers using key combinations.

If you attach an external microphone, the built-in microphone is disabled.

When you connect headphones or external speakers, the built-in speakers are disabled.

Information on connecting headphones and a microphone can be found in "Connecting external devices", Page 54.

SIM card

Whether or not your device has a SIM card slot depends on whether or not you have ordered UMTS functionality.

A SIM Card (Subscriber Identity Module) is a chip card which is inserted in a mobile telephone or notebook to enable access to a mobile radio network in conjunction with an installed UMTS module.

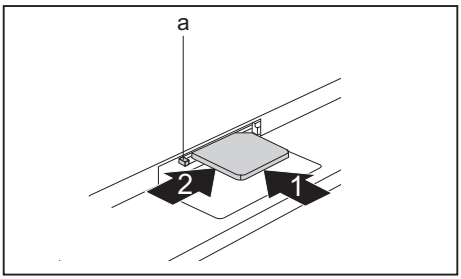
Follow the instructions supplied by the provider of the SIM card.

The SIM card slot is located in the battery compartment and can only be accessed when the battery is removed.

Inserting the SIM card

► Prepare for insertion of the SIM card, see chapter "Preparing to remove components", Page 61.

► If necessary, open the clip (a) of the SIM card.



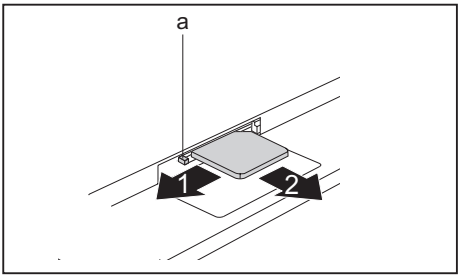
► Slide the SIM card into the slot (1) until it engages, as shown in the battery compartment.

► Slide the SIM card lock (a) in the direction of the arrow (2).

► Complete the insertion, see chapter "Finishing component removal", Page 66.

Removing a SIM card

► Prepare for removal of the SIM card, see chapter "Preparing to remove components", Page 61.



► Slide the SIM card lock (a) in the direction of the arrow (1).

► Press on the edge of the SIM card so that it jumps up slightly out of the slot.

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

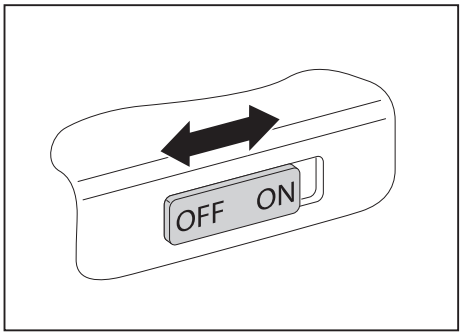
► Complete the removal, see chapter "Finishing component removal", Page 66.

Wireless LAN / BlueTooth / UMTS (optional)

The installation of radio components not approved by Fujitsu Technology Solutions will invalidate the certifications issued for this device.

Switching the wireless components on and off

Before switching on your device for the first time, the on/off switch for wireless components must be in the "ON" position.



► Slide the ON/OFF switch into the "ON" position to activate the wireless components.

or

► Slide the ON/OFF switch to the "OFF" position to deactivate the wireless components.

The Bluetooth and UMTS modules and the wireless LAN transmission unit (antenna) will also be switched off when you switch off the wireless components.

You can also deactivate the wireless components individually in the *BIOS Setup*. In order to be able to do this, you will either need to know the supervisor password if one has been assigned, or no password must have been assigned.

Please read the additional safety notes for devices with wireless components in the "Safety" manual.

Details on using Wireless LAN can be found in the online help system included in the Wireless LAN software.

You can find more information on how to use Bluetooth on the CD you received with your Bluetooth software.

You can obtain more information on UMTS from your service provider.

Setting up WLAN access

- Requirement: A WLAN must be available and you must have the corresponding access information.

Information on configuring the WLAN access can be found in the documentation for your operating system.

Access via UMTS

You can purchase the accessories for UMTS reception from your retailer or your Fujitsu Technology Solutions dealer.

If you have ordered a UMTS module, your device will already be prepared when you receive it.

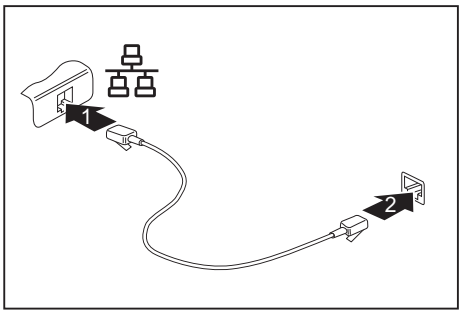
You will find information on establishing the connection with the UMTS network in the documentation for the hardware used.

Your device can connect with the Internet via UMTS. To do this, use one of the following types of connection:

- USB dongle
  a USB stick with your mobile phone provider's SIM card
- a mobile end-device (e.g. mobile phone) with Bluetooth connection
- a mobile end-device (e.g. mobile phone) with data cable

Ethernet and LAN

The internal network module of your notebook supports Ethernet LAN. You can use it to establish a connection to a local network (LAN = Local Area Network).



- ► Connect the network cable to the LAN port of the notebook (1).
- ► Connect the network cable to your network connection (2).

Your network administrator can help you to configure and use the LAN connections.

The network cable is not included in the delivery scope. This type of cable can be obtained from a specialist dealer.

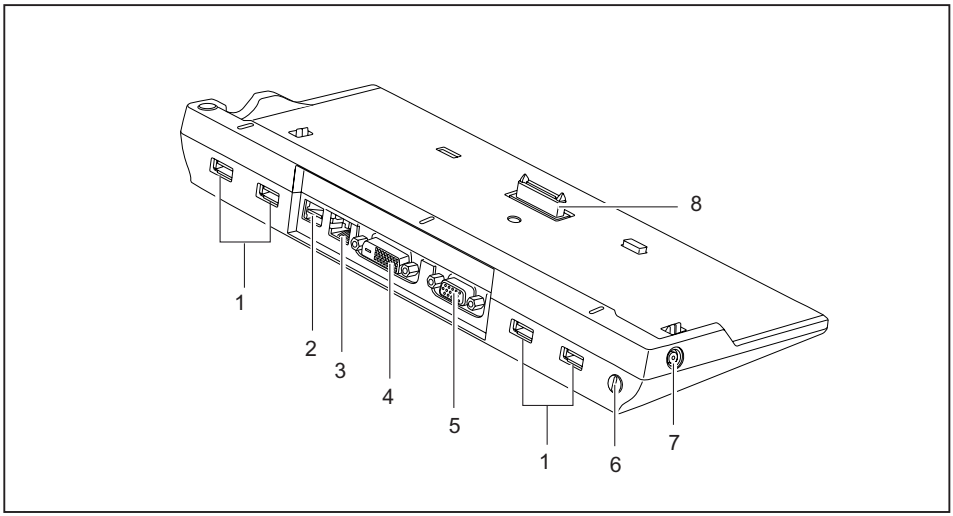
Your Port Replicator

The Port Replicator is a device that helps you to quickly connect your notebook to your peripheral devices, such as a monitor, printer etc.

The features offered by the Port Replicator include standard ports for monitor, audio, mouse and keyboard.

You need only dock the notebook in order to work with your peripheral devices.

Ports on the Port Replicator



1 = USB ports
2 = e-SATA port
3 = LAN port
4 = DVI port
5 = VGA monitor port
6 = Kensington Lock
7 = DC input connector (DC IN)
8 = Connector on the Port Replicator for the docking port on the underside of the notebook

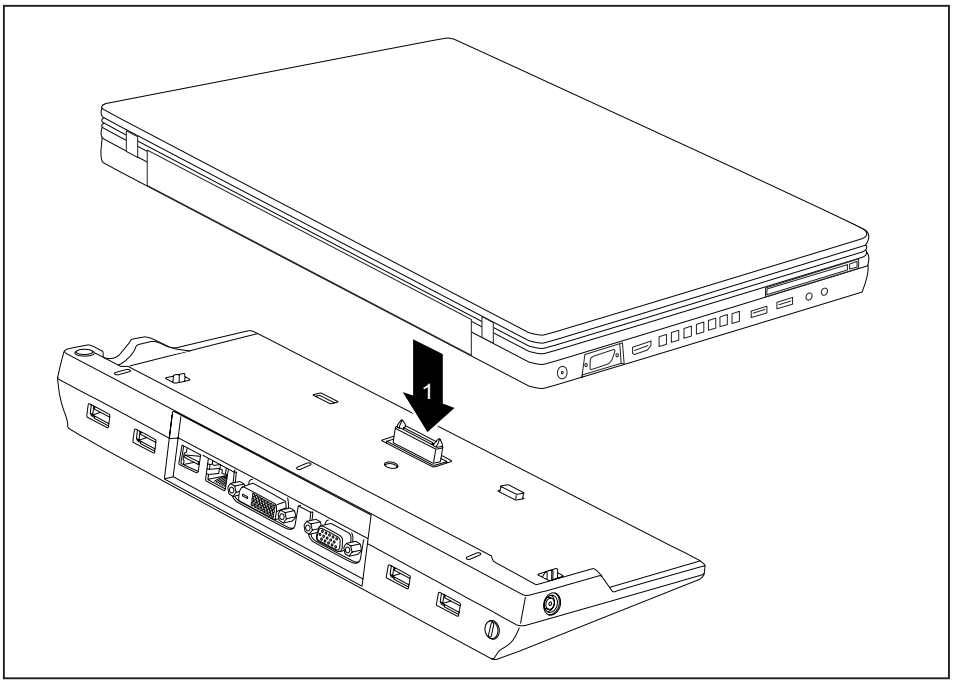
Connecting the notebook to the Port Replicator

If you connect the notebook to the Port Replicator during operation, problems can occur. We recommend that you switch off the notebook beforehand.

The mains adapter must be connected to the Port Replicator when the notebook is connected to the Port Replicator.

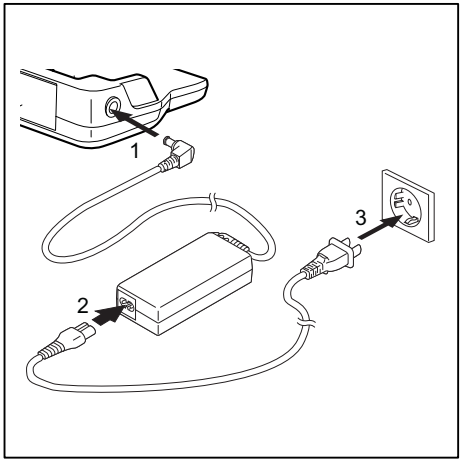
We recommend that the notebook is not operated with the LCD screen closed when the notebook is connected to the Port Replicator. The resulting overheating can cause reduced performance and increased activity of the integrated fan.

- ► Switch the notebook off.
- ► Remove the mains plug for the mains adapter from the mains socket.
- ► Disconnect the mains adapter cable from the DC socket (DC IN) of the notebook.



- ► Position the notebook so that it is in line with the back edge of the Port Replicator.
- ► Place the notebook onto the Port Replicator (1) and ensure that it locks into place correctly.

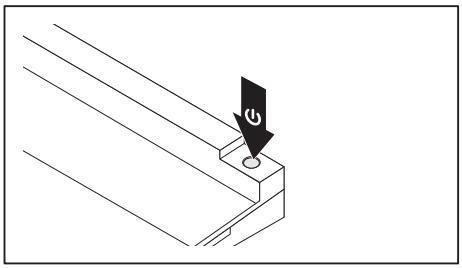
Connecting the mains adapter to the Port Replicator



- ► Connect the mains adapter cable to the DC jack (DC IN) of the Port Replicator (1).
- ► Connect the power cable to the mains adapter (2).
- ► Plug the power cable into the mains socket (3).

i When the notebook is connected to a Port Replicator, the operating system creates a hardware profile for the "Docked" mode. In this profile, for example, the setting is saved as to which monitor was last used for output. This profile will be loaded, as soon as the notebook is connected to a Port Replicator of the same type.

Switching on the notebook via the port replicator



- ► Press the ON/OFF switch on the port replicator to switch the notebook on.
- ↳ The power-on indicator of the Port Replicator lights up.

Switching off notebook via Port Replicator

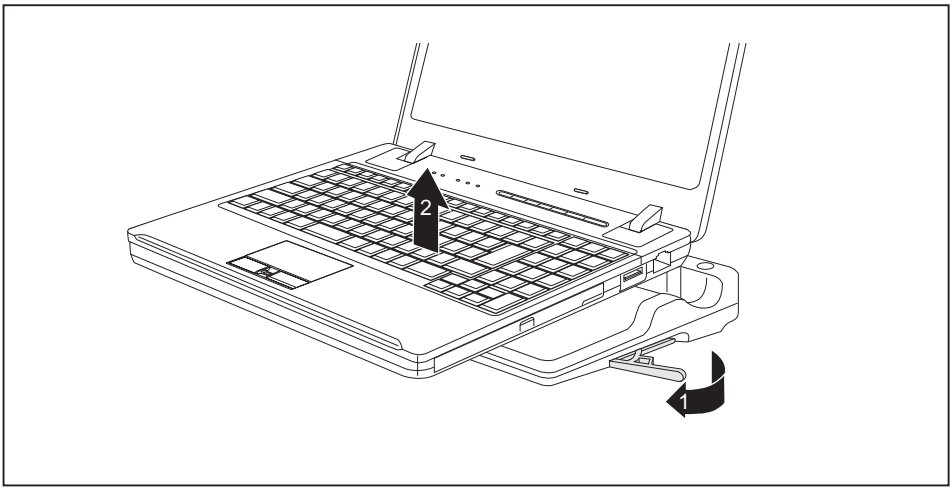
- ► Close all applications and shut down your operating system (please refer to the manual for the operating system).

i If the notebook cannot be shut down properly, press the ON/OFF button on the Port Replicator for approx. four seconds. The notebook will switch off. Any unsaved data may however be lost.

Disconnecting the notebook from the Port Replicator

Problems may occur if the notebook is removed from the Port Replicator during operation. We recommend that the notebook is switched off or that the appropriate undocking function provided by the operating system is executed.

► Switch the notebook off.



► Pull the unlocking lever in the direction of the arrow (1), until you hear the notebook unlatch.
► Lift off the notebook (2).

Security functions

Your notebook has several security features that you can use to secure your system from unauthorised access.

This chapter explains how to use each function, and what the benefits are.

Please remember that in some cases, for example, forgetting your password, you may be locked out and unable to access your data. Therefore, please note the following information:

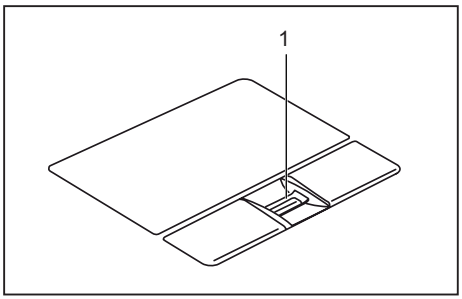
- Make regular backups to external storage devices such as external hard drives, CD or DVD disks.
- Some security functions need you to choose passwords. Make a note of the passwords and keep them in a safe place.

If you forget your passwords you will need to contact the our Service Desk. Deletion or resetting of passwords is not covered by your warranty and a charge will be made for assistance.

Configuring the fingerprint sensor

Whether or not your device has a fingerprint sensor depends on the device configuration you have ordered.

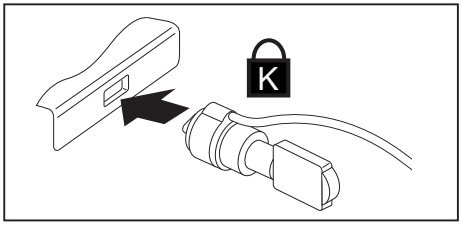
The fingerprint sensor can record an image of a fingerprint. With additional fingerprint software, this image can be processed and used instead of a password.



► You must install the fingerprint software in order to be able to use the fingerprint sensor (1).

Use Kensington Lock

Your device comes with a Kensington Lock device for the Kensington MicroSaver. With the Kensington MicroSaver, a sturdy steel cable, you can help protect your notebook from theft. The Kensington MicroSaver is available as an accessory.



► Fit the Kensington MicroSaver on the device on your notebook.

Connect another Kensington MicroSaver to your port replicator in order to secure your port replicator against theft.

Configuring password protection in BIOS Setup Utility

Before using the various options for password protection in the *BIOS Setup utility* to increase data security, please observe the following:

Make a note of the passwords and keep them in a safe place. If you forget your supervisor password you will not be able to access your notebook. Passwords are not covered by your warranty and a charge will be made for assistance.

Your password can be up to eight characters long and contain letters and numbers. No distinction is made between uppercase and lowercase.

Protecting BIOS Setup Utility (supervisor and user password)

If you have opened these operating instructions on the screen, we recommend that you print out the following instructions. Because you cannot call the instructions onto the screen while you are setting up the password.

You prevent unauthorised use of the *BIOS Setup Utility* with both the supervisor and the user password. The supervisor password gives you access to all functions of the *BIOS Setup Utility*, while the user password only provides some of the functions. You can only set a user password if a supervisor password has already been assigned.

Please refer to the "'"Settings in BIOS Setup Utility", Page 67 section for a description of how to call up and operate the *BIOS Setup Utility*.

Setting supervisor and user password

► Start the *BIOS Setup Utility* and go to the *Security* menu.
► Select the *Set Supervisor Password* field and press the Enter key.
↳ With *Enter new Password*: you are asked to enter a password.
► Enter the password and press the Enter key.
↳ *Confirm new Password* requires you to confirm the password.
► Enter the password again and press the Enter key.
↳ *Changes have been saved* is a confirmation that the new password has been saved.
► To set the user password, select *Set User Password* and proceed exactly as when configuring the supervisor password.
↳ If you do not want to change any other settings, you can exit *BIOS Setup Utility*.
► In the *Exit* menu, select the option *Save Changes & Exit*.
► Select *Yes* and press the Enter key.
↳ The notebook will be rebooted and the new password will come into effect. It will now be necessary to first enter your supervisor or user password in order to open the *BIOS Setup Utility*. Please note that the user password only provides access to a few of the BIOS settings.

Changing the supervisor or user password

You can only change the supervisor password when you have logged into the *BIOS Setup Utility* with the supervisor password.

► Call the *BIOS Setup Utility* and go to the *Security* menu.
► When changing the password, proceed exactly as for password assignment.

Removing passwords

To remove a password (without setting a new password) perform the following steps:

► Start the *BIOS Setup Utility* and go to the *Security* menu.
► Highlight the *Set Supervisor Password* or *Set User Password* field and press the Enter key.
↳ You will be requested to enter the current password by the *Enter Current Password* prompt.
You will be requested to enter a new password by the *Enter New Password* prompt.
► Press the Enter key twice.
► In the *Exit* menu, select the option *Save Changes & Exit*.
► Select *Yes* and press the Enter key.
↳ The notebook will now reboot with the password removed.
Removing the supervisor password simultaneously deactivates the user password.

Password protection for booting of the operating system

With the supervisor password you have set in the *BIOS Setup Utility* (see section "Setting supervisor and user password", Page 50), you can also prevent booting of the operating system.

Activating system protection

- ► Start the *BIOS Setup Utility* and go to the *Security* menu.
- ► Select the *Password on Boot* option and press the Enter key.
- ► Select the desired option (*Disabled*, *First Boot* or *Every Boot*) and press the Enter key
- ► Select the *Save Changes & Exit* option under *Exit*.

↳ The notebook will reboot. You will be prompted to enter your password (the supervisor password).

Deactivating system protection

- ► Start the *BIOS Setup Utility* and go to the *Security* menu.
- ► Select the *Password on Boot* option and press the Enter key.
- ► Select the *Disabled* option and press the Enter key.

↳ If you do not want to change any other settings, you can exit *BIOS Setup Utility*.

- ► Select the *Save Changes & Exit* option under *Exit*.

↳ The notebook will reboot. The system is no longer password-protected.

Trusted Platform Module (TPM) (device-dependent)

To use the TPM, you **must** activate the TPM in the *BIOS Setup* before the software is installed. The condition for this is that you have assigned at least the supervisor password (see "Security functions", Page 48).

Options for using the TPM

You can use the TPM in different ways:

SmartCase™ Logon+	SmartCase™ Logon+ offers additional help with managing and using the numerous passwords required to work with the computer. To install, configure and use SmartCase™ Logon+, please refer to the documentation and online help on the CD with the SmartCase™ Logon+ software.
Security API	Smart Security API 4.1 is middleware which supports the entire range of mobile and stationary clients from Fujitsu Technology Solutions. Independent of the TPM hardware, it is needed by everyone who uses a PKI Smart Security environment for identification purposes.
Microsoft® BitLocker	BitLocker Drive Encryption (BDE) is a feature of Microsoft® Vista Enterprise and Ultimate Editions for encryption of the hard disk drive. Here, BitLocker uses the TPM for the storage of the recovery data which are used for decryption of the partition. It is also possible to use BitLocker without TPM and only to use the USB dongle for storing the crypto key. This option is mainly of interest if Vista is installed on a computer on which TPM is not installed or an older version (before Version 1.2) is installed. For BitLocker to work, you must have set up at least two partitions on your hard drive. The first partition contains the boot information. The second, larger partition is encrypted and contains the operating system as well as the user data. **Important:** The partitions must be set up before Windows Vista is installed.

Enabling TPM

- Requirement: You have assigned a supervisor password, see "Security functions", Page 48.

► Call up the BIOS Setup and select the *Security* menu.

► Mark the *TPM Security Chip Setting* field and press the Enter key.

► Select *Enabled* to activate the TPM.

↳ Once you have activated the TPM the *Clear Security Chip* option appears.

Select *Clear Security Chip* to delete the holder in the TPM. By clicking on *Enabled*, all secret keys (e.g. SRK - Storage Root Keys, AIK - Attestation Identity Keys etc.) generated by applications are deleted.

Please note that you will then no longer be able to access the data you have encrypted with the keys based on that holder.

► Select the *Exit Saving Changes* option in the Exit menu.

► Press the Enter key and select *Yes*.

↳ The notebook will restart, and TPM will be enabled after the reboot.

Disabling TPM

- Requirement: You have assigned a supervisor password, see "Security functions", Page 48.

► Call up the BIOS Setup and select the *Security* menu.

► Mark the *TPM Security Chip Setting* field and press the Enter key.

► Select *Disabled* to deactivate the TPM.

► From the *Exit* menu, choose the option *Exit Saving Changes*.

► Press the Enter key and select *Yes*.

↳ Your notebook will now restart and TPM will be disabled.

Connecting external devices

Always refer to the safety information provided in "Important notes", Page 11 before connecting or disconnecting any devices to or from your notebook.

Always read the documentation supplied with the device you wish to connect.

Never connect or disconnect cables during a thunderstorm.

Never pull at a cable when disconnecting it. Always grasp the plug.

Follow the steps below in order, when connecting or disconnecting devices to your notebook:

With some devices such as USB devices, it is not necessary to switch off the notebook and the device before connecting/disconnecting. For more information about whether or not devices need to be switched off, please refer to the documentation supplied with the external device.

Some of the external devices require special drivers (see the operating system and external device documentation).

Connecting devices to the notebook

1. Turn off your notebook and all external devices.
2. Unplug your notebook and all devices from the mains sockets.
3. Connect the cables for your external devices following the instructions.
4. Plug all power cables into the mains sockets.

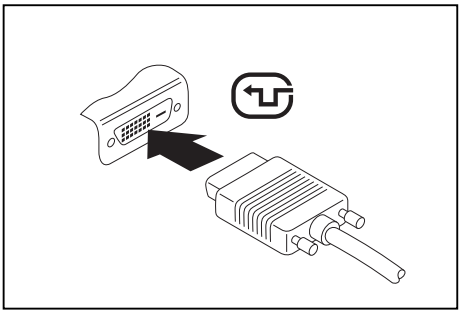
Disconnecting devices from the notebook

1. Turn off your notebook and all external devices.
2. Unplug your notebook and all devices from the mains sockets.
3. Disconnect the cables for your external devices following the instructions.

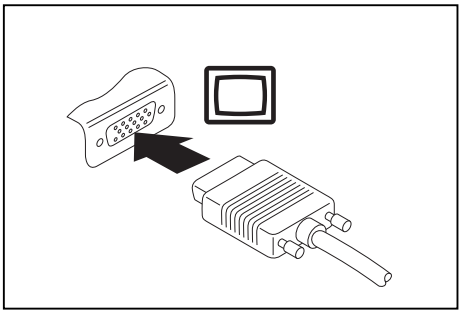
Connecting an external monitor

The notebook itself does not have a DVI port. The optional Port Replicator available for your notebook provides this port.

An analogue monitor is connected to the analogue VGA monitor port, a digital monitor to the DVI monitor port. Screen output is limited to a maximum of two screens at any one time (see "Key combinations", Page 24, section "Toggle output screen").



Digital DVI monitor port



Analogue VGA monitor port

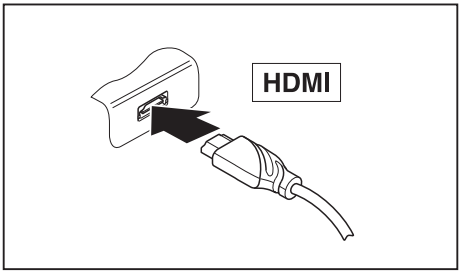
- ► Switch off the notebook and the external monitor.
- ► Plug the data cable of the external monitor into the monitor port.
- ► First switch on the external monitor and then the notebook.

You can also switch back and forth between the external monitor and the notebook's LCD monitor, see chapter "Key combinations", Page 24.

You can display the same picture on the external monitor and the notebook LCD screen simultaneously.

HDMI port

The HDMI port of your notebook can be used to connect an external amplifier, LCD TV or a plasma TV with an HDMI connection.



- ► Connect the data cable to the external device.
- ► Connect the data cable to the HDMI port of the notebook.

Some LCD televisions have only two loudspeaker connections and therefore cannot reproduce Dolby digital or DTS. In order to reproduce the sound, you must go into *Windows* and adjust the sound settings.

Proceed as follows:

- ► Select *Startsymbol – (Settings) – Control Panel – Hardware and Sound – Sound*.
- ► Mark *Realtek HDMI Output*.
- ► Select *Properties – Supported formats*.
- ► Deactivate the settings *DTS audio* and *Dolby digital*.
- ► Confirm the settings with *OK*.

Connecting USB devices

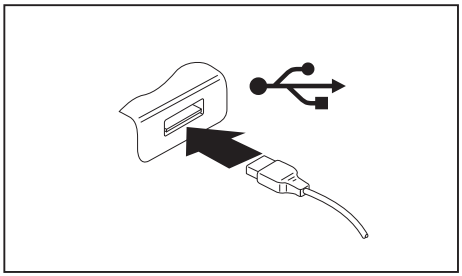
On the USB ports, you can connect external devices that also have a USB port (e.g. a DVD drive, a printer, a scanner or a modem).

USB devices are hot-pluggable. This means you can connect and disconnect devices while your operating system is running.

USB 1.x has a maximum data transfer rate of 12 Mbit/s.

USB 2.x has a data transfer rate of up to 480 Mbit/s.

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 a USB port of the notebook.

Device drivers

USB devices will be automatically recognised and installed by your operating system.

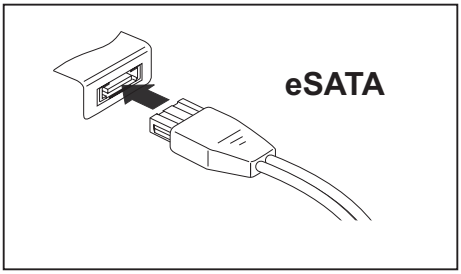
Connecting an external SATA hard disk (eSATA)

The notebook itself does not have an eSATA port. The optional Port Replicator available for your notebook provides this port.

An external SATA hard disk can be connected at the eSATA port. This allows you to expand the internal hard disk capacity as you wish.

The length of the eSATA cable must not exceed 2 metres. Consult a specialist dealer for advice on which eSATA data cable is suitable for your external eSATA hard disk. Make sure that the hard disk has its own external power supply.

The data transfer rate is up to 2,400 Mbit/s.



- ► Connect the data cable to the external device.
- ► Connect the data cable to the eSATA port.

Device drivers

The eSATA hard disk is automatically recognised by your operating system and installed.

You will find more information in the documentation for the external SATA hard disk and the operating system.

Safe removal of eSATA and USB devices

Always correctly remove the device according to the rules described below, to ensure that none of your data is lost.

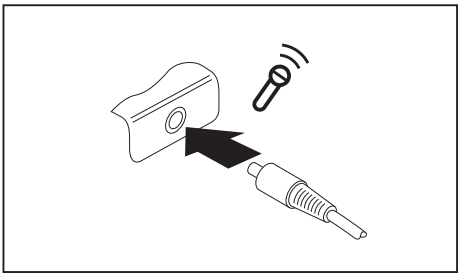
- ► Left-click on the symbol to remove hardware safely.
- ► Select the device you wish to shut down and remove.
- ► Press the "Enter" key.

↳ Wait for the dialogue box which tells you that it is now safe to remove the device.

Connecting external audio devices

Microphone port / Line In

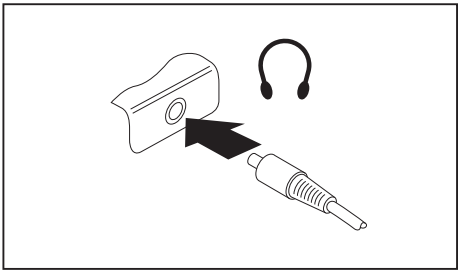
The microphone port/Line In allows you to connect an external microphone, a MiniDisc player, MP3 player, CD player or a tape deck to your notebook.



- ► Connect the audio cable to the external device.
- ► Connect the audio cable to the microphone port/Line In of the notebook.

Headphone port

You can connect headphones or external loudspeakers to your notebook via the headphone port.



- ► Connect the audio cable to the external device.
- ► Connect the audio cable to the headphone port of the notebook.
- ↳ The internal loudspeakers are disabled.

If you purchase a cable from a retailer, please note the following information:

The headphone port on your notebook is a "3.5 mm jack socket".

If you want to connect headphones or a speaker you will need a "3.5 mm jack plug".

Removing and installing components during servicing

Only qualified technicians should repair your notebook. Unauthorised opening or incorrect repair may greatly endanger the user (electric shock, fire risk) and will invalidate your warranty.

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

If you remove and install components without consulting the Hotline/Service Desk, then the warranty of your notebook will be voided.

Notes on installing and removing boards and components

- Switch the notebook off and pull the power plug out of the mains socket.
- Always remove the battery.
- Take care when you use the locking mechanisms on the battery and any other component.
- Never use sharp objects such as screwdrivers, scissors or knives as leverage to remove covers.

Boards with electrostatic sensitive devices (ESD) are marked with 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.
- Remove the power plug from the mains supply before inserting or removing boards containing ESDs.
- Always hold boards with ESDs by their edges.
- Never touch pins or conductors on boards fitted with ESDs.

Preparing to remove components

If you are going to remove or change system components, prepare for the removal as follows:

Please observe the safety information in chapter "Important notes", Page 11.
Remove the power plug from the mains outlet !

► Switch the device off.

The device must not be in energy-saving mode !

► Close the LCD screen.
► Remove all the cables from the device.
► Turn the device over and place it on a stable, flat and clean surface. If necessary, lay an anti-slip cloth on this surface to prevent the device from being scratched.
► Remove the battery (see "Removing a battery", Page 32).

Installing and removing memory expansion

If you are asked by the Hotline/Service Desk to remove and install the memory expansion yourself, proceed as follows:

Please observe the safety information in chapter "Important notes", Page 11.

When installing/removing memory modules, the battery must be removed from the notebook and the notebook must not be connected to the power supply, see "Preparing to remove components", Page 61.

Only use memory expansion modules that have been approved for your notebook (see "Technical data", Page 77).

Never use force when installing or removing a memory extension.

Make sure that foreign objects do not fall into the memory extension compartment.

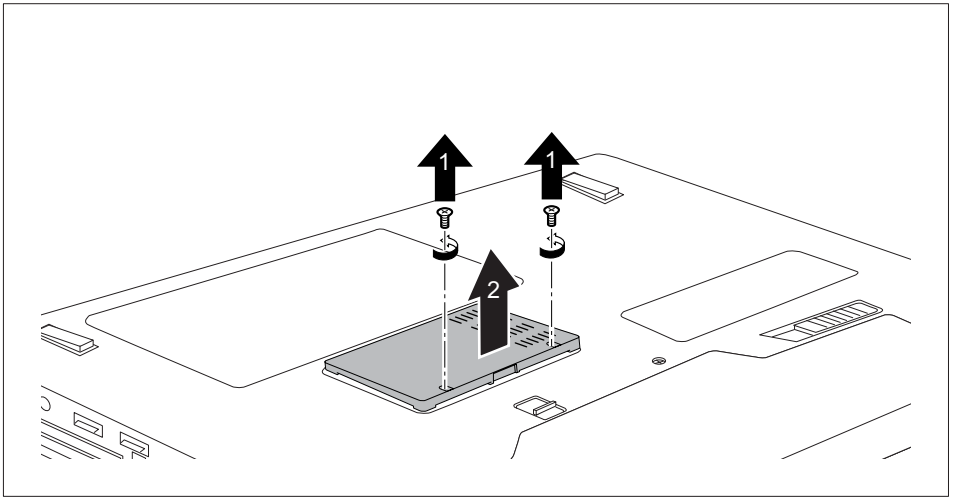
You must open the service compartment to remove or install a memory module. On some devices, opening the compartment may expose other components. These components should be removed and replaced only by authorised specialists. Therefore, be sure to observe the following:

Individual components can become very hot during operation. Therefore, we recommend that you wait one hour after switching off the notebook before removing or installing memory modules. Otherwise, there is a risk of suffering burns!

As some components are exposed that are sensitive to static electricity, please take note of chapter "Notes on installing and removing boards and components", Page 60.

Removing a cover

► Prepare for removal, see "Preparing to remove components", Page 61.

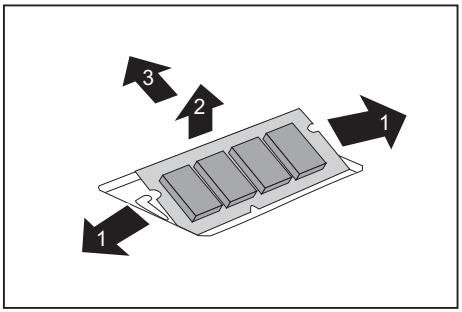


► Remove the screws (1).

Keep the screws in a safe place. If you are removing more than one component at the same time, store the screws for the individual components separate from each other. If you install the wrong screws, components may be damaged.

► Lift the cover off the notebook (2).

Removing memory modules

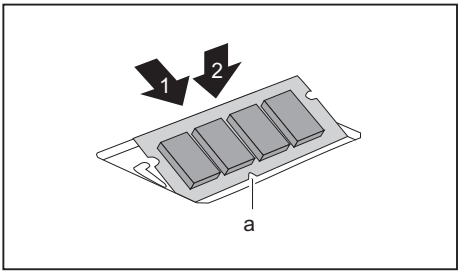


► Carefully push the two mounting clips outwards (1).

↳ The memory module snaps upwards (2).

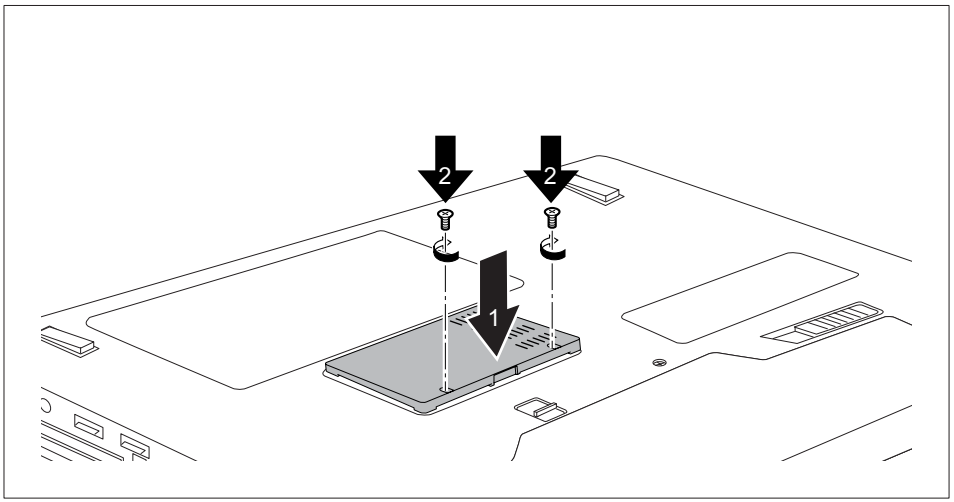
► Pull the memory module out of its slot in the direction of the arrow (3).

Installing a memory module



- ► Insert the memory module with the contacts and the recess (a) facing the slot (1).
- ► Carefully push the memory module downwards until you feel it click into place (2).

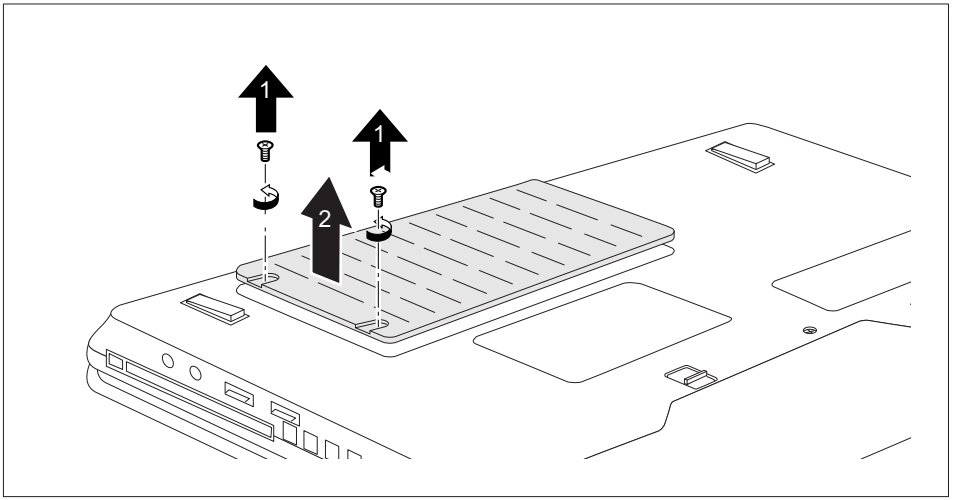
Attaching the cover



- ► Place the cover in the correct mounting position (1).
- ► Fasten the screws (2).
- ► Complete the installation, see "Finishing component removal", Page 66.

Removing and installing the hard disk

Removing a cover

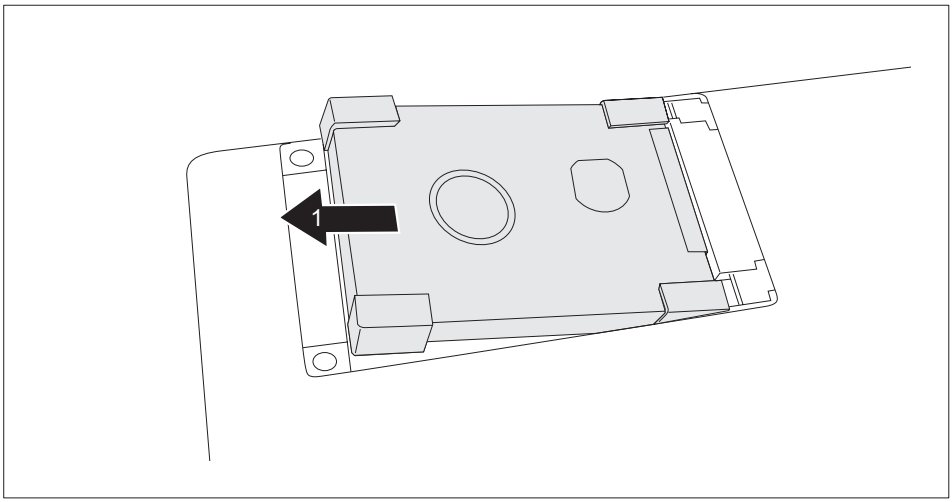


► Remove the screws (1).

Keep the screws in a safe place. If you are removing more than one component at the same time, store the screws for the individual components separate from each other. If you install the wrong screws, components may be damaged.

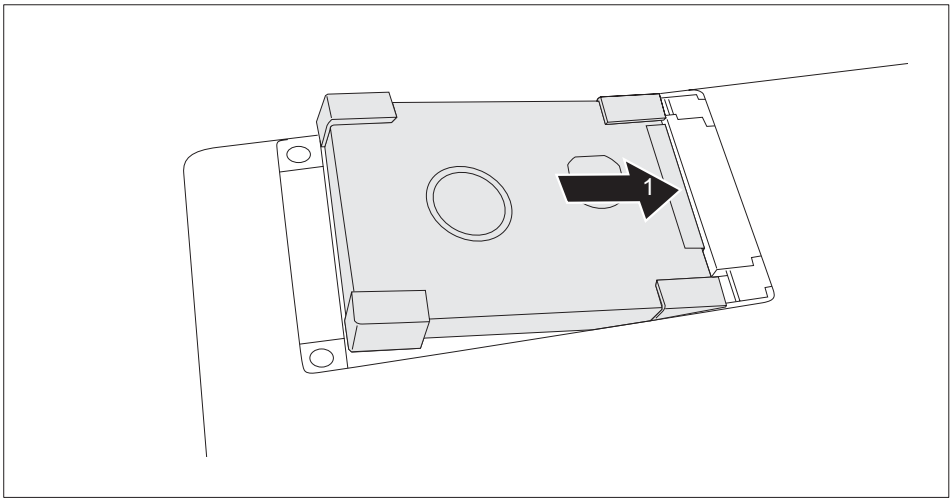
► Lift the cover off the notebook (2).

Removing a hard disk



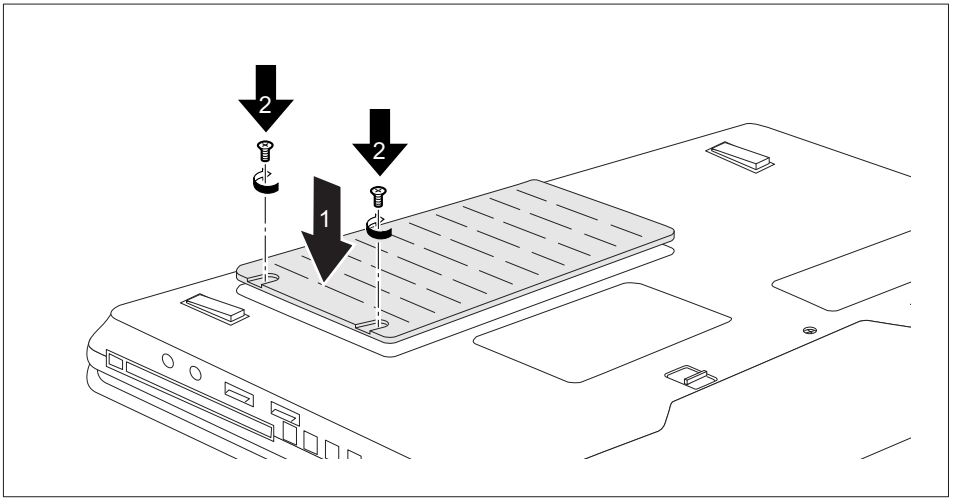
► Remove the hard disk from the hard disk compartment (1).

Installing a hard disk



► Place the hard disk into the hard disk compartment (1). Ensure that the contacts engage.

Attaching the cover



► Place the cover in the correct mounting position (1).
► Fasten the screws (2).

Finishing component removal

After you have removed or changed the system components as you required, please prepare your device for operation again as follows:

► Install the battery again (see "Installing a battery", Page 33).
► Turn the notebook the right way up again and place it on a flat surface.
► Reconnect the cables that you disconnected before.

Settings in BIOS Setup Utility

The *BIOS Setup Utility* allows you to set the system functions and the hardware configuration for the notebook.

When it is delivered, the notebook is set to factory default settings. You can change these settings in *BIOS Setup Utility*. Any changes you make take effect as soon as you save and exit the *BIOS Setup Utility*.

The *BIOS Setup Utility* program contains the following menus:

About	Displays information relating to the BIOS, processor and notebook
System	Advanced system settings
Advanced	Configuration of various hardware components, such as mouse, keyboard, processor
Security	Password settings and security functions
Boot	Configuration of the start-up sequence
Exit	Exits the *BIOS Setup Utility*

Starting the BIOS Setup Utility

► Reboot the notebook (switch off/on or reboot the operating system).

↳ The following or a similar display appears on the screen at start-up:

```
<F2> BIOS Setup <F12> Boot Menu
```

► Press the function key F2.

► If a password has been assigned, enter the password and press the Enter key.

If you have forgotten the password, contact your system administrator or contact our customer service centre.

The *BIOS Setup Utility* starts.

Operating BIOS Setup Utility

Press the F1 key to display help on the operation of *BIOS Setup Utility*. The description of the individual settings is shown in the right-hand window of the *BIOS Setup Utility*.

With the F9 key you can load the default settings of the *BIOS Setup Utility*.

► Use the cursor keys ← or → to select the menu you wish to access to make changes.

↳ The menu is displayed on the screen.

► Select the option you want to change with the cursor keys ↑ or ↓.

► Press the Enter key.

► Press the ESC key to exit the selected menu.

► For future reference, make a note of the changes you have made (for example, in this manual).

Exiting BIOS Setup Utility

You need to select the desired option in the *Exit* menu and activate it by pressing the Enter key:

Exit Saving Changes - save changes and exit BIOS Setup Utility

► To save the current menu settings and exit the *BIOS Setup Utility*, select *Exit Saving Changes* and *Yes*.

↳ The notebook is rebooted and the new settings come into effect.

Exit Discarding Changes – Discard changes and exit BIOS Setup Utility

► To discard the changes, select *Exit Discarding Changes* and *Yes*.

↳ The settings in place when *BIOS Setup Utility* was called remain effective. *BIOS Setup Utility* is terminated and the notebook is rebooted.

Load Setup Defaults – Copy Standard Entries

► To copy the standard entries for all menus of the *BIOS Setup Utility*, choose *Load Setup Defaults* and *Yes*.

Discard Changes – Discard changes without exiting the BIOS Setup Utility

► To discard the changes you have made, select *Discard Changes* and *Yes*.

↳ The settings in place when *BIOS Setup Utility* was called remain effective.
You can now make additional settings in the *BIOS Setup Utility*.

► If you want to exit*BIOS Setup Utility*with these settings, select *Exit Saving Changes* and *Yes*.

Save Changes - save changes without exiting the BIOS Setup Utility

► To save the changes, select *Save Changes* and *Yes*.

↳ The changes are saved. You can now make additional settings in the BIOS Setup Utility.

► If you want to exit BIOS Setup Utility with these settings, choose *Exit Saving Changes* and *Yes*.

Save Changes and Power Off

► To save the changes and switch off your device, select *Save Changes and Power Off* and *Yes*.

↳ The changes are saved. Your device is shut down.

Troubleshooting and tips

Refer to the safety information in the "Safety" manual when connecting or disconnecting cables.

If a fault occurs, try to correct it as described. If you fail to correct the problem, proceed as follows:

- ► Make a note of the steps and the circumstances that led to the fault. Also make a note of any error messages displayed.
- ► Switch the notebook off.
- ► Please contact the Hotline/Service Desk.

You can find the telephone numbers in the service desk list. Please have the following information ready when you call:

- The model name and serial number of the notebook. The serial number is located on a sticker on the underside of the notebook.
- Notes of any messages that appear on the screen and information on acoustic signals.
- Any changes you have made to the hardware or software since receiving the notebook.
- Any changes you have made to the *BIOS Setup* settings since receiving the notebook.
- Your system configuration and all peripheral devices connected to your system.
- Your sales contract.

Our notebooks have been designed primarily with mobile applications in mind. This means that considerable effort has been made to optimise components and equipment in terms of weight, space and energy requirements. Depending on the particular configuration you have purchased, it is possible that functionality may be slightly reduced compared to a desktop PC if you are running processor-intensive gaming software, e.g. games with intensive 3D graphics. Updating your hardware with drivers which have not been approved by Fujitsu Technology Solutions may result in performance losses, data losses or malfunction of the equipment. A list of approved drivers and current BIOS versions can be downloaded from: "http://ts.fujitsu.com/support/downloads.html"

Help if problems occur

Should you at any time have a problem with your computer that you can't solve yourself, in many cases you can quickly solve it by using the *SystemDiagnostics* program which is pre-installed on your computer.

The *SystemDiagnostics* program is already installed on devices which were delivered with a Windows operating system.

- ► To start the *SystemDiagnostics* program, click on *Startsymbol - Program - Fujitsu - SystemDiagnostics*.
- ► If a problem is found during a test run, the *SystemDiagnostics* program outputs a code (e.g. DIFS-Code YXXX123456789123).
- ► Make a note of the output DIFS code and the identity number of your device. The identity number can be found on the type rating plate on the back 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://ts.fujitsu.com/support/servicedesk.html"). When you do this, please have ready the identity number and serial number of your system and the DIFS code.

Restoring the hard disk contents under Windows

You can reinstall the operating system with the "Windows Recovery CD" and the "Drivers & Utilities" CD/DVD.

The instructions are provided on the case of the Recovery CD.

During the reinstall process your personal files and any installed programs will be deleted. We advise you to backup your files to an external hard drive, or CD / DVD disk before you start.

- ► Switch the notebook on.
- ↳ The following display briefly appears on the screen during start-up:
  <ESC>Diagnostic screen <F12>Boot Menu <F2>BIOS Setup
- ► When this message appears, press the function key F12.
- ► Insert the "Windows Recovery CD" into the optical drive.
- ► Select *CD-ROM* and press the Enter key.
- ► Follow the instructions on the screen.

  After the installation you must install all the drivers again. Some installed hardware components will not be correctly supported until this has been done.
- ► Insert the "Drivers & Utilities" CD/DVD into the optical drive. The CD starts automatically.
- ► Click on the *Desk Update* button.
- ► Select *Automatic driver installation (Express)* and click on *Start installation*.
- ► Follow the instructions on the screen.
- ► Restart your notebook when the driver installation is completed.

The notebook's date or time is incorrect

Cause	Troubleshooting
Time and date are incorrect.	► With the *BIOS-Setup-Utility*, you can set the date and time in the *main* menu.

If the date and time are repeatedly incorrect when you switch on the notebook, the built-in battery that supplies the internal clock has failed.

► Please contact your sales outlet or our Hotline/Service Desk.

When certain characters are entered on the keyboard, only numerals are written

Cause	Troubleshooting
The virtual numeric keypad of your device is activated, see "Virtual numeric keypad", Page 23	► Press the Num key.

The notebook's LCD screen remains blank

Cause	Troubleshooting
Monitor is switched off.	► Press a key or touch the touchpad.
External monitor or television set connected.	► Press the key combination to switch the screen output, see "Key combinations", Page 24.

The LCD screen is difficult to read

Cause	Troubleshooting
Reflected glare	► Turn the notebook or alter the tilt of the LCD screen. ► Increase the brightness of the screen.

The external monitor remains blank

Cause	Troubleshooting
Monitor is switched off.	► Switch the external monitor on.
Power saving has been activated (monitor is blank).	► Press any key to continue.
Brightness is set to dark.	► Adjust the brightness of the monitor.
Screen output is set to the notebook's LCD screen	► Press the key combination to switch the screen output, see "Key combinations", Page 24.
The external monitor's power cable or data cable is not connected properly.	► Switch off the external monitor and the notebook. ► Check whether the power cable is plugged properly into the external monitor and into the power socket. ► Check whether the data cable is properly connected to the notebook and the external monitor (if it is plugged in with a connector). ► Switch on the external monitor and the notebook.

The external monitor is blank or the image is unstable

Cause	Troubleshooting
The wrong external monitor has been selected or the wrong screen resolution has been set for the application program.	► Terminate the application program in Windows by pressing Alt + F4. If the fault persists after closing the program, use the key combination for switching the screen output (see "Key combinations", Page 24) to switch over to the notebook's LCD screen. Change the following setting: ► Set the screen resolution: Set the screen resolution as described in the documentation for your operating system. ► Select monitor: Select monitor 1 or 2 as described in the documentation for your operating system.

The notebook cannot be started

Cause	Troubleshooting
The battery is not installed correctly.	► Check whether the battery is installed correctly in its compartment. ► Switch the notebook on.
The battery is dead.	► Charge the battery. **or** ► Insert a charged battery. **or** ► Connect the mains adapter to the notebook.
The power adapter is not connected correctly.	► Check whether the mains adapter is connected correctly to the notebook. ► Switch the notebook on.

The notebook stops working

Cause	Troubleshooting
Notebook is in energy saving mode.	► Leave energy saving mode.
An application programme has caused the malfunction.	► Close the application program or restart the notebook (by restarting the operating system or switching the device off and back on again).
The battery is dead.	► Charge the battery. **or** ► Insert a charged battery. **or** ► Connect the mains adapter to the notebook.

The printer does not print

Cause	Troubleshooting
The printer is not switched on.	► Make sure that the printer is switched on and ready for operation (refer to the documentation supplied with the printer).
The printer is not connected correctly.	► Check that the data cable connecting the notebook to the printer is properly connected.
The printer driver is faulty or not correctly installed, or it is the wrong printer driver.	► Check that the data cable connecting the notebook to the printer is properly connected. ► Check whether the correct printer driver is loaded (refer to the printer documentation).

The radio connection to a network does not work

Cause	Troubleshooting
The wireless component is disabled.	► Switch the radio component on (see "Switching the wireless components on and off", Page 42).
The wireless component is enabled. Despite this, the wireless connection to a network does not work.	► Check whether the radio connection is switched on via the software. ► Further information on using the radio component can be found in the help files.

Acoustic warnings

Cause	Troubleshooting
A beep sounds every few seconds The battery is almost flat.	► Charge the battery.

Error messages on the screen

This section describes the error messages generated by the BIOS Setup. Error messages displayed by the operating system or programmes are described in the relevant documentation.

If the error message appears repeatedly, despite troubleshooting measures, please contact the place of purchase or our customer service centre.

Error message/cause	Resolution
CMOS battery bad If the error message occurs repeatedly, the buffer battery in the notebook is flat.	► Contact your sales outlet or our customer service centre.
System CMOS checksum bad - default configuration used The system configuration information is incorrect.	► Switch the notebook off. ► Switch the notebook on. ► Press the function key F2 to access the *BIOS Setup*. ► In the *BIO Setup*, select the *Exit* menu. ► Select the entry *Load Setup Defaults*. ► Select *OK* and press the Enter key.
Extended memory failed at offset: xxxx Failing Bits: zzzz zzzz When testing the extended memory an error has resulted at the address xxxx.	► Check whether the additional memory module has been inserted correctly.
Failure Fixed Disk n The settings of the hard disk drive are incorrect.	► Start the *BIOS Setup* (*Primary Master* submenu) and select the correct settings.
Keyboard controller error	► Switch the notebook off with the ON/OFF switch. ► Wait 3 - 5 seconds and switch on the notebook again.
Keyboard error	If you are using an external keyboard: ► Check the connection and reboot the notebook.
nn Stuck key	► Make sure that no key is pressed.
Operating system not found	► Check in the *BIOS Setup* whether your hard disk has been set correctly. ► Make sure that the operating system is installed on the corresponding drive.
Press <F1> to resume, <F2> to SETUP This error message appears if an error occurs during the self-test before starting the operating system.	► Press the F1 function key to start the operating system. ► Press the function key F2 to access the *BIOS Setup*.

Error message/cause	Resolution
Previous boot incomplete - Default configuration used Due to an error during the previous system boot, default values were used for certain settings. Check the settings in the BIOS Setup.	► Press the F1 function key when prompted to do so.
Real time clock error	► Contact your sales outlet or our customer service centre.
nnnnK Shadow RAM failed at offset: xxxx Failing Bits: zzzz	► Contact your sales outlet or our customer service centre.
System battery is dead - Replace and run SETUP	► Contact your sales outlet or our customer service centre.
System cache error - Cache disabled	► Contact your sales outlet or our customer service centre.
System timer error	► Contact your sales outlet or our customer service centre.

Technical data

LIFEBOOK

Ambient conditions	
Operating temperature	5 °C – 35 °C
Dimensions	
Width x depth x height	282 mm x 215 mm x 29.9 mm
Weight	Approx. 1.3 kg
Main memory	
Slots	2 slots 204pin DDR3-800 SO-DIMM with a total of max. 4 Gbyte RAM
Approved memory modules	1 Gbyte or 2 Gbyte DDR3-800 SO-DIMM

The data sheet for the device provides further technical data. You will find the data sheet on your device or on the Internet at "http://ts.fujitsu.com/support".

Rechargeable battery

You can find information on the batteries used in your device on the Internet at "http://ts.fujitsu.com/support".

	6-cell rechargeable battery 1	**6-cell rechargeable battery 2**
Rated voltage	10.8 V	10.8 V
Rated capacity	5800 mAh	5200 mAh

Mains adapter

Electrical data	
Primary	60 W
Rated voltage	100 V – 240 V (automatic)
Rated frequency	50 Hz – 60 Hz (automatic)
Secondary	
Rated voltage	19 V
Max. rated current	3.16 A

An additional mains adapter or power cable can be ordered at any time.

Manufacturer’s notes

Disposal and recycling

Information about this subject can be found on your notebook or on our Internet pages.

Declarations of Conformity

The "Declarations of Conformity" concerning the device can be found at our Internet address: "http://ts.fujitsu.com".

Fujitsu Technology Solutions hereby declares that your device is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

CE marking

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	The 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.

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