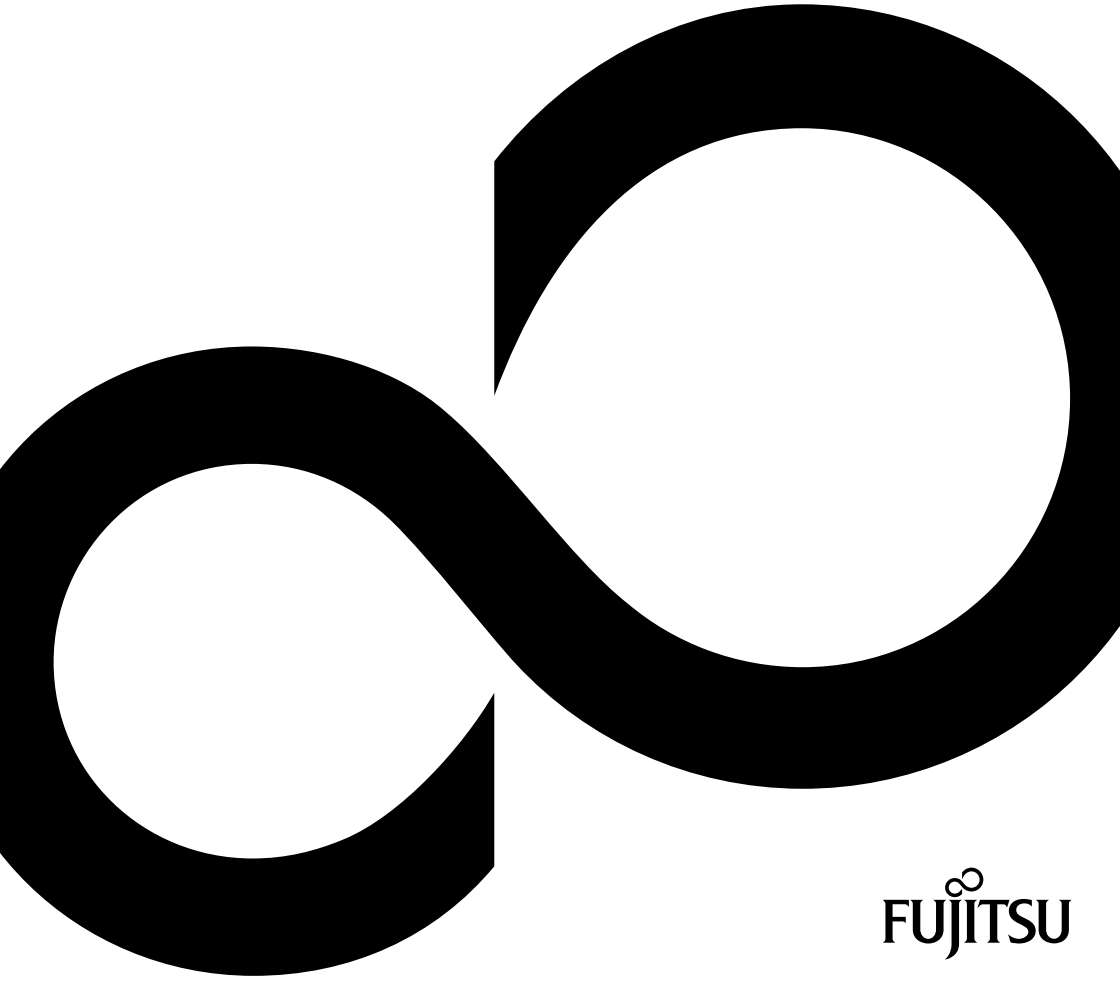
FUJITSU LIFEBOOK E548
FUJITSU LIFEBOOK E558



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"http://solutions.us.fujitsu.com/contact"

Have a question? Email us at: "AskFujitsu@us.fujitsu.com"

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FUJITSU LIFEBOOK E548
FUJITSU LIFEBOOK E558

Operating Manual

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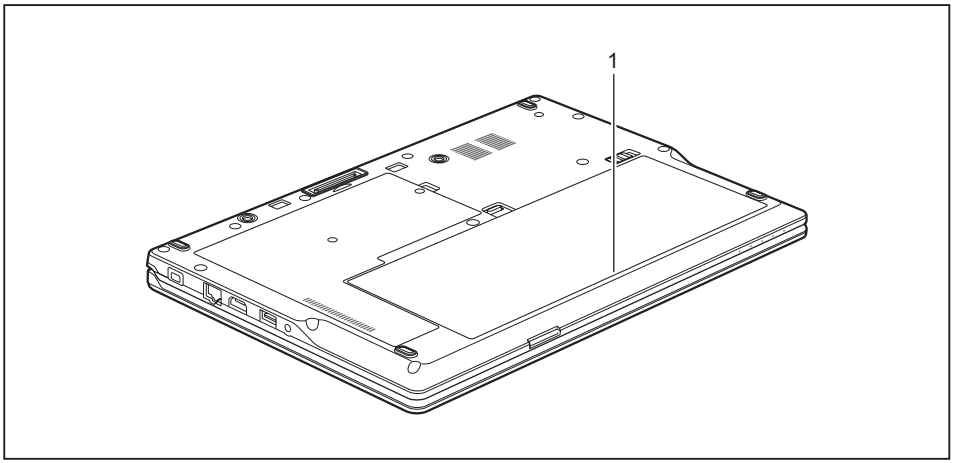
Declarations of conformity

DECLARATION OF CONFORMITY
according to FCC Part 15

Responsible Party Name:	Fujitsu America, Inc.
Address:	1250 E. Arques Avenue Sunnyvale, CA 94085
Telephone:	(408) 746-6000
Declares that product:	Base Model Configuration: LIFEBOOK E548, LIFEBOOK E558 Complies with Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC rules. Operations are subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.

Model ref. of certification: ME14A for E548, ME15A for E558.



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Fujitsu Contact Information

Service and Support

You can contact Fujitsu Service and Support in the following ways:

- Toll free phone: 1-800-8Fujitsu (1-800-838-5487)
- Website: "http://solutions.us.fujitsu.com/www/content/support/contact/index.php"

Before you place the call, have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- Product name
- Product configuration number
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Type of device connected, if any

Fujitsu Shopping Online

Please go to "http://www.shopfujitsu.com/store/ ".

Maintaining Latest Configuration

To ensure that you always have the most current driver updates related to your system, you should occasionally access the Fujitsu Software Download Manager (FSDM) utility. The FSDM utility is available from the Fujitsu Support site. FSDM will allow you to view a list of the most current drivers, utilities and applications to determine whether you have the latest versions. If you have a Windows 10 operating system, you will need to go to the Support Site to download the FSDM Utility: "http://support.fujitsupc.com/CS/Portal/support.do?srch=DOWNLOADS".

Limited Warranty

Your LIFEBOOK notebook is backed by a Fujitsu International Limited Warranty. Check the Limited Warranty Terms and Conditions Booklet that came with your notebook.

Notational conventions

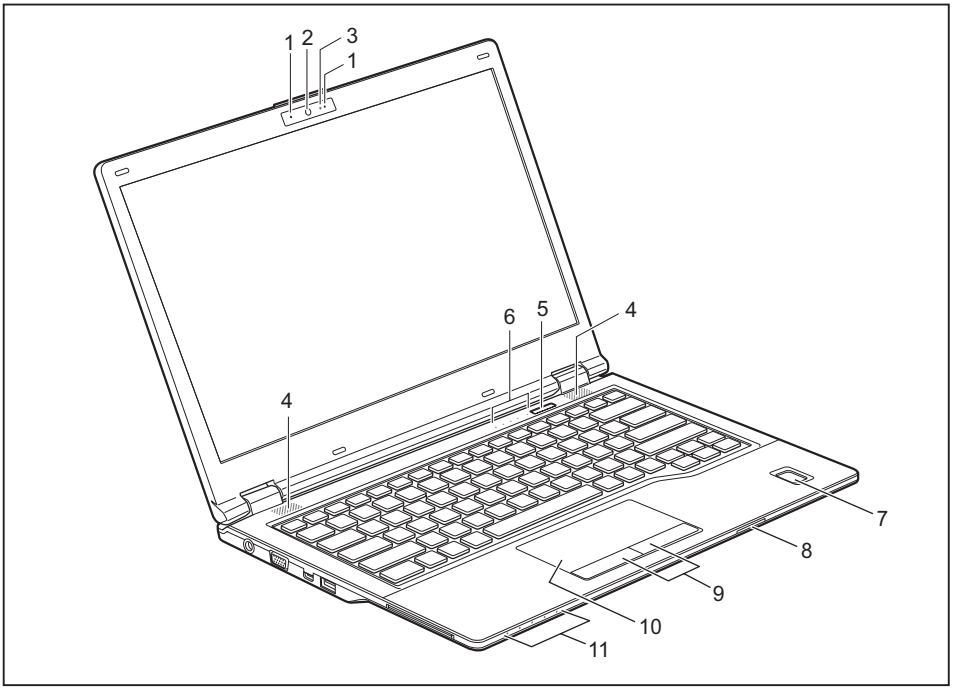
	Pay particular attention to text marked with this symbol. Failure to observe this warning will endanger your life, will damage the device or lead to loss of data. The warranty will be invalidated if the device becomes defective through failure to observe these warnings.
	Indicates important information which is required to use the device properly.
►	indicates an activity that must be performed
↳	indicates a result
`This style`	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 style`	indicates information that is displayed on the screen by a program, e.g.: `Installation is complete.`
This style	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 style"	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://solutions.us.fujitsu.com/" • names of CDs, DVDs and titles or designations of other materials, e.g.: "CD/DVD Drivers & Utilities"
Key	indicates a key on the keyboard, e.g: F10
This style	indicates terms and text that are emphasized 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 on the device. Please familiarize yourself with these items before you start to work with the device.

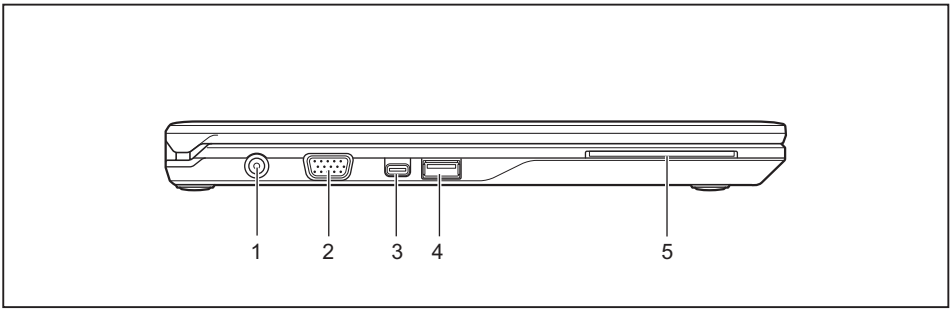
FUJITSU LIFEBOOK E548

Front



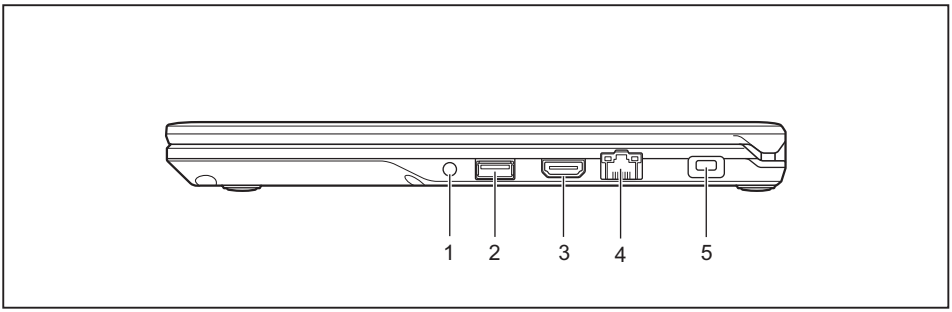
1 = Microphone (optional)
2 = Webcam (optional)
3 = Webcam LED indicator (optional)
4 = Speaker
5 = ON/OFF button
6 = Status indicators
7 = Fingerprint sensor (optional)
8 = Memory card slot
9 = Touchpad buttons
10 = Touchpad
11 = Status indicators

Left side



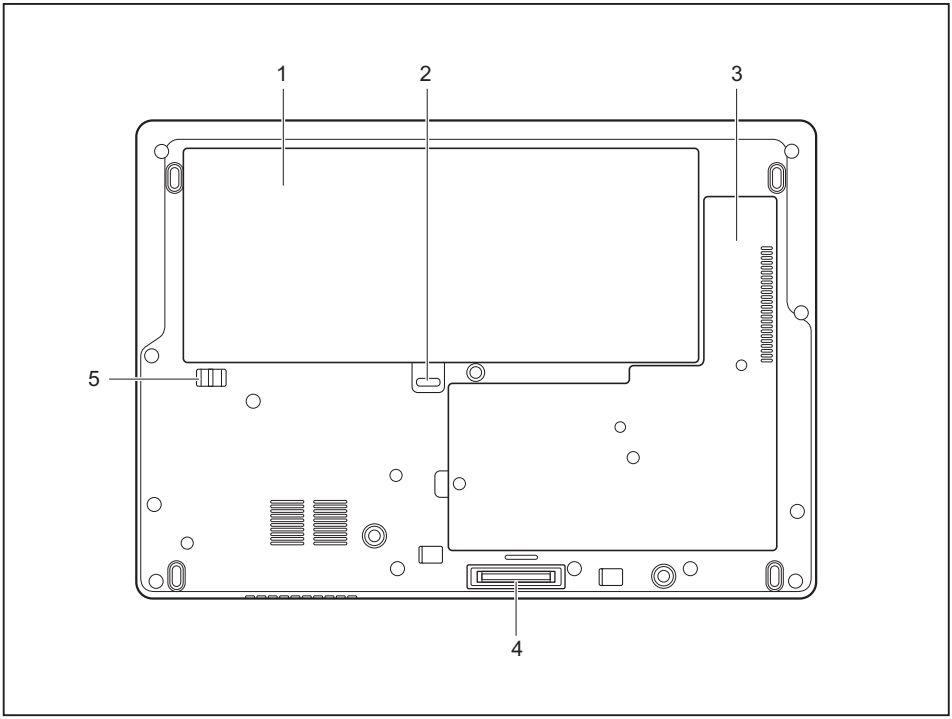
1 = DC input connector (DC IN)
2 = External monitor port (VGA)
3 = USB 3.1 Gen 1 port with charging function (USB Type-C®)
4 = USB 3.0 port with charging function (USB Type-A, Anytime USB charge)
5 = Smart Card reader (optional)

Right side



1 = Headset port
2 = USB 3.0 port (USB Type-A)
3 = HDMI port
4 = LAN port
5 = Security Lock device

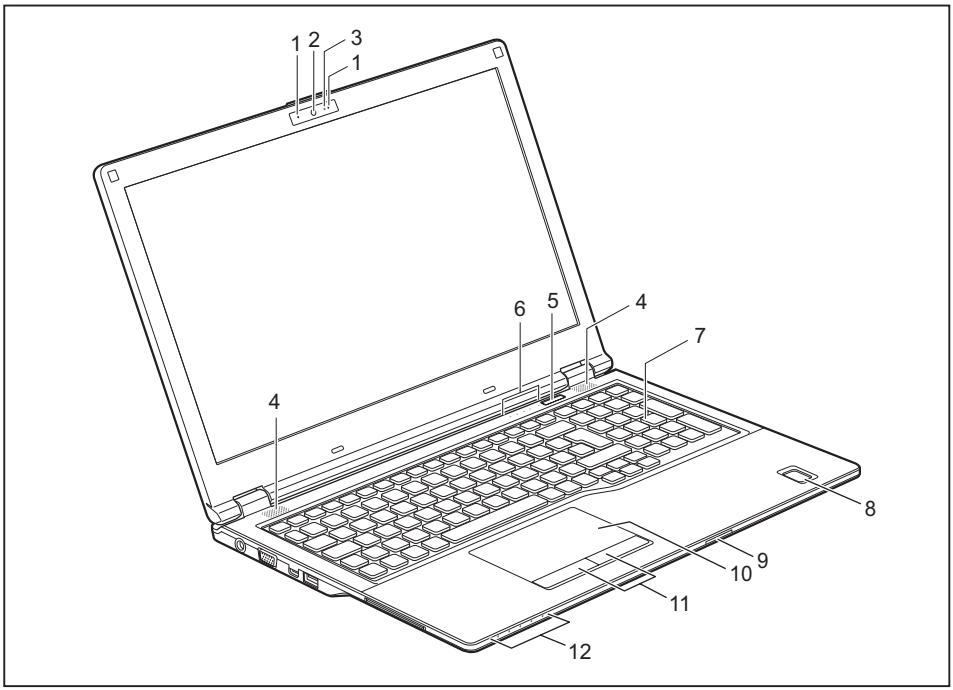
Bottom



1 = Rechargeable battery
2 = Battery lock slider switch 1
3 = Upgrade compartment for memory and storage modules
4 = Port replicator port
5 = Battery lock slider switch 2

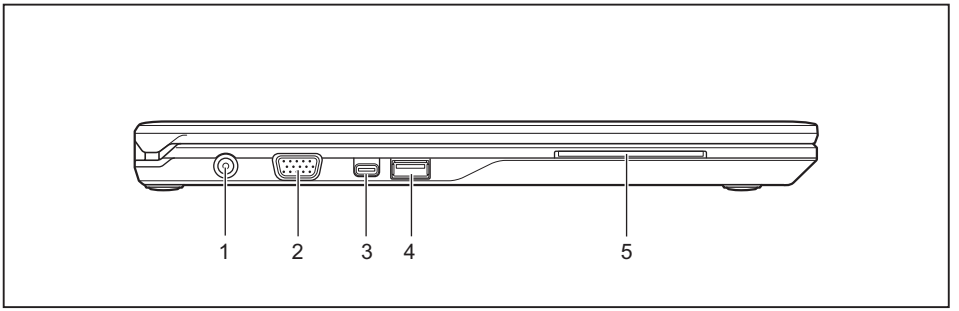
FUJITSU LIFEBOOK E558

Front



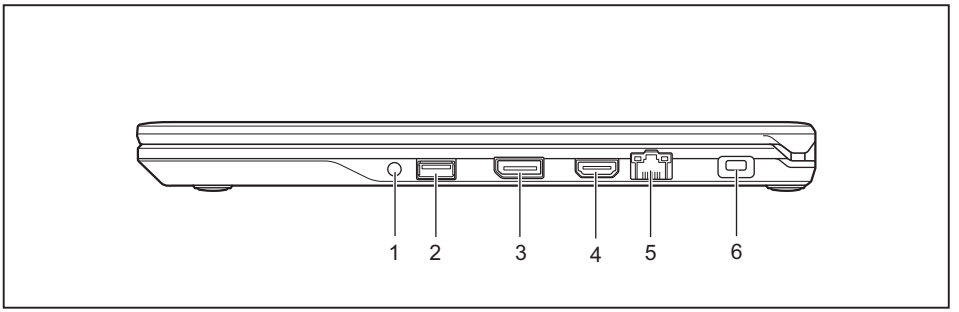
1 = Microphone (optional)
2 = Webcam (optional)
3 = Webcam LED indicator (optional)
4 = Speaker
5 = ON/OFF button
6 = Status indicators
7 = Separate number keypad
8 = Fingerprint sensor (optional)
9 = Memory card slot
10 = Touchpad
11 = Touchpad buttons
12 = Status indicators

Left side



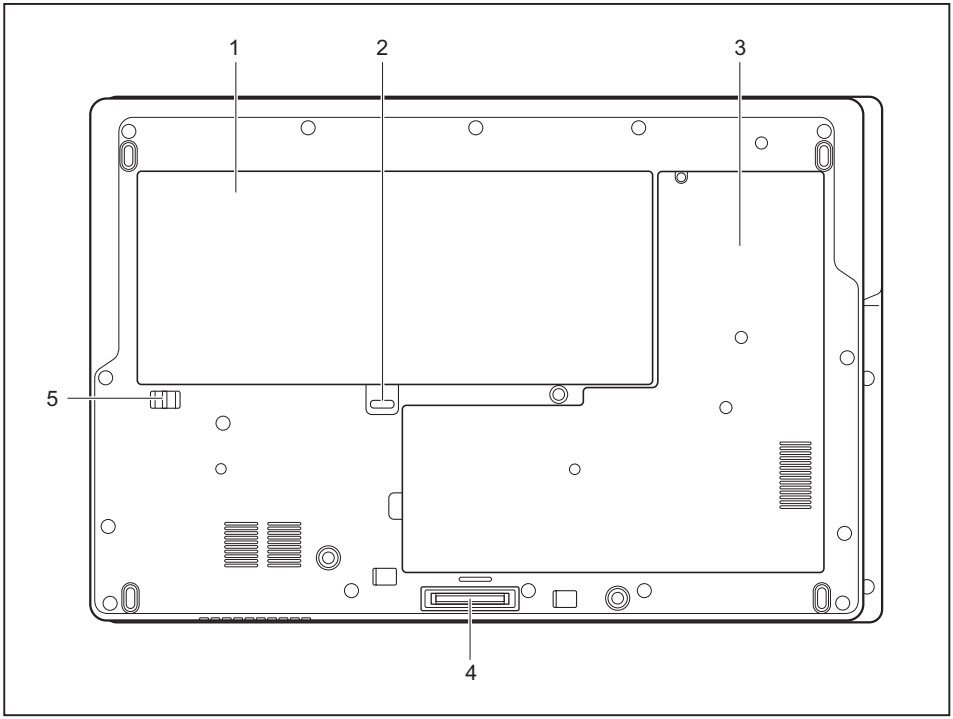
1 = DC input connector (DC IN)
2 = External monitor port (VGA)
3 = USB 3.1 Gen 1 port with charging function (USB Type-C®)
4 = USB 3.0 port with charging function (USB Type-A, Anytime USB charge)
5 = Smart Card reader (optional)

Right side



1 = Headset port
2 = USB 3.0 port (USB Type-A)
3 = Display Port
4 = HDMI port
5 = LAN port
6 = Security Lock device

Bottom



1 = Rechargeable battery
2 = Battery lock slider switch 1
3 = Upgrade compartment for memory and storage modules
4 = Port replicator port
5 = Battery lock slider switch 2

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 instructions

Please observe the following safety information.

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 81 chapter and the "First-time setup of your device", Page 20 chapter 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 19.

Please refer to the notes in the chapter "Removing and installing components during servicing", Page 62.

When handling this device, you will come into contact with lead, a chemical which in California is held to be a possible cause of birth defects and other damage to fertility.

Wash your hands after using the device.

Do not place the device on uneven or unstable surfaces.

Do not place any objects on the device.

Do not apply any pressure to the device.

Do not use the corners of the display to move it.

Turn the display carefully. In doing so, do not use excessive force.

Lift and carry the device by holding it at the bottom and not just at the display.

Prevent harsh impacts, vibrations and shaking of the device and the display.

On devices with touchscreen: Use very little pressure to carefully tap and write on the display.

Keep the ventilation slots free.

Switch off the device before you put it inside a bag or backpack.

In emergencies (e.g. damage to the device or power cable, entry of liquids or foreign objects), immediately switch off the device and disconnect the AC plug. Short circuit, smoke and/or fire may occur as a result. Please contact your sales outlet or our Hotline/Service Desk.

This notebook complies with the relevant safety regulations for data processing equipment. If you have any questions about setting up your notebook in the intended environment, 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) 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. gas station, paintshops), as the transmitted radio waves can cause an explosion or a fire.

For further information on how to switch the radio components on and off, refer to chapter "Switching the wireless components on and off", Page 44.

Energy saving

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

The energy efficiency is increased and environmental pollution is reduced. You save money and help protect the environment.

Energy saving under Windows

► Make use of the available energy saving functions as described in chapter "Using the energy saving functions", Page 42.

Traveling with your notebook

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

Before you travel

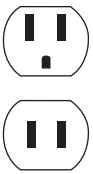
- ► Back up important data stored on your hard disk.
- ► Switch off the radio component for data security reasons. With data traffic via a wireless connection, it is also possible for unauthorized third parties to receive data.

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

- ► If you wish to use your notebook during a flight, check with the flight attendants if its use is safe.

When traveling in other countries

- ► If you are traveling abroad, check that the AC adapter can be operated with the local AC voltage. If this is not the case, obtain the appropriate AC adapter for your notebook. Do not use any other converter!
- ► Check whether the local AC voltage and the AC cable are compatible. If this is not the case, buy an AC cable that suits the local conditions.
- ► Enquire with the corresponding government office of the country you will be traveling to, whether you may use your notebook with its integrated radio component there.
- ► Take the necessary travel adapters with you when traveling abroad. Check the following table to see which travel adapters you will need, or ask your travel organizer.

Power connection	Travel destination
	United States, Canada, Mexico, parts of Latin America, Japan, Korea, Philippines, Taiwan
	Russia and the Commonwealth of Independent States (CIS), much of Europe, parts of Latin America, the Middle East, parts of Africa, Hong Kong, India, much of south-east Asia
	United Kingdom, Ireland, Malaya, Singapore, parts of Africa
	China, Australia, New Zealand

Transporting the notebook

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

- ► Switch the notebook off.
- ► Unplug the AC plug of the AC adapter and all external devices from the power outlets.
- ► Disconnect the AC 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 is very sensitive to scratches. Only clean the display surface with a very soft, slightly damp cloth.

- ► Switch the notebook off.
- ► To prevent the device being switched on unintentionally, remove the AC plug of the AC adapter from the power outlet and remove the battery (see chapter "Removing and installing the battery", Page 40).

↳ The casing surfaces may be cleaned with a dry cloth.
If particularly dirty, use a damp cloth which has been dipped in water containing some mild domestic detergent and then well wrung out.

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

Ensure that no moisture reaches the inside of the device!

First-time setup of your device

Please read the chapter "Important notes", Page 16.

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

Before switching it on for the first time, connect the device to the AC voltage using the AC adapter, see "Connecting the AC adapter", Page 21. The AC adapter must remain connected during the whole of the 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.

When the device is delivered, the battery is located in the battery compartment. 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

If you find that damage has occurred during transport, please 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 to reuse the packaging in the future, for example if you need to ship your device.

Choose a location

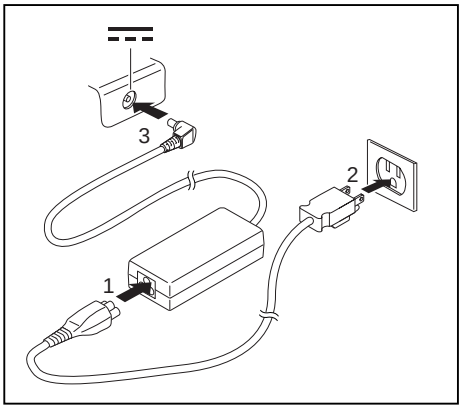
Choose a suitable location for the device before setting it up. In doing so, please follow these instructions:

- Never place the device or the AC 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 can 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 / 3.94 inches away from the device and its AC adapter to ensure adequate ventilation.
- Never cover the ventilation openings of the device.
- Do not expose the device to extreme environmental conditions. Protect the device against dust, humidity and heat.

Connecting the AC adapter

Observe the safety notes in section "Important notes", Page 16.

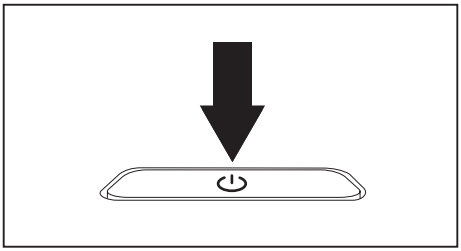
The supplied AC cable conforms to the requirements of the country in which you purchased your device. Make sure that the AC cable is approved for use in the country in which you intend to use it.



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

Switching on the device for the first time

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



► Switch your device on.

► During the installation process, follow the on-screen instructions.

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

Installing Bonus Apps

Certain applications need to be activated before using your device.

The *Fujitsu Bonus Apps* utility can be accessed via the *Start* menu.

► In the *Start* menu, click on *Fujitsu Extras*.
► Double-click on the *Application* folder.
► Double-click on the shortcut *Fujitsu BonusApps*.
► In the dialog box *User Account Control* by clicking *Yes* confirm you wish to enter *Fujitsu Bonus Apps*.
► Select the applications you wish to install by selecting the checkbox adjacent to your selection.

or

► Click *Select All* if you would like to install all available applications.

↳ Applications that are already installed appear in grey, those that are available for installation appear in blue.

► To confirm your selection, click *Install*.

Note that in some cases (depending upon which application was selected for installation) after installation completes, the system will prompt you to reboot.

There are also cases in which if multiple applications are selected to install but one of them needs a reboot, the system will reboot and continue installing the rest of the selected applications.

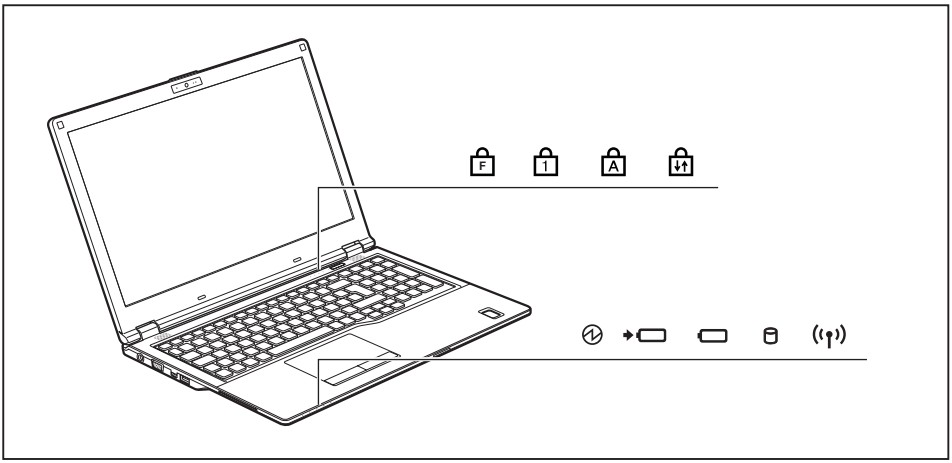
Working with the notebook

This chapter describes the basics for operating your notebook. Please refer to "Connecting external devices", Page 56 for instructions on how to connect external devices such as a mouse and a printer to the notebook.

Please refer to the notes in the chapter "Important notes", Page 16.

Status indicators

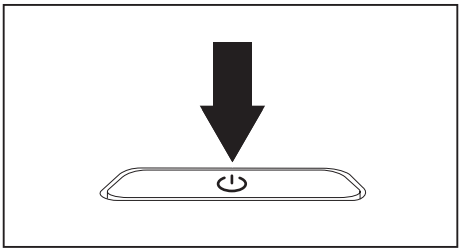
The status indicators provide information about the status of the power supply, the hard disks and the keyboard functions.



Display	Description
	Power-on indicator/Standby • The indicator is illuminated: The notebook is switched on. • The indicator flashes: The notebook is in standby mode. • Indicator is off: The notebook is switched off.
	Battery charging indicator/AC connection The battery charging level is shown by the rechargeable battery indicator. • The indicator lights up white: The rechargeable battery is charged or no rechargeable battery is inserted. • The indicator light is orange: The AC adapter is connected and the battery is being charged. • The indicator is flashing orange: The AC adapter is connected but the battery cannot be charged as the battery is too hot or too cold for charging. The charging process is continued as soon as the rechargeable battery has reached a permissible temperature again. • The indicator is flashing red: A fault has occurred. • The indicator is not lit up: The AC adapter is not connected.
	Battery indicator • The indicator lights up white: The rechargeable battery is charged to between 51% and 100% of its maximum capacity. • The indicator light is orange: The rechargeable battery is charged to between 13% and 50% of its maximum capacity. • The indicator lights up red: The rechargeable battery is charged to between 0% and 12% of its maximum capacity. • The indicator is flashing red: A fault has occurred.
	Drive indicator The indicator is illuminated: The hard disk drive is being accessed.
	Wireless indicator • The indicator is illuminated: The wireless components are switched on. • Indicator is off: The wireless components are switched off.
	F Lock indicator The indicator is illuminated: The key combination Fn + has been pressed. Instead of the special functions printed on the function keys, the Fn functions can be executed by pressing the keys directly (see chapter "Hot Keys", Page 30).
	Num Lock indicator The indicator is illuminated: The Num Lock key has been pressed. The virtual number keys have been switched on. You can output the characters indicated on the upper right of the keys.

Display	Description
	Caps Lock indicator The 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 The indicator is illuminated: The key combination Fn + Rol has been pressed. The effect that this key has varies between applications.

Switching the notebook on



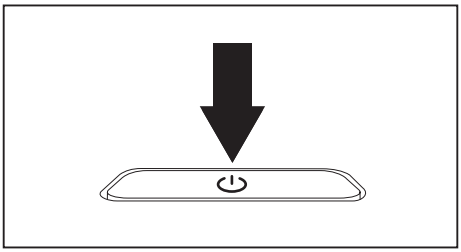
► Open the LCD screen.

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

↳ The power-on indicator of the notebook is lit.

Switching the notebook 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 correctly.

► If the notebook is not switched off automatically, press the ON/OFF button 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.

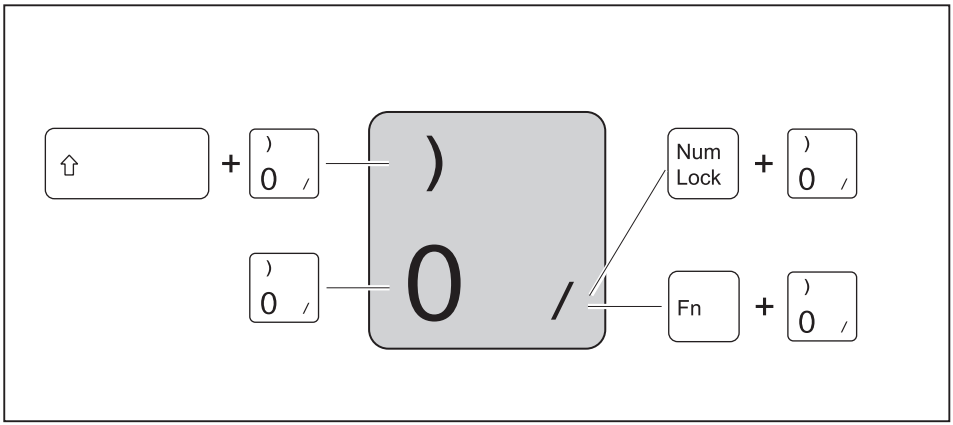
The keyboard has been designed to provide all the functions of an enhanced keyboard. Some enhanced keyboard functions are mapped with key combinations.

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

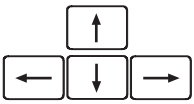
The following illustration shows how to access the different characters on keys with overlaid functions. The example applies when the Caps Lock key has not been activated.

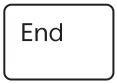
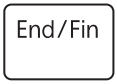
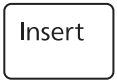
The illustration may differ from your device variant.

Depending on the region, your notebook comes with a monolingual keyboard layout (USA) or a bilingual keyboard layout (Canada).



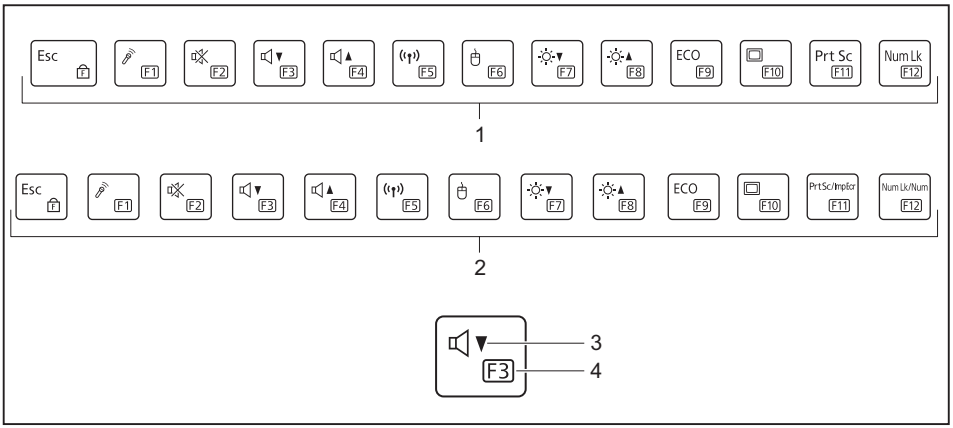
Key	Description
← Backspace	**Backspace** The Backspace key deletes the character to the left of the cursor.
Tab	**Tab key** The Tab moves the cursor to the next tab stop.
↵ Enter	**Enter key (return)** The Enter key terminates a command line. The command you have entered is executed when you press this key.

Key	Description
Bilingual keyboard:	**Caps Lock** The Caps Lock key activates uppercase mode. The corresponding icon appears in the Windows notification 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 causes uppercase characters to appear. In the case of overlay keys, the character printed on the upper left of the key will appear when that key is pressed.
	Fn key The Fn key enables the special functions indicated on overlay keys.
	Windows key The Windows-Taste switches between the start screen and the last used application.
	Alt key When pressing the Alt key, special functions are activated when it is pressed in combination with other keys.
Bilingual keyboard:	**Menu key** The Menu key opens the menu for the active application.
	Ctrl key When pressing the Ctrl key, special functions are activated when it is pressed in combination with other keys.
	**Cursor keys** The cursor keys move the cursor in the direction of the arrow, i.e. up, down, left, or right.
Bilingual keyboard:	**Pos 1** The Home / Home/Debut key moves the cursor to the beginning of the line, document page, cell, or screen, depending on where it is displayed.

Key	Description
 Bilingual keyboard: 	**End key** The End / End/Fin key moves the cursor to the end of the line, document page, cell, or screen, depending on where it is displayed.
 Bilingual keyboard: 	**Insert key** With the Insert / Insert/Insér key, you change between two input modes: 1. Typeover mode: when typing, you overwrite the character at the current cursor position. 2. Insert mode: when typing, another character is inserted at the current cursor position. All characters to the right of the cursor are moved one position further.
 Bilingual keyboard: 	**Delete key** With the Delete / Delete/Suppr key, the character to the right of the cursor is deleted.

Hot Keys and function keys

The upper key row on the keyboard is labeled with Hot Key and function key icons:



1 = Upper key row (monolingual keyboard)
2 = Upper key row (bilingual keyboard)
3 = Hot Key
4 = Function key

Hot Keys

The symbols on the top of the keys represent Hot Keys.

The Hot Keys are used to turn on/off and control notebook functions (such as speakers, microphone, volume, and brightness). Hot Keys are comfort functions.

The Hot Keys can be activated as the primary key function when Windows starts (see Chapter "F-Lock setting", Page 32).

Hot Key	Description
	Switching the microphone on/off This Hot Key switches the microphone off or on.
	Switch the speakers on and off This Hot Key switches your notebook's speakers off and on.
	Decrease the volume This Hot Key reduces the volume of the internal speakers.
	Increase volume This Hot Key increases the volume of the internal speakers.
	Switch the wireless components on / off This Hot Key switches the wireless components off or on.
	Switch the touchpad and touchpad buttons on/off This Hot Key combination switches the touchpad and the touchpad keys on or off.

Hot Key	Description
	Decrease the brightness of the screen This Hot Key reduces screen brightness.
	Increase screen brightness This Hot Key increases screen brightness.
ECO	**Energy saving functions** Use this Hot Key to activate the energy saving functions (see chapter "Using the energy saving functions", Page 42).
	Switch between display outputs Use this Hot Key to select which screen(s) is/are used for display if an external monitor is connected. Screen output is possible: • only on the LCD screen of the notebook • 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.
Prt Sc Bilingual keyboard: PrtSc/ImpEcr	**Create screenshot** With this Hot Key, a screenshot of the current screen image is created and stored in the clipboard.
Num Lk Bilingual keyboard: Num Lk/Num	**Switch virtual number keys on/off** This Hot Key switches the virtual number pad off or on. The characters marked at the top right of the keys are displayed.

Function keys

The symbols below the keys represent function keys.

They are numbered from F1 to F12.

The function keys are used to activate functions of the operating system or applications directly.

Regardless of the F-Lock setting, the function keys are the primary key function:

- until Windows is loaded (after a system reboot).
  The F-Lock setting, which was last active before the system reboots, then reappears (see chapter "F-Lock setting", Page 32).
- with BIOS access during the POST phase: When during boot-up Fn + F2 or Fn + F12 are pressed, the BIOS menu is not called up. Here the F2 or F12 key must be pressed without an additional key.

F-Lock setting

With the F Lock key you can set either the hotkeys or the function keys as the primary function for the upper key row.

F Lock is disabled by default in the delivery state.

► By pressing Fn + Esc F-Lock is switched on and off.

↳ When F-Lock is switched on, it is activated like the Caps Lock key.

When changing the F-Lock setting, the primary and secondary key functions change as follows:

Status	Hot Key	Function key
F-Lock is switched off (F-Lock symbol not illuminated)	The Hot Keys become the primary function: ► They are used by simply pressing the Hot Key.	The function keys become the secondary function: ► They are used by pressing Fn + Function key.
F-Lock is switched on (F-Lock symbol illuminated)	The Hot Keys become the secondary function: ► They are used by pressing Fn + Hot Key.	The function keys become the primary function: ► They can used by simply pressing the Function Key.

Key combinations

The key combinations described below apply when using Microsoft Windows operating systems. Some of the following key combinations do 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 key combination and keep it pressed.

► While holding the first key down, press the other key or keys in the combination.

Combination	Description
Fn + Esc F	**Switching F-Lock on/off** This key combination is used to switch the F-Lock function on and off (see chapter "F-Lock setting", Page 32).
Alt + Tab Bilingual keyboard: Alt Alt Car + Tab	**Switch between open applications** This key combination is used to switch between open applications.

Combination	Description
Ctrl + Alt + Delete Bilingual keyboard: Ctrl + Alt Alt Car + Delete/Suppr	**Open Windows Security or Task Manager** This key combination opens the Windows "Security" window or Task Manager.
⇧ Shift + ⇤	**Back tab** This key combination moves the cursor back to the previous tab stop.
Fn + Scr Lk Bilingual keyboard: Fn + Scr Lk/Arr Déf	**Switch the scroll lock on / off** This key combination activates special functions, which differ from application to application.
Fn + ⌨	**Control keyboard backlight** This key combination switches between the keyboard backlight settings (low, high, and off - configuration-dependent).

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

In addition, the following unlabeled key combinations are supported:

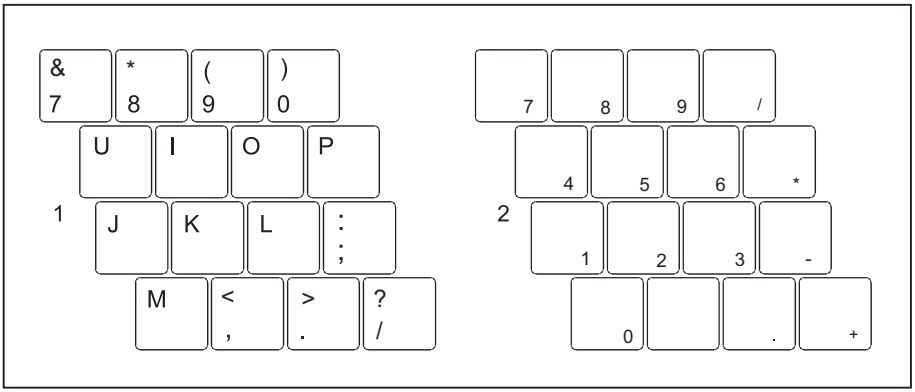
- Fn + S = Pause
- Fn + B = Break
- Fn + R = SysRq

Virtual number keys

LIFEBOOK E548 has virtual number keys, LIFEBOOK E558 has a separate number keypad.

To allow you to use the keys on a numeric keypad for certain applications, there is a virtual numeric keypad. On the keyboard, you can recognize the keys of the virtual numeric keypad on the numbers and symbols on the lower right of the corresponding keys. When you have activated the virtual numeric keypad, you can output the characters that are on the lower right of the keys.

The key assignment shown below may be different from the keyboard layout of your device variant.



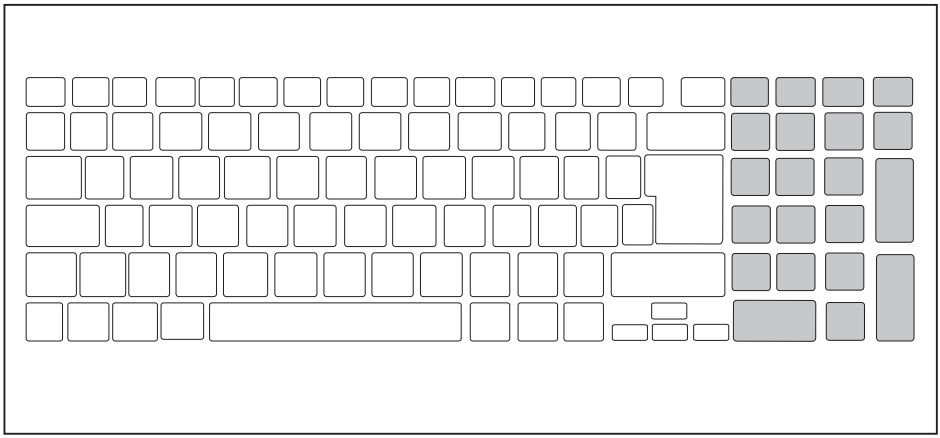
1 = Valid characters when the Num Lk key (bilingual keyboard): Num Lk/Num is not activated

2 = Valid characters when the Num Lk key (bilingual keyboard): Num Lk/Num is activated

Further information about the status indicators can be found in chapter "Status indicators", Page 23.

Separate number keypad

LIFEBOOK E548 has virtual number keys, LIFEBOOK E558 has a separate number keypad.



Country and keyboard settings

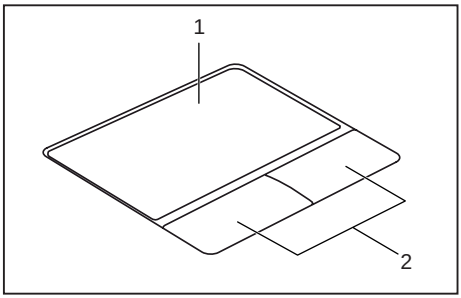
► Make the country and keyboard settings as described in the documentation for your operating system.

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 = Touchpad buttons

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

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

You can also deactivate the touchpad via the keyboard, so that you cannot move the pointer on the monitor unintentionally (see chapter "Hot Keys", Page 30).

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 LCD screens (TFT) are installed in Fujitsu notebooks. For technical reasons, these screens are manufactured for a specific resolution. An optimal, clear picture can only be ensured in the resolution intended for the particular monitor. A resolution which differs from the specification can result in an unclear picture.

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

Current production technology cannot guarantee an absolutely fault-free screen display. A few isolated constantly lit or unlit pixels may be present.

Background lighting

LCD screens 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.

Synchronizing the display on the LCD screen and an external monitor

For more information, please refer to Chapter "Hot Keys", Page 30 under "Switching between display outputs".

Do not lift or hold the device by the LCD screen. This can damage LCD screen due to overstressing. Always lift/carry device by holding the keyboard base with both hands.

Webcam

Depending on the configuration, your device may include a webcam with integral microphone.

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

The webcam has its own status indicator. The indicator lights up when the webcam is active.

- 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 base must not wobble.
- The webcam automatically adjusts itself to the current light level. For this reason the LCD display may flicker while the light level is adjusted.

Further information on use of the webcam and additional settings for your webcam can be found in the help function of the program using the webcam.

Rechargeable battery

During use as a portable, the notebook runs on its built-in battery. You can increase the service life of the battery by caring for the battery properly. The average battery service life is around 500 charge/discharge cycles.

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

Charging, caring for and maintaining the battery

The notebook battery can only be charged if the ambient temperature is between 5°C / 41°F and a maximum of 35°C / 95°F.

You can charge the battery by connecting the notebook to the AC adapter (see "Connecting the AC adapter", Page 21).

Be aware that the battery will not charge when the battery charge level is between 90% and 100%. If the battery charge level is less than 90% and the AC adapter is connected, the battery charges up to 100%.

If the battery is running low, an alert is triggered. If you do not connect the AC adapter within five minutes after the alert tone, your notebook will automatically switch off.

Monitoring the battery state of charge

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

Battery storage

The battery should be stored in a dry environment at a temperature between 0°C / 32°F and 30°C / 86°F. The lower the storage temperature, the lower the rate of self-discharge.

If you will be storing a battery for a longer period (more 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 optimum capacity of the battery, you should allow the battery to fully discharge and then recharge it.

If you do not intend to use a battery for long periods of time, remove it from the notebook. Never store batteries in the unit!

Removing and installing the battery

Only use batteries approved by Fujitsu for your notebook.

Never use force when fitting or removing a battery.

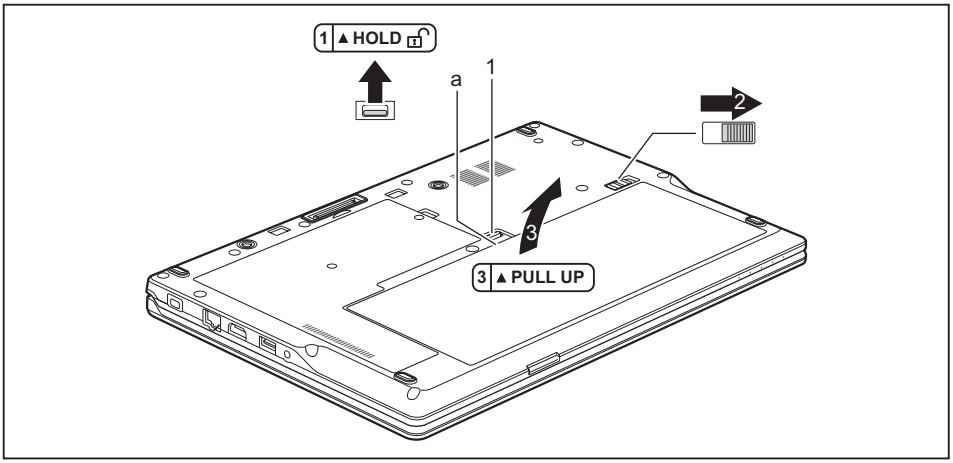
Make sure that no foreign bodies get into the battery connections.

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

The LIFEBOOK E558 is illustrated below. The procedure is the same for both device variants.

Removing a battery

► Prepare for removal, see chapter "Preparing to remove components", Page 63.

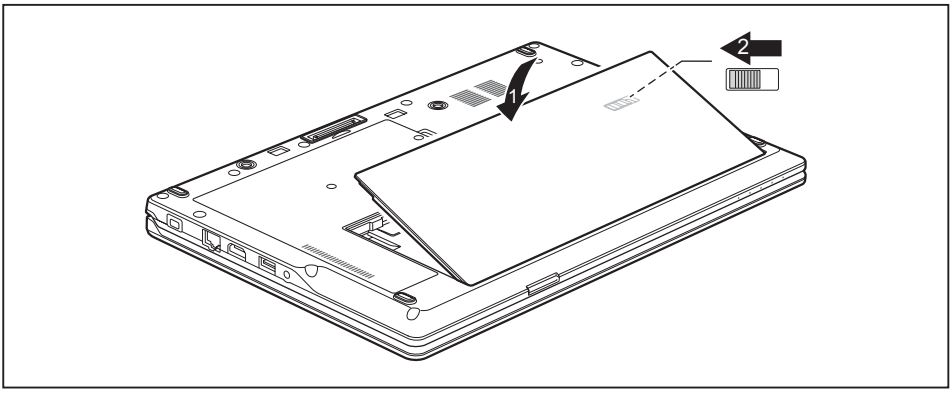


► Slide the release (button) (1) in the direction of the arrow and hold it in place.

► Slide the release (button) (2) in the direction of the arrow.

► Reach into the opening (b) and pull the battery out of the battery compartment in the direction of the arrow (3).

Installing a battery



► Position the battery at the edge.
► Insert the battery into the battery compartment until it engages positively (1)
► Slide the release (button) (2) in the direction of the arrow.
► Complete the removal, see chapter "Finishing component removal", Page 70.

Using the energy saving functions

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

The energy efficiency is increased and environmental pollution is 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.

► Set the energy saving functions in your Control Panel.

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 energy saving mode, the following must be remembered:

During energy saving mode, open data is held in main memory or in a swap file on the hard disk.

Never switch the notebook off while it is in an energy saving mode. If the built-in battery is nearly flat, close all open files and do not go into energy saving mode.

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

► Exit energy saving mode if necessary by moving the mouse, making an entry at the keyboard or by switching on the notebook.

► Close all opened programs and completely shut down the notebook.

Adjusting fan control

You can adjust the fan control in the BIOS Setup Utility. The following settings are available:

- Normal: The system is cooled to ensure that the maximum system performance is always available.
- Silent: The fan rotation speed, and therefore the noise created by the fan, is reduced.

► Call up the *BIOS Setup Utility*.

► In the menu *Advanced - Miscellaneous Configurations* select the *Fan Control* function.

► Choose the setting *Normal* or *Silent*.

Instructions for how to call up and operate the *BIOS-Setup-Utility* can be found in chapter "Settings in BIOS Setup Utility", Page 71.

Memory cards

Your notebook is equipped with an integrated memory card reader.

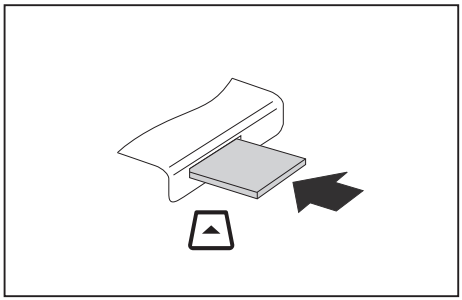
Follow the manufacturer's instructions when handling the memory cards.

Supported formats

Your notebook supports the following format:

- Secure Digital (SD™ Card)

Inserting the memory card

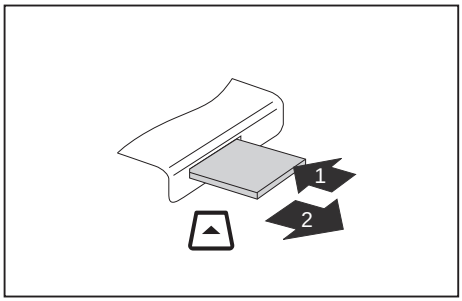


► Gently push the memory card into the slot until you feel it click into place. The label area must be facing upward. Do not apply excessive force, as otherwise the delicate contact surfaces could be damaged.

↳ Depending on the particular type used, the memory card may protrude slightly from the slot.

Removing the memory card

To avoid any loss of data, always follow the correct procedure for removing the card (see the documentation for your operating system).



► On devices with card locking: Press on the memory card (1).

↳ The memory card is released and can now be removed.

► Pull the memory card out of the slot (2).

Speaker and microphone

You can find information about the exact position of speakers and microphones in chapter "Ports and controls", Page 10.

Please refer to chapter "Hot Keys", Page 30 for information on setting the volume and also enabling/disabling the speakers using the keyboard.

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.

You can find information on connecting headphones and a microphone in chapter "Connecting external devices", Page 56.

Wireless LAN/Bluetooth wireless components

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

Switching the wireless components on and off

► Press the key with the wireless icon (F5) to to switch the wireless components on and off (airplane mode).

↳ The wireless indicator will illuminate when one or more wireless components are switched on.

If you switch off the wireless components, the wireless LAN antenna and the Bluetooth module will also be switched off.

Observe the additional safety instructions for devices with wireless components in section "Important notes", Page 16.

Configuring WLAN access

- Requirement: A WLAN is available and you have the necessary access data on hand.

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

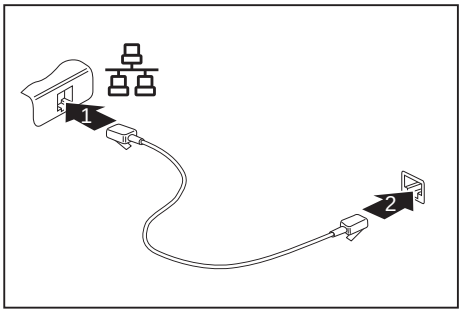
Further information on WLAN and Bluetooth

For further information about WLAN or Bluetooth, please refer to the appendix of this Operating Manual.

For WLAN specifications, see chapter "WLAN specifications", Page 81.

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.

Use a shielded network cable (CAT 5e).

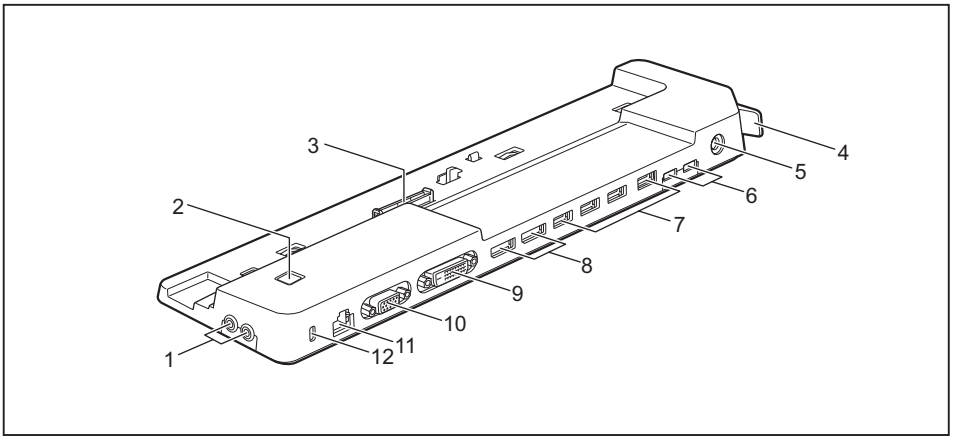
Your port replicator

Your 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 = Headphone port (left), microphone port (right)
2 = ON/OFF button
3 = Connector on the port replicator for the docking port on the underside of the notebook
4 = Unlocking lever
5 = DC input connector (DC IN)
6 = USB 3.1 ports (USB Type-C)
7 = USB 3.0 ports
8 = Display Ports
9 = DVI-D monitor port
10 = External monitor port (VGA)
11 = LAN port
12 = Security Lock device

The DVI port and the neighboring Display Port cannot be used at the same time.

Multi-monitoring

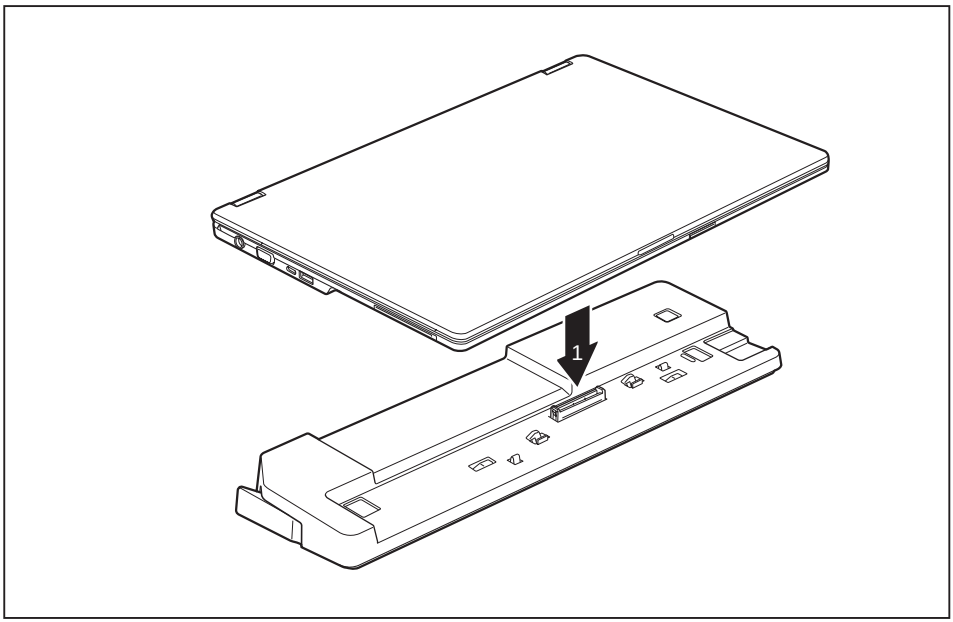
You can use up to three screens with the optional port replicator and therefore bring multi-tasking to a new level. With three screens, you can for example copy content from a document on one screen into a document on a second screen and, at the same time, have your e-mails displayed on the third screen without having to close one application in order to be able to access another application. This is the key to efficient working in today's business environment.

Connecting the notebook to the port replicator

The AC 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.

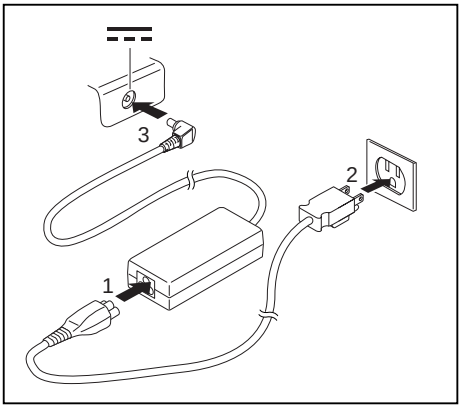
► Disconnect the AC adapter cable from the DC input connector (DC IN) of the notebook.



► 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 AC adapter to the port replicator



- ► Connect the AC cable to the AC adapter (1).
- ► Plug the AC cable into the power outlet (2).
- ► Connect the AC adapter cable to the DC jack (DC IN) of the port replicator (3).

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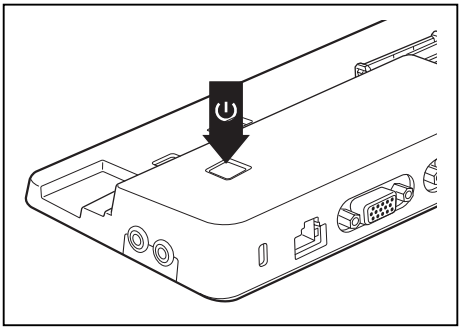
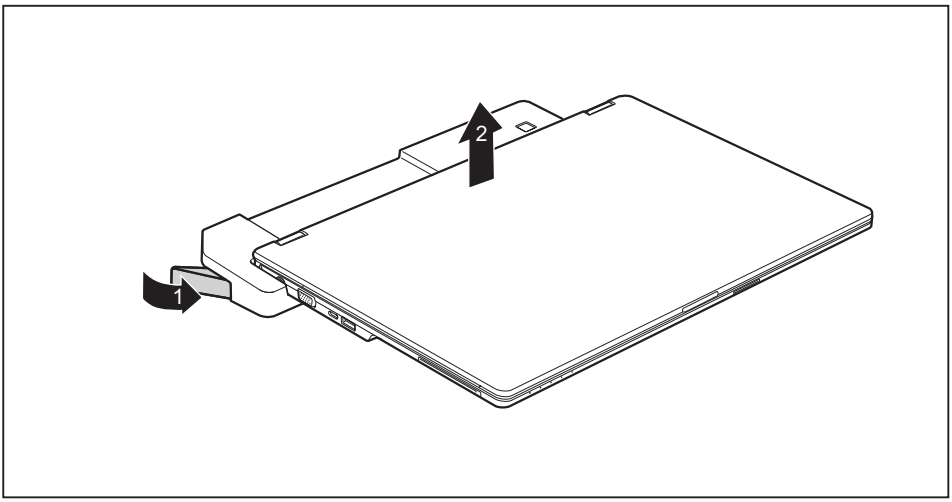
When the notebook is connected to a port replicator, the operating system creates a hardware profile for the "Docked" mode. In this profile, for example, the monitor which was last used for output is saved as a setting. This profile will be loaded as soon as the notebook is connected to a port replicator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

Switching on the notebook via the port replicator



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

Disconnecting the notebook from the port replicator



► 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 a variety of security functions that you can use to protect your system and your personal data from unauthorized access.

This chapter explains how to use these functions, and what the benefits are.

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

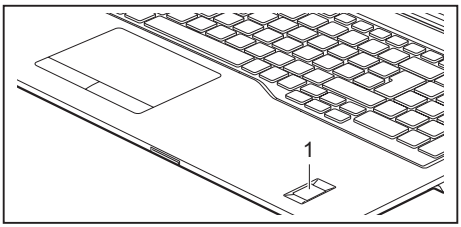
- Make regular backups to external optical disks such as external hard drives, CDs, DVDs or Blu-ray Discs.
- Some security functions need you to choose passwords. Make a note of the passwords and keep them in a safe place.

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

Configuring the fingerprint sensor

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

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



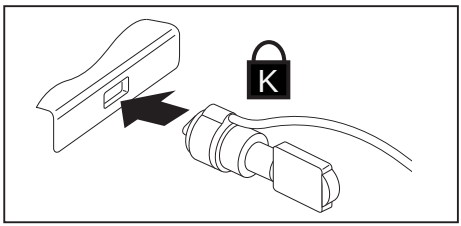
► Install the fingerprint software to be able to use the fingerprint sensor (1).

You can obtain further information on the fingerprint sensor in the "appendix: Miscellaneous Information".

Using the Security Lock

Your device comes with a Security Lock mechanism for the Kensington Lock Cable. You can use the Kensington Lock Cable, a sturdy steel cable, to help protect your notebook from theft. The Kensington Lock Cable is available as an accessory.

Fujitsu recommends the use of a combination lock.



► Fit the Kensington Lock Cable to the mechanism on your notebook.

Attach another Kensington Lock Cable to your port replicator to protect your port replicator from theft as well.

Configuring password protection in BIOS Setup Utility

Before using the various options for password protection in the *BIOS Setup Utility*, please proceed as follows to increase data security:

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 can contain letters and numbers. No distinction is made between uppercase and lowercase.

Protecting BIOS Setup Utility (supervisor password and user password)

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

The supervisor password and the user password both prevent unauthorized use of the *BIOS Setup Utility*. The supervisor password allows you to access all of the functions of the *BIOS Setup Utility*, while the user password will only give you access to some of the functions. You can only set up a user password if a supervisor password has already been assigned.

Calling and using the *BIOS Setup Utility* is described in the chapter "Settings in BIOS Setup Utility", Page 71.

Assigning the supervisor and user passwords

- ► 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 displayed as 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 is then rebooted and the new password comes 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 password or user password

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

- ► Start the *BIOS Setup Utility* and go to the *Security* menu.
- ► When changing the password, proceed exactly as when assigning a password.

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. *Enter New Password* will appear and you will be requested to enter a new password.
► Press the Enter key twice at this request.
► 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.
With the supervisor password, you simultaneously deactivate the user password.

Password protection for booting the operating system

With the supervisor password you have set in the *BIOS Setup Utility* (see section "Assigning the supervisor and user passwords", Page 52), 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 option you require (*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.

Password protection for the hard disk

If a supervisor password was set, an additional password for the hard disk can be set in the *Hard Disk Security* menu.

The hard disk is protected by this password. Data on this hard disk can then only be read in another system if the correct password is entered.

Trusted Platform Module - TPM (device dependent)

To use the TPM, you must enable 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 50).

For how to call up and operate the *BIOS Setup Utility*, see Section "Settings in BIOS Setup Utility", Page 71.

Enabling TPM

- Requirement: You have assigned a supervisor password (see "Security functions", Page 50).

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

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

► Select the *"Security Chip" "Enabled"* entry to enable the TPM

↳ Once you have enabled the TPM by rebooting, the *Clear Security Chip* menu item appears.

If the TPM was already in use, you can use *Clear Security Chip* to clear the holder in the TPM. With *Enabled*, all secret keys (e.g. SRK - Storage Root Keys, AIK - Attestation Identity Keys etc.) generated by applications are deleted.

Take note that you can then no longer access the data you have encrypted on the holder-based keys!

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

► Press the Enter key and select *Yes*.

↳ The notebook restarts and the TPM is switched on after the reboot.

Disabling TPM

- Requirement: You have assigned a supervisor password (see "Security functions", Page 50).

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

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

► Select the *"Security Chip" "Disabled"* entry to deactivate the TPM.

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

► Press the Enter key and select *Yes*.

↳ The notebook will now reboot with TPM deactivated.

Smart Card reader

Smart Cards are not supplied as standard equipment. You can use all Smart Cards that comply with the ISO standard 7816-1, -2 or -3. These Smart Cards are available from various manufacturers.

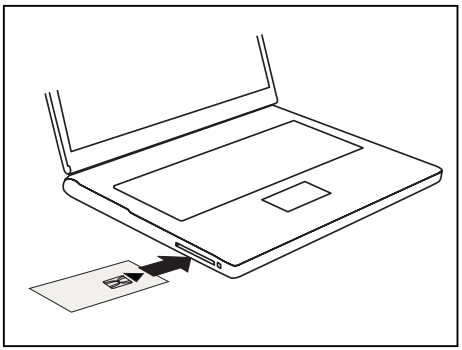
With the appropriate software you can use your Smart Card as an alternative to password protection, but also as a digital signature, for encrypting your e-mails or for home banking.

We recommend that you always use two Smart Cards. Always keep one of the Smart Cards in a safe place if you are carrying the other Smart Card with you.

Inserting the Smart Card

Do not use force when inserting and removing the Smart Card.

Make sure that foreign objects do not fall into the Smart Card reader.



► Slide the Smart Card into the Smart Card reader with the chip facing upwards (or downwards depending on the device) and to the front.

Connecting external devices

Under all circumstances, please observe the safety notes provided in the "Important notes", Page 16 chapter 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.

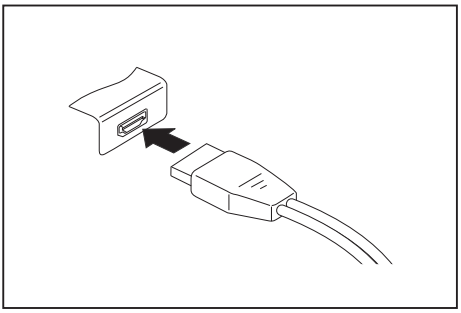
With some devices such as USB devices, it is not necessary to switch off the notebook and the device before connecting/disconnecting. For more information about whether or not devices need to be switched off, please refer to the documentation supplied with the external device.

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

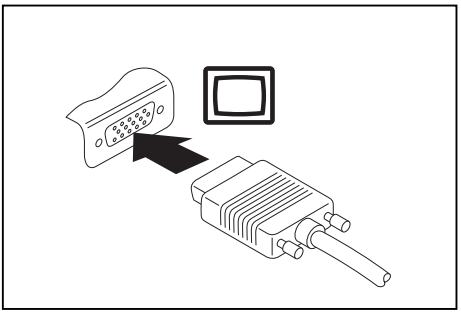
Connecting an external monitor

An analog screen is connected to the analog Video Graphics Array (VGA) monitor port, a digital screen to the display port, or to the Digital Visual Interface - digital only (DVI-D) monitor port on the optional port replicator.

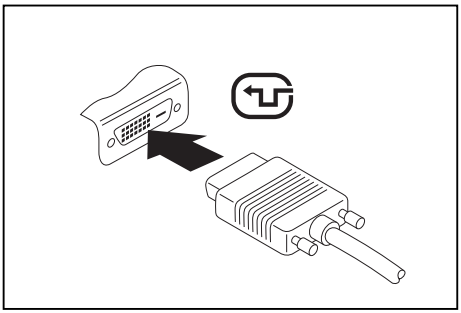
The HDMI port on your notebook can be used to connect an external amplifier, LCD TV or a plasma TV with an HDMI connection.



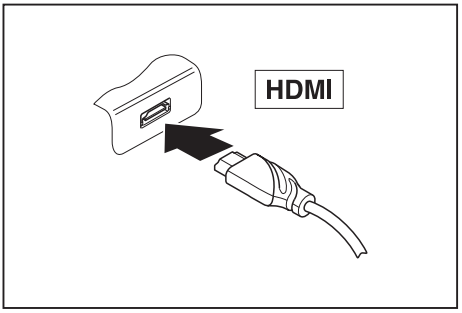
Digital display port (on the LIFEBOOK E558 or on the optional port replicator)



Analog external monitor port (VGA) (on notebook or on optional port replicator)



Digital DVI-D monitor port (on optional port replicator)



Digital HDMI 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 LCD screen of the notebook, see chapter "Hot Keys", Page 30.

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

If you wish to operate the screen via a DVI port, use the port replicator which is available as an option for your notebook.

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 the cables of USB devices while the operating system is running.

USB 1.x has a maximum data transfer rate of 12 Mbps.

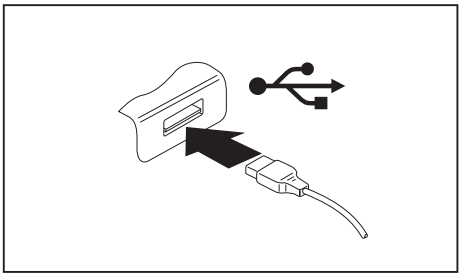
USB 2.0 has a data transfer rate of up to 480 Mbps.

USB 3.0 has a data transfer rate of up to 5 Gbps.

USB 3.1 generation 1 has a data transfer rate of up to 5 Gbit/s.

USB 3.1 generation 2 has a data transfer rate of up to 10 Gbit/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 recognized and installed by your operating system.

USB port with charging function (USB Type-C)

You can also charge a connected USB device or operate devices without an additional power supply at this USB Type-C port.

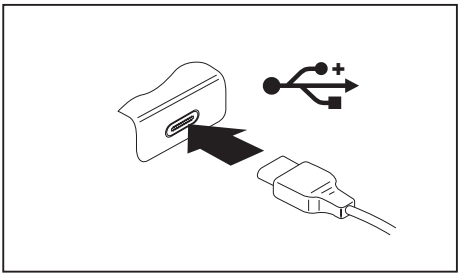
This is also possible with the notebook switched off, if the *USB Type-C Power Delivery on System Off* function is activated in the *Advanced - Miscellaneous Configurations* menu of the *BIOS Setup Utility*. Calling up and using the *BIOS Setup Utility* is described in section "Settings in BIOS Setup Utility", Page 71.

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

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

USB 3.1 generation 1 has a data transfer rate of up to 5 Gbps.

USB 3.1 generation 2 has a data transfer rate of up to 10 Gbps.



- ► Connect the data cable to the external device.
- ► Connect the data cable to a USB port (USB Type-C) on the notebook.

USB port with charging function (Anytime USB charge)

You can use this USB port to charge or supply power to a USB device (e.g. to charge a PDA or a mobile phone or to connect a USB lamp).

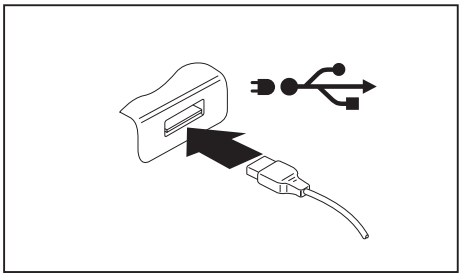
This is possible even when the notebook is switched off; in the *BIOS-Setup-Utility* in the *Advanced* menu the function *Anytime USB Charge* must be activated. If the setting *AC* is selected thereby, the device will only be charged when the AC adapter is connected.

Calling and using the *BIOS-Setup-Utility* is described in the section "Settings in BIOS Setup Utility", Page 71.

It is recommended that the notebook be operated with the AC adapter connected whenever the USB port with charging function is in use, as this function will drain the battery more quickly if an external USB device is being charged.

The AC adapter must already be connected when the notebook is switched off, as otherwise the USB charging function will be disabled and the connected USB devices will not be charged.

Some USB devices (e.g. mobile telephony) require a driver in order to utilize the USB charging function. In this case the USB charging function will not work when the notebook is switched off, as no drivers are active when the notebook is switched off.



- ► Connect the data cable to the external device.
- ► Connect the data cable to a USB port (Anytime USB charge) of the notebook.

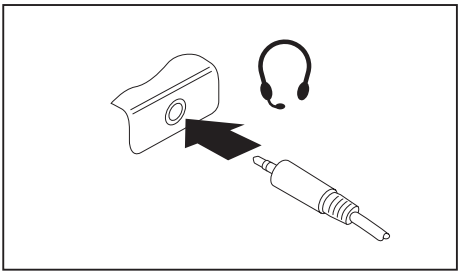
How to remove USB devices correctly

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

- ► With the left mouse button, click on the symbol in the taskbar for safe removal of hardware.
- ► Select the device you wish to shut down and remove.
- ► Press the "Enter" key.
- ↳ Wait for the dialog box which tells you that it is now safe to remove the device.

Headset port

You can connect a headset, headphones or external loudspeakers to your notebook via the headset port.



- ► Connect the audio cable to the external device.
- ► Connect the audio cable to the headset port on the notebook.
- ↳ The internal speakers are disabled.

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If you buy a cable from a specialized dealer, please note the following information:

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

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

Removing and installing components during servicing

The illustrations shown below may differ from your actual device. They are merely intended to clarify the principles involved.

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

You may remove and install the components described in this chapter yourself after consulting the Hotline/Service Desk.

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 off your notebook and remove the AC plug from the power outlet.
- Always remove the battery.
- Take care when you use the locking mechanisms for the battery and any other component.
- Never use sharp objects such as screwdrivers, scissors or knives as a lever 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 with boards.
- The equipment and tools you use must be free of static charge.
- Remove the AC plug from the power outlet before inserting or removing boards.
- Always hold boards by their edges.
- Never touch connector pins or conductors on the board.

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 16.

Remove the AC plug from the power outlet!

► Switch the device off.

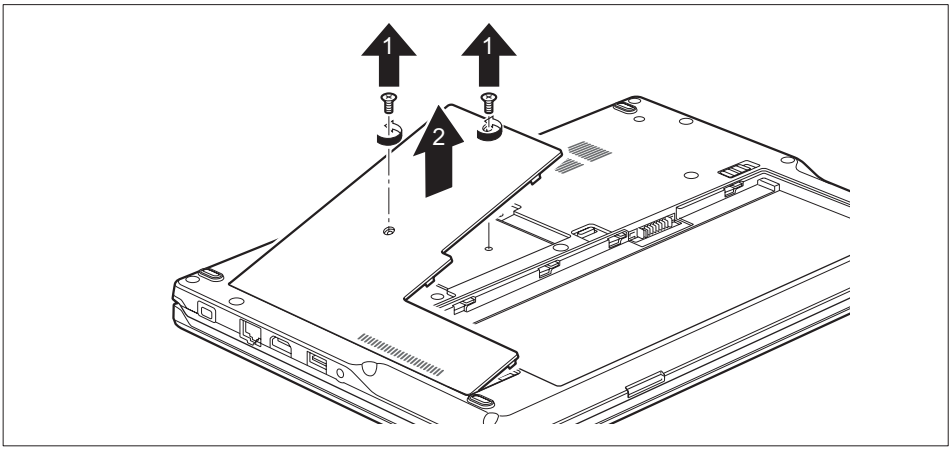
The device must not be in energy saving mode.

► 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 40.

Remove the cover

Under this cover you will find all of the components that can be removed by the customer himself in case service is required (memory module, M.2 module and HDD).

► Prepare for removal, see "Preparing to remove components", Page 63.



► Remove the screws (1).

The LIFEBOOK E548 has 2 screws, the LIFEBOOK E558 has 3 screws.

Keep the screws in a safe place.

► Lift the cover off the notebook (2).

Removing and installing memory expansion

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

Please observe the safety information in chapter "Important notes", Page 16.

During installation/removal of memory modules, the battery must remain removed from the notebook and the notebook must not be connected to the AC adapter, see "Preparing to remove components", Page 63.

Only use memory modules that have been approved for use in your notebook (see chapter "Technical data", Page 81).

Never use force when installing or removing a memory module.

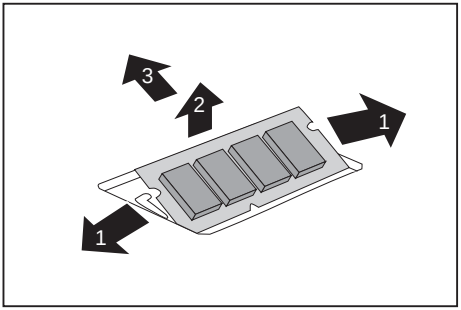
Make sure that no foreign objects fall into the memory upgrade compartment.

You must open the memory upgrade compartment to remove or install a memory module. On some devices, it is possible that opening the compartment exposes various components. Only authorized specialists are permitted to remove or change these components. 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 the notebook off before removing or installing memory modules. Otherwise, there is a risk of suffering burns!

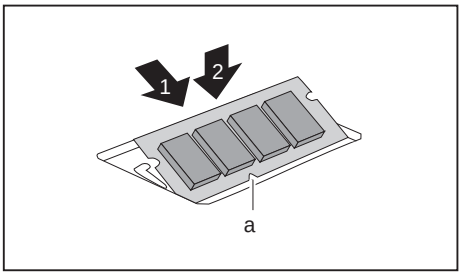
As some components are exposed that are sensitive to static electricity, please take note of chapter "Notes on installing and removing boards and components", Page 62.

Removing a memory module



- ► Carefully push the two mounting clips outwards (1).
- ↳ The memory module will fold 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) forward in the slot (1).
- ► Carefully push the memory module downwards until you feel it click into place (2).

Installing and removing an M.2 module (dependent on configuration)

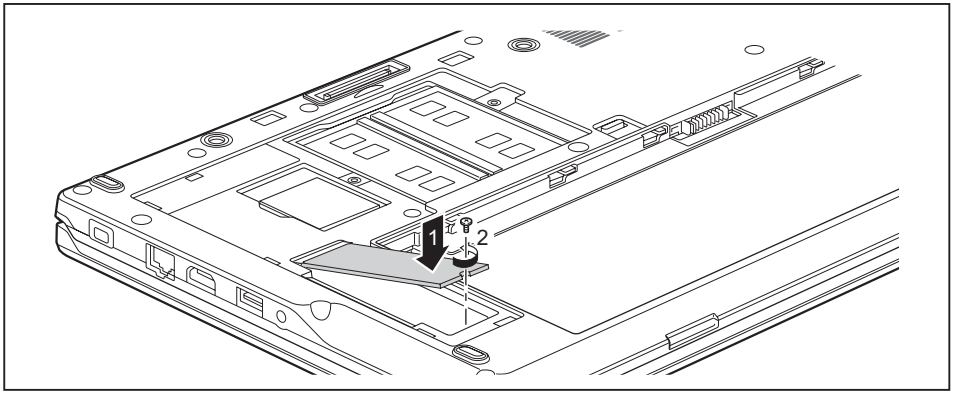
Your LIFEBOOK is equipped with a service compartment for an M.2 module. The LIFEBOOK E558 can be ordered either with an M.2 module or with a standard hard disk (HDD). For systems with HDD, an M.2 adapter is available as an accessory, in order to retrofit an M.2 module instead of the HDD, if necessary. For more information on how to install a hard disk, see "Installing and removing the hard disk (only for LIFEBOOK E558 with HDD configuration level)", Page 68.

It is not possible to install a standard hard disk in systems that were ordered with an M.2 module.

The LIFEBOOK E548 is illustrated below. The approach is the same for all variants. Corresponding reference is made to any differences.

Installing the M.2 module

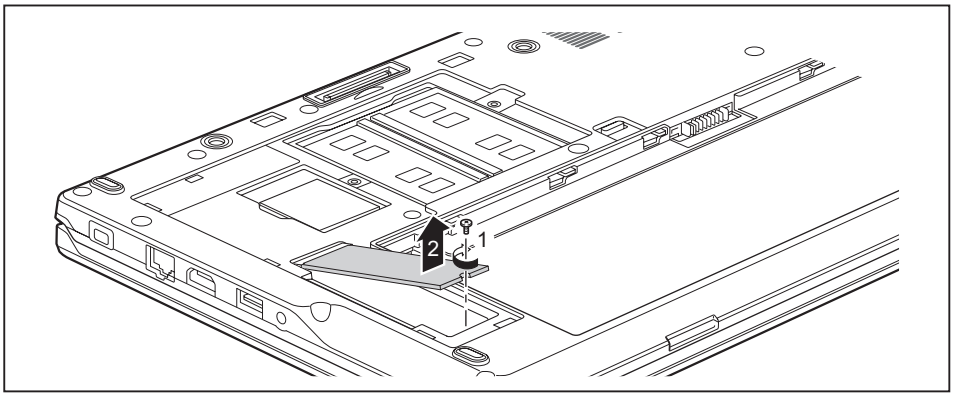
► LIFEBOOK E558: If relevant, insert the M.2 adapter in the service compartment.



► Position the M.2 module in the slot on the mainboard at a slight angle, in the direction of the arrow (1).

► Secure the W.2 module in its location with the screw (2).

Removing the M.2 module



► Loosen the screw (1).

↳ The M.2 module folds slightly upwards.

► Pull the M.2 module out of the slot on the mainboard in the direction of the arrow (2) and remove it from the casing.

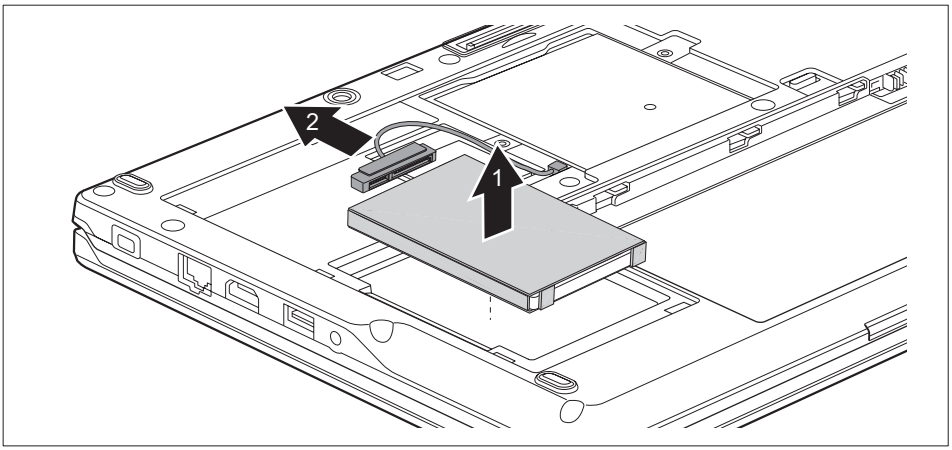
Installing and removing the hard disk (only for LIFEBOOK E558 with HDD configuration level)

Removing the hard disk

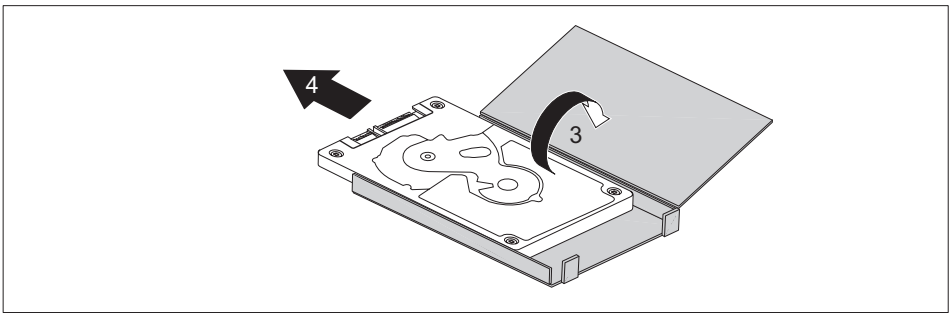
► Remove the cover, see "Remove the cover", Page 64.

For easier removal from the device, the hard disk is installed in a hard disk carrier.

The LIFEBOOK E558 is illustrated below. The approach is the same for all variants. Corresponding reference is made to any differences.



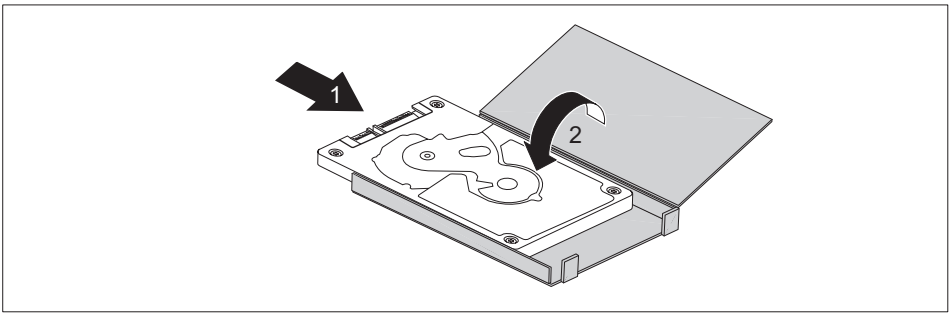
► Raise the hard disk carrier (1) slightly.
► Disconnect the hard disk cable (2) from the hard disk.
► Remove the hard disk carrier.



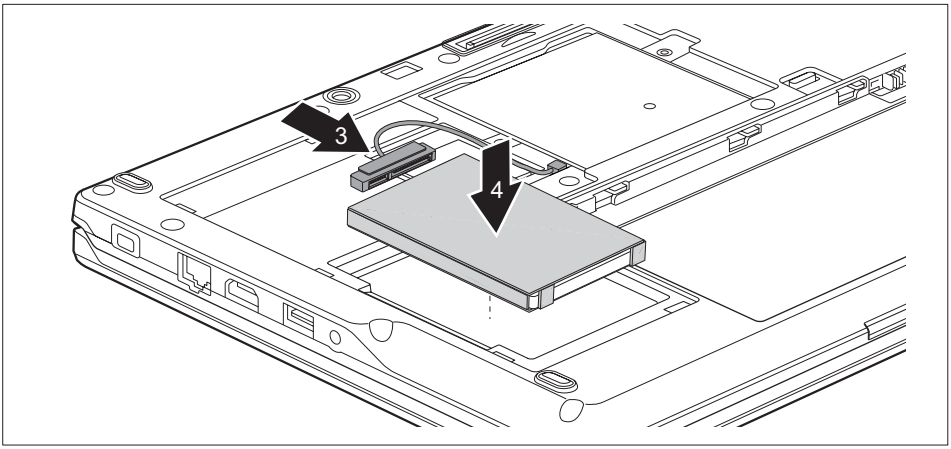
► Open the hard disk carrier (3).
► Pull the hard disk out of the hard disk carrier (4) in the direction of the arrow.

Installing a hard disk

Always insert the hard disk into the device in the relevant hard disk carrier.



► Slide the hard disk into the hard disk carrier in the direction of the arrow (1).
► Close the hard disk carrier (2).

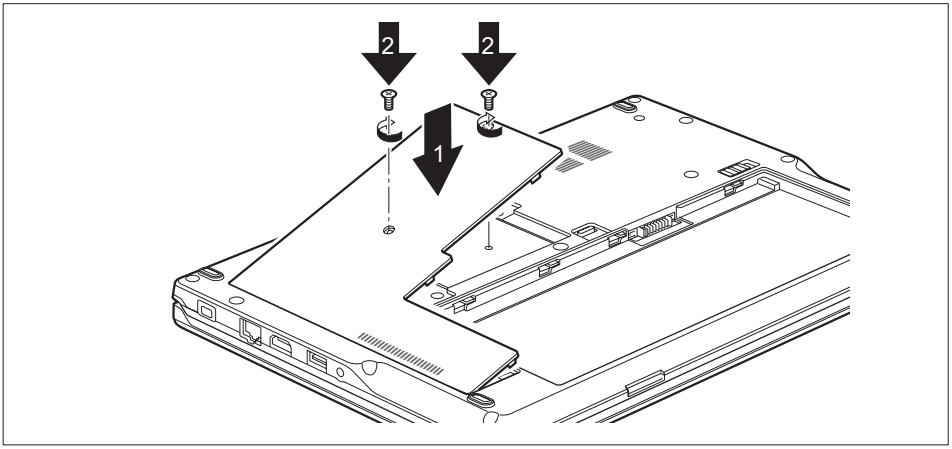


► Plug the hard disk cable into the hard disk (3).
► Place the hard disk into the hard disk compartment (4).

When attaching the cover, take care not to trap any cables.

► Fasten the cover again, see "Attaching the cover", Page 70.

Attaching the cover



► Place the cover in the correct location (1).
► Tighten the screws (2).

The LIFEBOOK E548 has 2 screws, the LIFEBOOK E558 has 3 screws.

► Complete the installation, see "Finishing component removal", Page 70.

Finishing component removal

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

► Install the battery again, see "Installing a battery", Page 41.
► Turn the notebook the right way up again and place it on a flat surface.
► Reconnect the cables that were previously disconnected.

Settings in BIOS Setup Utility

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

When a notebook is delivered, the factory default settings are effective. You can change these settings in the menus of the *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:

Info	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 device (switch off/on or reboot the operating system).

↳ Depending on the setting for *Fast Boot* in the *BIOS-Setup-Utility*, the following notification may appear on the screen during 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 center.

The *BIOS Setup Utility* starts.

BIOS Setup Utility operation

Press the F1 key to display help about operation of the *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 - Reject 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 – load default values

► 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 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 the *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

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 contact Fujitsu Service and Support in the following ways:

- Toll free phone: 1-800-8Fujitsu (1-800-838-5487)
- Website: "http://solutions.us.fujitsu.com/www/content/support/contact/index.php"

Before you place the call, have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- The model name and serial number of the notebook. The serial number is located on a sticker on the underside of the notebook.
- Notes with the messages that appeared 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 after 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 optimize 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 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://solutions.us.fujitsu.com"

Help if problems occur

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

- ► Note the ID number of your device. The ID number is found on the type rating plate on the back or underside of the casing.
- ► For further clarification of the problem, contact the Fujitsu Service Desk. When you do this, please have ready the ID number and serial number of your system.

If you need to restore your system

In the event you need to restore your system, please refer to the appendix of this Operating Manual.

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.
Date and time are still set incorrectly after switching on the notebook.	► 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 number keys of your device are activated, see "Virtual number keys", Page 34	► Press the Num button.

The notebook’s LCD screen remains blank

Cause	Troubleshooting
Screen is switched off.	► Press a key or touch the touchpad.
External monitor or television set connected.	► Press the key for changing over the screen output, see "Hot Keys", Page 30.

The LCD screen of the notebook 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 for changing over the screen output, see "Hot Keys", Page 30.
The external monitor's AC cable or data cable is not connected properly.	► Switch off the external monitor and the notebook. ► Check whether the AC cable is plugged properly into the external monitor and into the power outlet. ► 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 under Windows by pressing Alt + F4. If the error persists after terminating the program, use the key for switching the screen output (see "Hot Keys", Page 30), in order to switch to the LCD screen of the notebook. 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 does not start after switching it on

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 AC adapter to the notebook.
The AC adapter is not connected properly.	► Check whether the AC adapter is properly connected to the notebook. ► Switch the notebook on.

The notebook stops working

Cause	Troubleshooting
The notebook is in energy saving mode.	► End energy saving mode.
An application program 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 AC 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 whether the correct printer driver is loaded (refer to the printer documentation).

The wireless connection to a network does not work

Cause	Troubleshooting
The wireless component is switched off.	► Switch the wireless component on (see "Switching the wireless components on and off", Page 44).
The wireless component is switched on. Despite this, the wireless connection to a network does not work.	► Check whether the wireless connection is enabled by the software. ► Further information on using the wireless component can be found in the help files.

Acoustic warning

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

Smart Card reader is not recognized

Cause	Troubleshooting
Smart Card inserted incorrectly.	► Make sure you have inserted your Smart Card into the Smart Card reader with the chip facing upwards / downwards (device-dependent). ► Check whether the Smart Card you are using is supported. Your Smart Card must comply with the ISO standard 7816-1, -2, -3 and -4.

Smart Card PIN forgotten

Cause	Troubleshooting
PIN forgotten	► If you are working in a network, contact your system administrator, who can unlock your notebook with a Supervisor PIN.

Smart Card lost

Cause	Troubleshooting
Smart Card lost.	► If you are working in a network, contact your system administrator, who can boot your notebook with a Supervisor Smart Card.

Error messages on the screen

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

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

Error message/cause	Troubleshooting
CMOS Battery Bad If the error message occurs repeatedly, the back-up battery in the notebook is dead.	► Contact your sales outlet or our customer service center.
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 *BIOS 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 off the notebook with the ON/OFF button. ► Wait 3 - 5 seconds and switch on the notebook again.
Keyboard error	If you use 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	Troubleshooting
Previous boot incomplete - Default configuration used Default values have been set for certain settings because of an error which occurred in the previous system boot. 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 center.
nnnnK Shadow RAM failed at offset: xxxx Failing Bits: zzzz	► Contact your sales outlet or our customer service center.
System battery is dead - Replace and run SETUP	► Contact your sales outlet or our customer service center.
System cache error - Cache disabled	► Contact your sales outlet or our customer service center.
System timer error	► Contact your sales outlet or our customer service center.

Technical data

LIFEBOOK

	LIFEBOOK E548 (ME14A)	LIFEBOOK E558 (ME15A)
Ambient conditions		
Operating temperature	5 °C .... 35 °C / 41°F .... 95°F	
Transport temperature	–10 °C .... 60 °C / 14°F .... 140°F	
Dimensions		
Width x Depth x Height	• 333,6 mm x 234 mm x 23,9 mm / 13,13” x 9,21” x 0,94”	• 379 mm x 256 mm x 23,9 mm / 14,92” x 10,08” x 0,94”
Weight (without optical drive)	• 1,79 kg / 3,95 lbs	• 2,04kg / 4,50 lbs
Main memory		
Slots	2 slots 260 pin DDR4 - 2133 or DDR4 - 2400 SO-DIMM with a total of max. 32 GB	
Approved memory modules	• 2133 MHz for Dual Core CPU • 2400 MHz for Quad Core CPU	

The data sheet for the device offers further technical data. You can find the data sheet on your device or online at "http://www.fujitsu.com/fts/support/".

WLAN specifications

Type of network	Intel® Dual Band Wireless-AC 8265 11a/b/g/n/11ac), Wi-Fi based*
Transfer rate	(Automatic switching) IEEE802.11 a and g: 54 Mbps max. data rate; IEEE802.11n: 300 Mbps max. data rate, IEEE802.11ac: 867 Mbps max. data rate
Active frequency	• 802.11n: 2.4 GHz or 5 GHz • 802.11b/g: 2400~2473 MHz • 802.11a. 4900~5850 MHz • 802.11a. 2.4 GHz / 5 GHz

Typical operating distances**	• 802.11a. 40 ft. (12 m) @ 54 Mbps; 300 ft. (91 m) @ 6 Mbps • 802.11ac: 40 ft. (12 m) @ 54 Mbps; 300 ft.(91 m) @ 6 Mbps • 802.11b: 100 ft. (30 m) @ 11 Mbps; 300 ft. (91 m) @ 1 Mbps • 802.11g: 100 ft. (30 m) @ 54 Mbps; 300 ft. (91 m) @ 1 Mbps • 802.11n: Estimated: double the operating distance of 802.11g and 802.11a in their respective frequencies
Number of channels	• 802.11a. 8 independent channels • 802.11b/g: 11 channels, 3 non-overlapping channels • 802.11n: Channel bonding takes two of the non-overlapping 20 MHz channels and combines them into one 40 MHz channel. It is actually 12 non-overlapping channels with channel bonding and 24 without. Also it is 1 non-overlapping channel in 2.4GHz when channel bonding is used. • 802.11ac: 5 independent channels
Security	Encryption types: compatible with WEP, TKIP, AES***, WPA 1.0 and WPA 2.0 Encryption key, lengths supported: 64 bits and 128 bits
Maximum recommended number of computers to be connected over wireless LAN (during ad hoc connection)	≤ 10 units ****

* “Wi-Fi based” means that the interconnectivity test of the organization that guarantees the interconnectivity of Wireless LAN (Wi-Fi Alliance) has been passed.

** The operating distances given above increase or decrease depending on factors such as the number of walls, reflecting material or interference by external RF sources.

*** Network key encryption (WEP) occurs with the number of bits given above, after deduction of the fixed length of 24 bits the user may however also set 40 or 104 bits.

**** Depending on the particular practical application, the number of computers which can be networked is reduced if necessary.

Rechargeable battery

For information on the batteries used in your device, please go to "http://www.fujitsu.com/fts/support/".

	LIFEBOOK E548/E558: **4 cell rechargeable battery 50 Wh**
Rated voltage	14.4 V
Rated capacity	3490 mAh

AC adapter

Electrical data	
Rated voltage	100 V – 240 V (automatic)
Rated frequency	50 Hz – 60 Hz (automatic)
Secondary	
Rated voltage	19 V
Max. rated current	3.42 A / 4.74 A
Max. rated wattage	65 W / 90 W

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

Manufacturer’s notes

Disposal and recycling

You can find information on this subject on your notebook or on our website ("http://solutions.us.fujitsu.com/www/content/products/trade-in_program/").

Recycling your battery

Over time, the batteries that run your mobile computer will begin to hold a charge for a shorter amount of time; this is a natural occurrence for all batteries. When this occurs, you may want to replace the battery with a brand new one*. If you replace it, it is important that you dispose of the old battery properly because batteries contain materials that could cause environmental damage if disposed of improperly.

Fujitsu is very concerned with environmental protection, and has enlisted the services of the Rechargeable Battery Recycling Corporation (RBRC)**, a nonprofit public service organization dedicated to protecting our environment by recycling old batteries at no cost to you.

RBRC has drop-off points at many convenient locations throughout the United States and Canada. To find the location nearest you, go to "www.RBRC.org" or call 1-800-822-8837.

If there are no convenient RBRC locations near you, you can also go to the EIA Consumer Education Initiative website "http://EIAE.org/ " and search for a convenient disposal location.

Remember – protecting the environment is a cooperative effort, and you should make every effort to protect it for current and future generations.

* To order a new battery for your Fujitsu mobile computer, go to the Fujitsu shopping site at "www.shopfujitsu.com" in the US or "www.fujitsu.ca/products/notebooks" in Canada.

** RBRC is an independent third party to which Fujitsu provides funding for battery recycling; RBRC is in no way affiliated with Fujitsu.

DOC (Industry CANADA) Notices

Notice to Users of Radios and Television

This Class B digital apparatus meets all requirements of Canadian Interference-Causing Equipment Regulations.

CET appareil numérique de la class B respecte toutes les exigence du Réglement sur le matérial brouilleur du Canada.

UL Notice

IMPORTANT SAFETY INSTRUCTIONS

This unit requires an AC adapter to operate. Only use UL Listed I.T.E. adapters with an output rating of 19 VDC, with a minimum current of 3.42A (65W). The correct output rating is indicated on the AC adapter label. Refer to the illustration below for the correct AC adapter output polarity:

CAUTION:

When using your notebook equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

- Do not use this product near water, for example near a bathtub, washbowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
- Use only the power cord and batteries indicated in this manual.
- Do not dispose of batteries in a fire. They may explode.
- Check with local codes for possible special disposal instructions.

SAVE THESE INSTRUCTIONS.

For Authorized Repair Technicians Only

CAUTION:

For continued protection against risk of fire, replace only with the same type and rating fuse.

WARNING:

Danger of explosion if Lithium (CMOS) battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instruction.

ENERGY STAR Compliance

Your Fujitsu system is an ENERGY STAR qualified mobile PC. By choosing a computer with the latest energy-saving technology, you're helping to preserve our environment for future generations. ENERGY STAR is a joint program of the U.S. Environmental Protection Agency, U.S. Department of Energy, Natural Resources Canada, and other governments around the world helping us save money while protecting the environment through energy efficient products and practices. With energy costs and global warming top-of-mind for consumers, Fujitsu is committed to offering solutions that help consumers conserve energy and improve the quality of our environment.

Sleep mode:

You will notice that your computer is initially set so that the display turns off after 10 minutes of user inactivity, and the computer goes into Sleep mode after 20 minutes of user inactivity, when the AC adapter is connected. On battery, the display turns off after 5 minutes and the computer goes into Sleep mode after 10 minutes. When going into Sleep mode, the computer also reduces the speed of any active Ethernet network links. To "wake" the computer from Sleep mode, press the Suspend/Resume Button.

Energy saving benefits:

Fujitsu ENERGY STAR qualified mobile PCs use about half as much electricity as standard equipment – saving half in utility costs. But more than that, ENERGY STAR also makes a difference for the environment. Did you know that the average house can be responsible for twice the greenhouse gas emissions as the average car? That's because every time you flip on a light switch, run your dishwasher, or turn on your PC, you use energy, which means more greenhouse gas emissions from power plants. So the more energy we can save through energy efficiency, the more we help to reduce greenhouse gases and the risks of global warming.

To learn more about the important ENERGY STAR program, visit:"www.energystar.gov".

To read about how Fujitsu is supporting Sustainable Management along with several other environmental activities, visit the Fujitsu Corporate Citizenship page at: "http://www.computers.us.fujitsu.com/www/content/aboutus/environmental/environment.php".

FCC and IC Regulatory Information

Please note the following regulatory information related to the wireless LAN device.

Regulatory Notes and Statements

Wireless LAN, Health and Authorization for use

Radio frequency electromagnetic energy is emitted from Wireless LAN devices. The energy levels of these emissions, however, are far much less than the electromagnetic energy emissions from wireless devices such as mobile phones. Wireless LAN devices are safe for use by consumers because they operate within the guidelines found in radio frequency safety standards and recommendations. The use of Wireless LAN devices may be restricted in some situations or environments, such as:

- On board an airplane, or
- In an explosive environment, or
- In situations where the interference risk to other devices or services is perceived or identified as harmful.

In cases in which the policy regarding use of Wireless LAN devices in specific environments is not clear (e.g., airports, hospitals, chemical/oil/gas industrial plants, private buildings), obtain authorization to use these devices prior to operating the equipment.

Regulatory Information/Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution or attachment of connecting cables and equipment other than those specified by the manufacturer. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. The manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failure to comply with these guidelines.

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

For IEEE 802.11a Wireless LAN: For operation within 5.15~5.25 GHz frequency range, it is restricted to indoor environments, and the antenna of this device must be integral.

Federal Communications Commission statement and Industry Canada statement:

This device complies with Part 15 of FCC Rules and Industry Canada license exempt RSS standard(s).

Operation is subject to the following two conditions: (1) This device may not cause interference, and, (2) This device must accept any interference, including interference that may cause undesired operation of this device.

Déclaration d'Industrie Canada

Cet appareil est conforme à la Section 15 des Règles de la FC C et à la (aux) norme(s) RSS concernant les appareils exempt s de licence par Industrie Canada. Son fonctionnement est soumis aux deux condition s suivantes : (1) cet appareil ne doit pas causer d'interférence nuisib le; (2) cet appareil doit accepter toutes les interférences reçues, y compris celles pouvan t causer un mauvais fonctionnement de l'appareil.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the distance between the equipment and the receiver.
3. Connect the equipment to an outlet on a circuit different from the one the receiver is connected to.
4. Consult the dealer or an experienced radio/TV technician for help.

FCC Radio Frequency Exposure statement

The available scientific evidence does not show that any health problems are associated with using low power wireless devices. There is no proof, however, that these low power wireless devices are absolutely safe. Low power wireless devices emit low levels of radio frequency energy (RF) in the microwave range while being used. Whereas high levels of RF can produce health effects (by heating tissue), exposure to low-level RF that does not produce heating effects causes no known adverse health effects. Many studies of low-level RF exposure have not found any biological effects. Some studies have suggested that some biological effects might occur, but such findings have not been confirmed by additional research.

The wireless LAN radio device has been tested and found to comply with FCC radiation exposure limits set forth for an uncontrolled equipment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65.

The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6 W/kg, and 1.6 W/kg by Industry Canada.

This device is compliant with SAR for general population /uncontrolled exposure limits in ANSI/IEEE C95.1-1992 and Canada RSS 102, and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C, and Canada RSS 102. This device has been tested, and meets the FCC, IC RF exposure guidelines when tested with the device operating conditions.

Déclaration de la FCC/d'Industrie Canada sur l'exposition aux radiofréquences

La norme régissant l'exposition des appareils sans fil aux radiofréquences emploie une unité de mesure dénommée Taux d'absorption spécifique, ou TAS. La FCC et Industrie Canada ont défini la même limite de TAS : 1,6 W/kg. Cet appareil est conforme au TAS pour les limites d'exposition générales de la population/non contrôlées définies par les règles C95.1-1992 de l'ANSI/IEEE et RSS 102 d'Industrie Canada ; il a été testé en conformité avec les méthodes et procédures de mesure spécifiées dans le supplément C du bulletin 65 de l'OET (Office d'ingénierie et de technologie) et la règle RSS 102 d'Industrie Canada. Cet appareil a été testé selon les directives de la FCC et d'IC concernant l'exposition aux radiofréquences et s'est révélé conforme à ces dernières lorsqu'il a été testé en contact direct avec le corps.

Export restrictions

This product or software contains encryption code which may not be exported or transferred from the US or Canada without an approved US Department of Commerce export license. This device complies with Part 15 of FCC Rules., as well as ICES 003 B / NMB 003 B. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation. Modifications not expressly authorized by Fujitsu America, Inc. may invalidate the user's right to operate this equipment.

Restrictions concernant l'exportation

Ce produit ou logiciel contient du code de chiffrement qui ne peut être exporté ou transféré du Canada ou des États-Unis sans un permis d'exportation du département du commerce des États-Unis. Ce matériel est conforme à la Partie 15 des règlements de la FCC, ainsi qu'à la norme ICES 003 B/NMB 003 B. Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence nuisible; (2) cet appareil doit accepter toutes les interférences reçues, y compris celles pouvant causer un mauvais fonctionnement de l'appareil. Toute modification n'ayant pas été expressément approuvée par la société Fujitsu America Incorporated peut annuler le droit de l'utilisateur de se servir du matériel.

Canadian Notice / Avis pour le Canada

Canadian Notice

The device for the 5150 - 5250 MHz band is only for indoor usage to reduce the potential for harmful interference to co-channel mobile satellite systems.

The maximum antenna gain of 6 dBi permitted (for devices in the 5250 - 5350 MHz, 5470 - 5725 MHz and 5725 - 5825 MHz bands) to comply with the e.i.r.p. limit as stated in RSS-247.

In addition, users are cautioned to take note that high power radars are allocated as primary users (meaning they have priority) of 5250 - 5350 MHz and 5650 - 5850 MHz and these radars could cause interference and/or damage to LE-LAN devices.

Avis pour le Canada

Le matériel destiné à un usage sur la bande 5 150 - 5 250 MHz doit être utilisé uniquement à l'intérieur afin de réduire les risques de brouillage nuisible causé aux systèmes mobiles par satellite fonctionnant sur un même canal.

Un gain d'antenne de 6 dBi est autorisé (pour le matériel utilisant les bandes 5 250 - 5 350 MHz, 5 470 - 5 725 MHz et 5 725 - 5 825 MHz), conformément à la limite p.i.r.e. maximale permise afférent aux périphériques RSS-247.

En outre, les utilisateurs doivent prendre garde au fait que les radars de grande puissance sont considérés comme des utilisateurs principaux (ce qui signifie qu'ils sont prioritaires) des bandes 5 250 - 5 350 MHz et 5 650 - 5 850 MHz et qu'ils pourraient causer des interférences et/ou des dommages aux appareils de réseau exempts de licence.

Appendix

Before Using the Optional Wireless LAN

This manual describes the procedures required to properly set up and configure the optional integrated Wireless LAN Mini-PCI device (referred to as "WLAN device" in the rest of the manual). Before using the WLAN device, read this manual carefully to ensure its correct operation. Keep this manual in a safe place for future reference.

Wireless LAN Devices Covered by this Document

This document is applicable to systems containing the following device:

- Intel Dual Band Wireless AC 8265 + BT v4.1

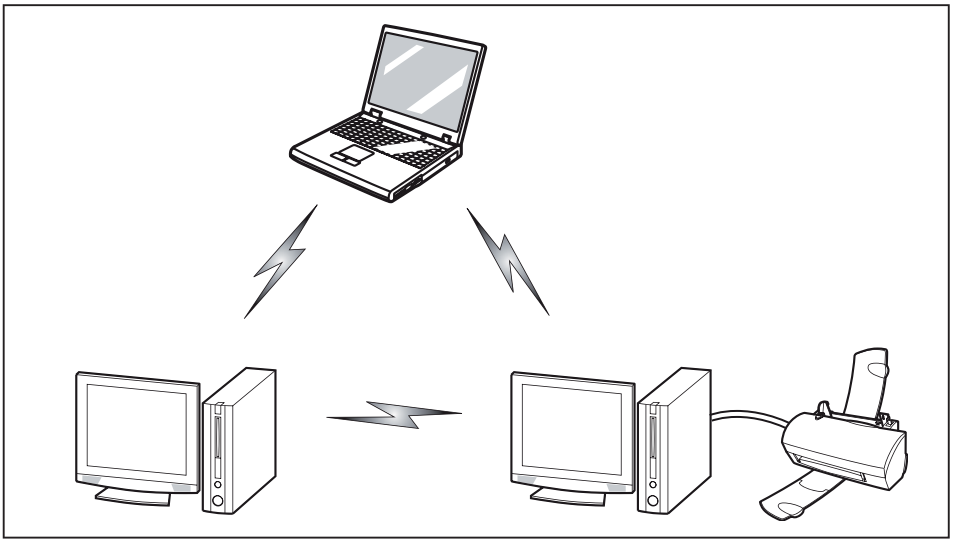
Characteristics of the WLAN Device

This device is compliant with SAR for general population /uncontrolled exposure limits. This device has been tested, and meets the FCC, IC RF exposure guidelines when tested with the device operating conditions.

Wireless LAN Modes Using this Device

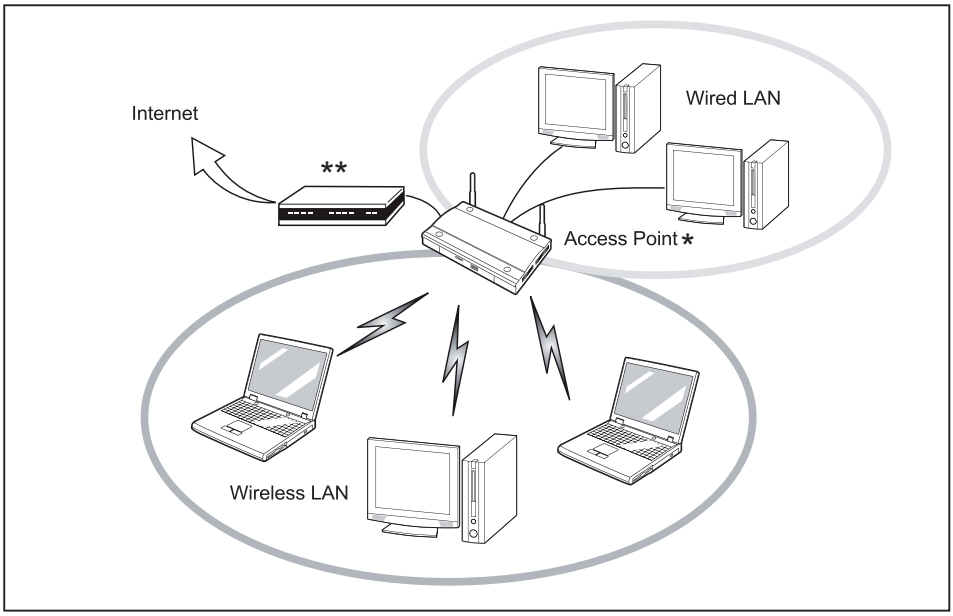
Ad Hoc Mode

"Ad Hoc Mode" refers to a wireless network architecture where wireless network connectivity between multiple computers is established without a central wireless network device, typically known as Access Point(s). Connectivity is accomplished using only client devices in a peer-to-peer fashion. That is why Ad Hoc networks are also known as peer-to-peer networks. Ad Hoc networks are an easy and inexpensive method for establishing network connectivity between multiple computers. Ad Hoc mode requires that the SSID, network authentication, and encryption key settings are identically configured on all computers in the Ad Hoc network.



Access Point (Infrastructure) Mode

Infrastructure mode refers to a wireless network architecture in which devices communicate with wireless or wired network devices by communicating through an Access Point. In infrastructure mode, wireless devices can communicate with each other or with a wired network. Corporate wireless networks operate in infrastructure mode because they require access to the WLAN in order to access services, devices, and computers (e.g., file servers, printers, databases).



* = An optional hub for a wired LAN may be required depending upon the type of access point used.

** = ADSL modem, cable modem, or similar

How to Handle This Device

The WLAN device is an optional device that may come pre-installed in your mobile computer. Under normal circumstances, it should not be necessary for you to remove or re-install it. The Operating System that your mobile computer comes with has been pre-configured to support the WLAN device.

- The WLAN device operates in the 2.4 GHz ISM band and the 5 GHz lower, middle, and upper UNII bands.
- Microwave ovens may interfere with the operation of WLAN devices since they operate in the same 2.4 GHz frequency range as IEEE802.11b/g/n devices. Interference by microwaves does not occur with IEEE802.11a radio which operates in the 5 GHz RF band.
- Wireless devices that transmit in the 2.4 GHz range may interfere with operation of WLAN devices in IEEE802.11b/g/n modes. Symptoms of interference include reduced throughput, intermittent disconnects, and many frame errors. It is HIGHLY recommended that these interfering devices be powered off to ensure proper operation of the WLAN device.

Deactivating/Disconnecting the WLAN Device

Disconnecting the WLAN device may be desired in certain circumstances (to extend battery life) or where certain environments require it (i.e. hospitals, clinics, airplanes, etc.). The WLAN device can be disconnected in Windows using the WLAN icon in the system tray (Note that disconnecting via the icon in the system tray does not turn off the radio; it continues to transmit and receive even though it's not connected.)

► Press the F5 key to start the *WirelessSelector*.

↳ The wireless component indicator will go off when the wireless components are switched off.

Configuring the Wireless LAN

The optional WLAN device can be configured to establish wireless network connectivity using the software that is built into Windows. Support for most industry standard security solutions is contained in this software.

Pre-defined parameters will be required for this procedure. Please consult with your network administrator for these parameters:

Configuring the WLAN Using Windows

The WLAN device can be configured to establish a wireless network connection using the software integrated in Windows. The software supports the current industry-standard security solutions.

Pre-defined parameters are required for this procedure. Consult your network administrator for these parameters:

1. Enter **`Control Panel`** in the search field and select *Network and Sharing Center*.

   or

   Right-click on the network status icon in the taskbar and select *Open Network and Sharing Center*.
2. Select *New connection or Set up new network*.
3. Depending upon what type of connection you would like to make, make a selection. For an infrastructure network, select *Manually connect to a wireless network*.
4. Enter the required information. It may be necessary to consult with your network administrator for some of the information.
5. In the event you require assistance, go to the *Network and Sharing Center* window (*Control Panel > Network and Sharing Center*), and type in relevant keywords in the *Search* box.

Connection to the network

After you have configured your computer, you can connect to an active network by performing the following steps:

1. Click on the *WLAN* icon in the system tray.
2. Select *Connect to a network*.
3. Select a network from the list that appears, and click the *Connect* button.

Troubleshooting the WLAN

Causes and countermeasures for troubles you may encounter while using your wireless LAN are described in the following table.

Problem	Possible Cause	Possible Solution
Unavailable network connection	Incorrect network name (SSID) or network key	**Ad hoc connection:** verify that the network names (SSID's) and network keys (WEP) of all computers to be connected have been configured correctly. SSID's and WEP key values must be identical on each machine. **Access Point (Infrastructure) connection:** set the network name (SSID) and network key to the same values as those of the access point. Set the Network Authentication value identically to that of the Access Point. Please consult your network administrator for this value, if necessary.
	Weak received signal strength and/or link quality	**Ad hoc connection:** Retry connection after shortening the distance to the destination computer or removing any obstacles for better sight. **Access Point (Infrastructure) connection:** Retry connection after shortening the distance to the access point or removing any obstacles for better sight.

Problem	Possible Cause	Possible Solution
Unavailable network connection (continued)	The WLAN device was deactivated or is disabled	Check if the wireless switch is turned On. Go to *Start > Control Panel*, and doubleclick on *Windows Mobility Center*. If the wireless network is off, click the *Turn wireless on* button.
	The computer to be connected is turned off	Check if the computer to be connected is turned ON.
	Incorrectly configured network settings	Recheck the configuration of your network settings.
	RF interference from Access Points or other wireless networks	The use of identical or overlapping RF channels can cause interference with the operation of the WLAN device. Change the channel of your Access Point to a channel that does not overlap with the interfering device.
	Wireless network authentication has failed	Re-check your Network Authentication, Encryption, and Security settings. Incorrectly configured security settings such as an incorrectly typed WEP key, a mis-configured LEAP username, or an incorrectly chosen authentication method will cause the LAN device to associate but not authenticate to the wireless network.
	Incorrect IP address configuration	This only applies to networks using static IP addresses. Please contact your network administrator for the correct settings.

Using the Bluetooth Device

Bluetooth is integrated into the Wireless LAN module. The Bluetooth capabilities are Bluetooth Basic, EDR and Bluetooth Low Energy (BT v4.0) operational modes.

What is Bluetooth?

Bluetooth technology is designed as a short-range wireless link between mobile devices, such as laptop computers, phones, printers, and cameras. Bluetooth technology is used to create Personal Area Networks (PANs) between devices in short-range of each other.

To change the Bluetooth settings, proceed as follows:

1. In the Start menu search field, search for "Bluetooth".
2. Select the option for the Bluetooth settings (depending on the operating system).
3. Make the desired settings in the Bluetooth Settings window.

Where to Find Information About Bluetooth

For additional information about Bluetooth Technology, visit the Bluetooth Web site at: "www.bluetooth.com".

FCC Radiation Exposure Statement

This system complies with the FCC limit values for radio frequency radiation in an uncontrolled environment. The Bluetooth antenna is located at the top edge of the LCD screen and is exempt from the criteria for minimum distance because of its low power consumption.

The transmitter used in this system must not be used together with other antennas or transmitters.

Canadian Notice

To prevent radio interference to licensed services, this system is designed for use in indoor spaces / in buildings and not directly at window openings, to allow a maximum shielding.

Warranty

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

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

Image Backup and Recovery Procedures

Windows 10 Procedures

It is very important that you create your Recovery Drive before beginning to use your system.

It is also important that you create a backup of the content of the *C:\Drivers* on your system to writable media or an external drive. System-specific Software Drivers are also available for download through the Fujitsu support site.

Note: Most of the information below comes from the Microsoft® page "http://windows.microsoft.com/en-us/windows-10/windows-10-recovery-options" . Please refer to it for more details.

Creating a recovery drive

A recovery drive can help you troubleshoot and fix problems with your PC, even if it won't start. To create one, all you need is a USB flash drive. Windows will inform you of the size the USB flash drive needed to hold the required data.

1. From the taskbar, search for *Create a recovery drive* and then select it. You may be asked to enter an administrator password or confirm your selection.
2. When the tool opens, make sure *Backup system files to the recovery drive* is selected and then select Next.
3. Connect a USB drive to your PC, select it, and then select *Next - Create*. A large number of files need to be copied to the recovery drive, so this could take some time.
4. When it's done, select *Finish*.

Note:

If you chose not to back up the system files when you created your recovery drive on Windows 10, you won't be able to use it to reinstall Windows.

Recovery options in Windows 10

If your PC isn't running as quickly or reliably as it used to, try one of these recovery options. The following table can help you decide which one to use.

Problem	Try this
Your PC isn't working well and you recently installed an app, driver, or update.	Restore from a system restore point
Your PC isn't working well and it's been a while since you installed anything new.	Reset your PC
Your PC won't start and you've created a recovery drive.	Use a recovery drive to reinstall Windows
Your PC won't start and you haven't created a recovery drive.	Use installation media to reinstall Windows

Restore from a system restore point

This option takes your PC back to an earlier point in time, called a system restore point. Restore points are generated when you install a new app, driver, or Windows update, and when you create a restore point manually. Restoring won't affect your personal files, but it will remove apps, drivers, and updates installed after the restore point was made.

1. Right-click the Start button, and then select *File Explorer*.
2. Press the Alt and Up Arrow keys.
3. Select *Control Panel*.
4. Search *Control Panel* for *Recovery*.
5. Select *Recovery - Open System Restore - Next*.
6. Choose the restore point related to the problematic app, driver, or update, and then select *Next - Finish*.

Note: If you don't see any restore points, it could be because the system protection isn't turned on. To check, go to the *Control Panel*, search for *Recovery*, and then select *Recovery - Configure System Restore - Configure* and make sure that Turn On System Protection is selected.

Reset your PC

Resetting lets you choose whether to keep your files or remove them, and then reinstalls Windows. Select *Settings - Update & security - Recovery - Reset this PC - Get started*.

Option	What it does
Keep my files	This reinstalls Windows 10, but keeps your personal files and any apps that came with your PC. It removes: • Changes you made to settings • Apps and drivers you installed
Remove everything	This reinstalls Windows 10 and any apps that came with your PC. It removes: • Personal files • Changes you made to settings • Apps and drivers you installed If you're planning to donate, recycle, or sell your PC, use this option and choose to fully clean the drive. This might take an hour or two, but it makes it harder for other people to recover files you've removed.

Use a recovery drive to reinstall Windows

Note: This process utilizes the USB Recovery Drive that you created in the previous section "Create a Recovery Drive".

1. Connect the recovery drive and turn on your PC.
2. On the *Choose an option* screen, select *Troubleshoot - Reset this PC*, and then choose the reset option that's best for you.

If that doesn't fix the problem, try *Troubleshoot - Recover* from a drive. This will remove your personal files, apps and drivers you installed, and changes you made to settings. If you repartitioned the drive Windows is installed on, note that this will restore the drive's default partitions.

Use installation media to reinstall Windows

If you have installation media, like a Recovery DVD that you purchased from Fujitsu, you can use it to reinstall Windows. You will need to install additional drivers and applications after reinstalling Windows.

To reinstall Windows, follow the steps below:

1. Power on your system. When the Fujitsu logo appears on the screen, press the F12 key.
2. Insert the bootable disc in your DVD drive.
3. Highlight the CD/DVD option from the Boot Menu and press Enter.
4. Follow the on-screen instructions to restore the image.
   - Select the language.
   - At the Windows Setup dialog window, enter your OS, language and other preferences and click *Next* to continue.
   - Click *Install now* to proceed with reinstalling Windows.
   - At License terms, check on *I accept the license terms* and click *Next*.
   - At *Which type of installation do you want*, click on *Custom: Install Windows only (advanced)*.
   - Delete all partitions on the drive and click *Next*. Installation of Windows will start. This will take some time so please wait until the installation is finished and the system restarts.
5. When the system restarts, perform all set-up steps to arrive at the Desktop.
6. Connect to the Internet.
7. Use the *Backup of the contents of the C:\Drivers* folder to install needed drivers and applications to your system. If it is not available, download the software from the Fujitsu Support Site, as described below in the "Auto Installation support for the software downloaded from support website" section below.

Auto Installation support for the software downloaded from support website

1. Download FSDM (Fujitsu Software Download Manager) from the support site and download all the drivers applicable to the model and OS using FSDM if they are not downloaded yet.
2. When the software packages are downloaded from the web, it is important to download the Auto Installer Software package and the model/language-specific Readme file if you prefer to auto install the software.
3. It is important to have the extracted Auto Installer software package folder and Readme file in the same location as the other software folders. Otherwise auto-installation of the software will not be supported.
4. Inside the Auto Installer software package, launch *FjAutoinstall.exe* as administrator.
5. Click *Yes* on the *User Account Control* dialog box. This will take some time to process the software packages. A message will be displayed during this time stating *Please wait while the content is being processed.*
6. If the EULA is displayed for Fujitsu Software Auto Installer, accept the EULA, otherwise continue.
7. The Fujitsu Software Auto Installer user interface will be launched providing the ability to auto install the software downloaded from the support site.
8. It is recommended that you install all the software in the listed order. You can *Select All*, to install the software in the order listed.
9. Click the *Install* button to start the installation.
10. After installing all the selected drivers, the Installation Results window is displayed. Click *OK*.

11. *You must restart the system for the settings to take effect. Do you wish to reboot now?* message appears. Select *Yes*.
12. The system will now reboot.

Downloading driver updates

To ensure that you always have the most current driver updates related to your system, you should occasionally access the Fujitsu Software Download Manager (FSDM) utility. The FSDM utility is available from the Fujitsu Support site. FSDM will allow you to view and download the most current drivers, utilities and applications to determine whether you have the latest versions. To download the FSDM utility, go to the support site: "http://support.fujitsupc.com/CS/Portal/support.do?srch=DOWNLOADS".

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