

# FUJITSU Thin Client FUTRO S940



# Thank you for buying an innovative product from Fujitsu.

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

You can find driver updates at: ["http://support.ts.fujitsu.com/download"](http://support.ts.fujitsu.com/download)

Should you have any technical questions, please contact:

- our Hotline/Service Desk (["http://support.ts.fujitsu.com/contact/servicedesk"](http://support.ts.fujitsu.com/contact/servicedesk))
- Your sales partner
- Your sales office

We hope you enjoy using your new Fujitsu system!





**Published by / Contact address in the EU**

Fujitsu Technology Solutions GmbH

Mies-van-der-Rohe-Straße 8

80807 Munich, Germany

["http://www.fujitsu.com/fts/"](http://www.fujitsu.com/fts/)

**Copyright**

© Fujitsu Technology Solutions GmbH 2019. All rights reserved.

**Publication Date**

04/2019

Order No.: A26361-K1090-Z320-1-7619, edition 2

# **FUJITSU Thin Client FUTRO S940**

## **Operating Manual**

<b>Your FUTRO...</b>	<b>5</b>
<b>Ports and Operating Elements</b>	<b>6</b>
<b>Important notes</b>	<b>11</b>
<b>Getting started</b>	<b>14</b>
<b>Operation</b>	<b>23</b>
<b>System expansions</b>	<b>28</b>
<b>Technical data</b>	<b>56</b>
<b>Index</b>	<b>58</b>

## **Remarks**

Information on the product description meets the design specifications of Fujitsu and is provided for comparison purposes. Several factors may cause the actual results to differ. Technical data is subject to change without prior notification. Fujitsu rejects any responsibility with regard to technical or editorial mistakes or omissions.

## **Trademarks**

Fujitsu, the Fujitsu logo and FUTRO are registered trademarks of Fujitsu Limited or its subsidiaries in the USA and other countries.

Kensington and Microsaver are registered trademarks of ACCO Brands.

USB Type-C™ and USB-C™ are trademarks of the USB Implementers Forum in the USA and other countries.

Microsoft and Windows are trademarks or registered trademarks of Microsoft Corporation in the USA and/or other countries.

eLux® and Scout Enterprise Management Suite® are registered trade marks of Unicon Software Entwicklungs- und Vertriebsgesellschaft mbH in the European Union and in the USA.

All other trademarks specified here are the property of their respective owners.

## **Copyright**

No part of this publication may be copied, reproduced or translated without the prior written consent of Fujitsu.

No part of this publication may be saved or transferred by any electronic means without the written approval of Fujitsu.

# Contents

<b>Your FUTRO...</b>	<b>5</b>
Validity of the Reference Manual	5
Notational conventions	5
<b>Ports and Operating Elements</b>	<b>6</b>
Front view	6
Rear view	7
Security functions	8
Property and data protection	8
Security Lock device	8
Securing USB covers (optional)	9
<b>Important notes</b>	<b>11</b>
Safety notes	11
Important notes for the preparation for use of your device using the Power-over-Ethernet module	12
Transporting the device	12
Cleaning the device	12
Energy saving, disposal and recycling	13
<b>Getting started</b>	<b>14</b>
Setting up the device	14
Vertical operating position	14
Horizontal operating position	17
Connecting external devices	19
Ports on the device	19
Connecting a monitor	20
Connecting the mouse	20
Connecting the keyboard	20
Connecting external devices to the serial interface	21
Connecting external devices to the USB ports	21
Connecting microphone, headphones, line-out and line-in devices	22
Connecting the device to the network (LAN)	22
Connecting the mains adapter	22
<b>Operation</b>	<b>23</b>
Switch the device on	23
Operating systems and management (device-dependent)	23
eLux®	23
Windows® 10 IoT Enterprise	24
Scout Enterprise Management Suite® – The management solution for Thin Clients	25
Switching off the device	26
Activating power-saving mode	26
Open BIOS Setup	26
PXE system boot	27
BIOS Update	27
Making system settings	27
Executing a system update	27
<b>System expansions</b>	<b>28</b>
Overview of optional system components	29
Information about boards	30

Opening the casing ..... 31

Adding memory ..... 32

    Installing a memory module ..... 32

    Removing memory modules ..... 32

Install and remove SmartCard reader (optional) ..... 33

    Installing the SmartCard reader ..... 33

    Removing the SmartCard reader ..... 36

Install and remove USB port ..... 37

    Install USB port ..... 37

    Remove USB port ..... 38

Install and remove loudspeaker (optional) ..... 39

    Installing the loudspeaker ..... 39

    Removing the loudspeaker ..... 41

Installing and removing a Power over Ethernet module (optional) ..... 42

    Installing the Power over Ethernet module ..... 42

    Removing the Power over Ethernet module ..... 44

Install and remove board (optional) ..... 45

    Installing the board ..... 45

    Removing the board ..... 47

Install and remove power supply (PSU, Power Supply Unit) (optional) ..... 48

    Install power supply ..... 48

    Remove power supply ..... 51

Replacing the lithium battery ..... 54

Closing the casing ..... 55

**Technical data ..... 56**

    FUJITSU Thin Client FUTRO S940 ..... 56

    AC adapter ..... 57

    Internal AC adapter ..... 57

**Index ..... 58**



# Your FUTRO...







... is a universal network client. The intelligent and flexible terminal is reliable and easy to maintain, it does not need a fan nor a hard disk. It therefore runs very quietly. The operating system is installed on a flash memory.

## Validity of the Reference Manual

This Reference Manual is valid for the following system:

- FUJITSU Thin Client FUTRO S940

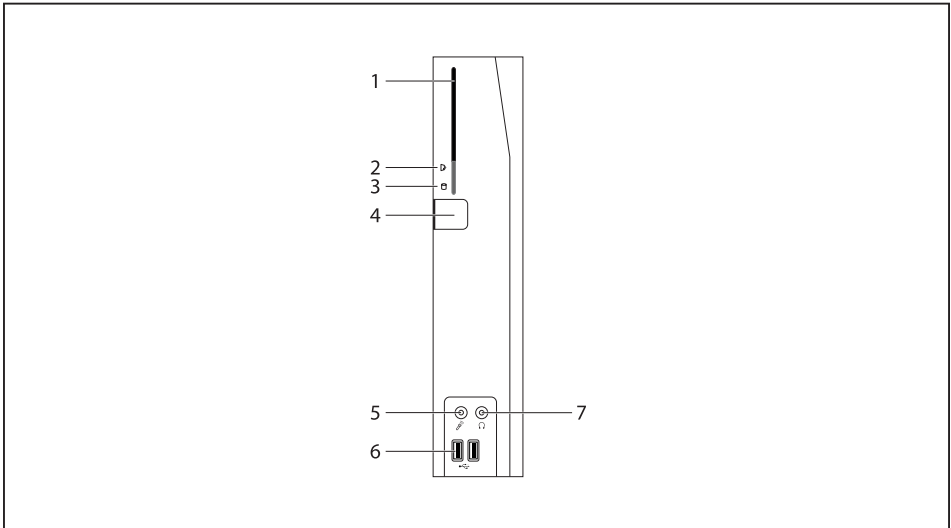
## Notational conventions

	Pay particular attention to text marked with this symbol. Failure to observe these warnings could pose a risk to health, damage the device or lead to loss of data. The warranty will be invalidated if the device becomes defective through failure to observe these warnings.
	Indicates important information for the proper use of the device.
	Indicates an activity that must be performed
	Indicates a result
<b>This font</b>	indicates data entered using the keyboard in a program dialogue or at the command line, e.g. your password ( <b>Name123</b> ) or a command used to start a program ( <b>start.exe</b> )
<i>This font</i>	indicates information that is displayed on the screen by a program, e.g.: <i>Installation is complete.</i>
<i>This font</i>	indicates <ul style="list-style-type: none"> <li>• terms and texts used in a software interface, e.g.: Click on <i>Save</i></li> <li>• names of programs or files, e.g. <i>Windows</i> or <i>setup.exe</i>.</li> </ul>
"This font"	indicates <ul style="list-style-type: none"> <li>• cross-references to another section, e.g. "Safety information"</li> <li>• cross-references to an external source, e.g. a web address: For more information, go to "<a href="http://www.fujitsu.com/fts">http://www.fujitsu.com/fts</a>"</li> <li>• Names of CDs, DVDs and titles or designations for other materials, e.g.: "CD/DVD Drivers &amp; Utilities" or "Safety/Regulations" manual</li> </ul>
	indicates a key on the keyboard, e.g.: 
<b>This font</b>	indicates terms and texts that are emphasised or highlighted, e.g.: <b>Do not switch off the device</b>

# Ports and Operating Elements

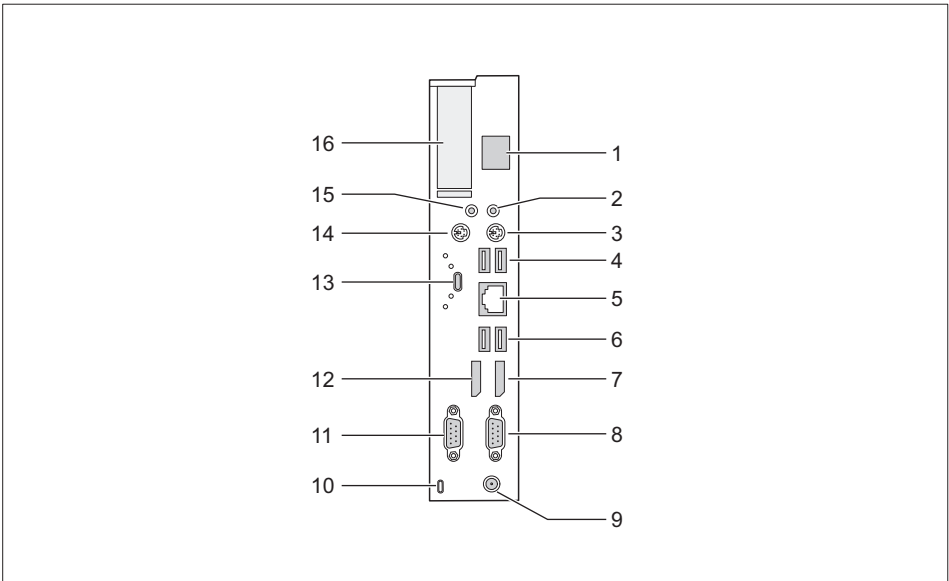
This chapter presents the individual hardware components of your device. This will provide you with an overview of the ports and operating elements on the device. Please familiarise yourself with these components before you start to work with the device.

## Front view



- |                                      |                                     |
|--------------------------------------|-------------------------------------|
| 1 = SmartCard reader (optional)      | 5 = Microphone jack                 |
| 2 = Indicator for SmartCard reader   | 6 = USB 3.1 Gen1 ports (USB Type-A) |
| 3 = Flash memory or hard disk access | 7 = Headphone port                  |
| 4 = ON/OFF switch                    |                                     |

## Rear view



- 1 = Socket for Power over Ethernet module (optional)
- 2 = Audio output (Line Out)
- 3 = PS/2 keyboard port
- 4 = USB 2.0 ports (USB Type-A)
- 5 = RJ45 socket (Local Area Network)
- 6 = USB 2.0 ports (USB Type-A)
- 7 = DisplayPort
- 8 = Serial port

- 9 = DC input jack (DC IN)
- 10 = Security Lock device
- 11 = Serial port
- 12 = DisplayPort
- 13 = USB 3.1 Gen1 port (USB Type-C) with double screw security
- 14 = PS/2 mouse port
- 15 = Audio input (Line In)
- 16 = PCI/PCIe slot

## Security functions

### Property and data protection

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

### Security Lock device

Using the Security Lock device and the Kensington Lock cable (steel cable, accessory) you can protect your device against theft. Please consult the manual for your Security Lock.

Your device has a Security Lock device on the rear side.

If you are using the VESA sub-adapter, first connect the Kensington Lock Cable to the Security Lock device and then mount your device on the VESA sub-adapter. You can find more information in the manual for your FUJITSU FUTRO S monitor carrier.



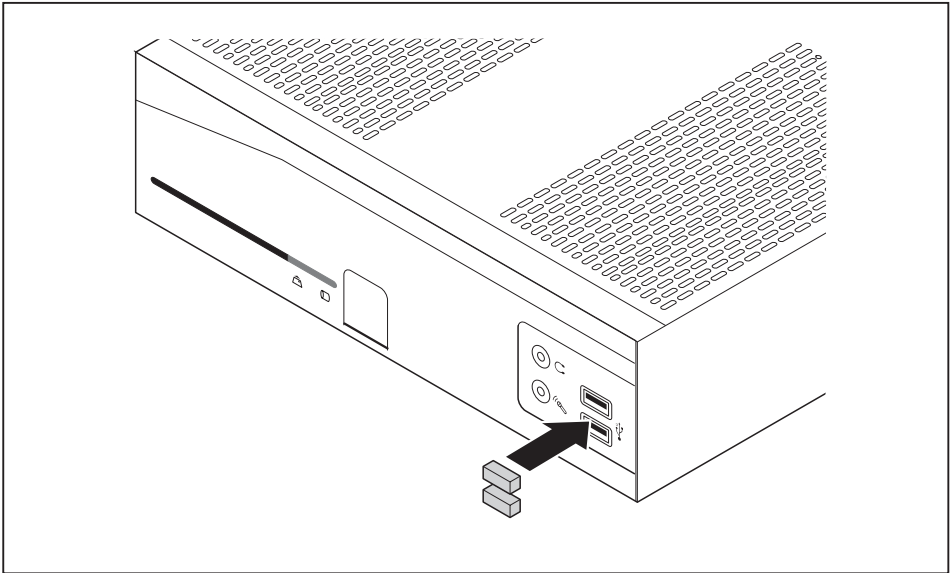
When using the Security Lock device, opening of the casing is also prevented.

## Securing USB covers (optional)

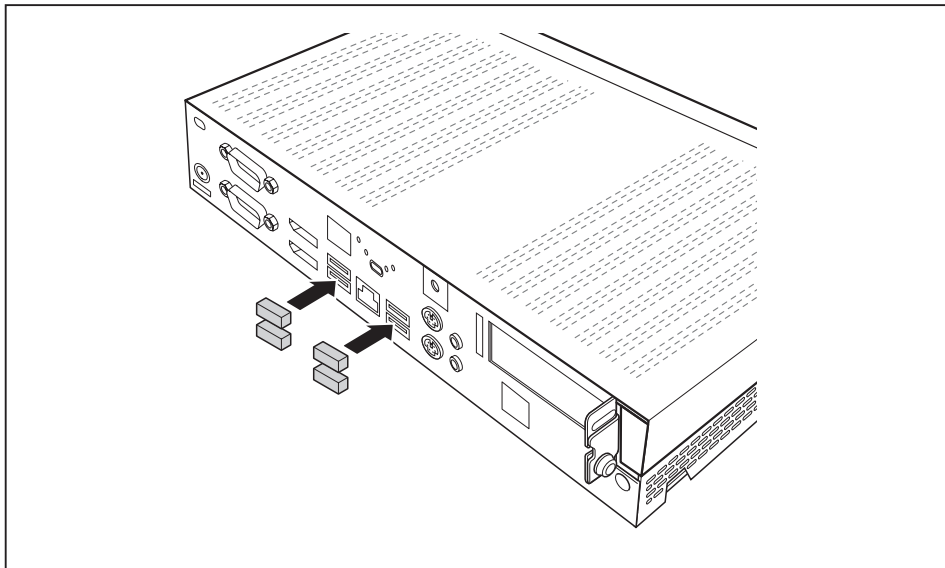
To prevent use of the USB ports, you can attach optional USB covers to the USB ports on the front and rear side of the device.



Please note that USB covers, once fitted, cannot be removed again!  
Ensure that you fit the USB covers the right way round.



- Insert the USB covers in the USB ports on the front of the device and push the USB covers in firmly.



- Insert the USB covers in the USB ports on the rear side of the device and push the USB covers in firmly.



In the *BIOS Setup*, under *Advanced - USB Port Security*, you can also deactivate the USB ports, in order to limit the use of USB devices.

# Important notes

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

## Safety notes



Please follow the safety notes provided in the "Safety/Regulations" manual as well as the safety notes given below.

When installing and operating the device, please observe the notes on ambient conditions in ["Technical data", Page 56](#) and the instructions in ["Getting started", Page 14](#).

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

The device may only be operated up to a maximum height of 3000 m (9842 ft) (for China only 2000 m (6557 ft)).

Caution, components in the system can get very hot.

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

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

Operate the device only with the casing closed.



Power cable and mains adapter:

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

The mains adapter's power cable should only be connected to a mains socket if the device is connected.

Do not use the mains adapter for other devices.

Use only the mains adapter which is intended for use with the device, see chapter ["Technical data", Page 56](#).

Make sure that the rated current of the mains adapter is not higher than that of the power system to which you connect the mains adapter.

ON/OFF switches do not disconnect the device from the mains voltage. To completely disconnect the mains voltage, remove the power plug from the power socket.

## Important notes for the preparation for use of your device using the Power-over-Ethernet module

With the help of the Power-over-Ethernet module you can operate the device via the LAN without an additional power supply. For this, you need to have an appropriate network infrastructure.

To operate the device using the Power-over-Ethernet module, end-span or midspan devices as defined in IEEE 802.3at and shielded CAT-5 network cables or higher-quality cables with a larger cross-section (AWG23 or smaller) and a maximum length of 75 m are required. End-span devices will only be supported in connection with a hardware classification.

When operating the device using the Power-over-Ethernet module, due to the limited power output, not all hardware expansion levels are possible. For this reason, the use of USB port type C (S26361-F3465-E9) or of PCI-Express expansion cards is prohibited. If you have any questions, please contact our support or sales outlet.

Depending on the system utilisation, occupancy of external interfaces (excluding the keyboard, screen, microphone and headset) may cause overloading of the Power-over-Ethernet module. In case of overheating or overload, the system can be shut down automatically to prevent damage to the device or the network. In the event of switching off, the assignment of the external interfaces must be checked or reduced.

If the system does not receive the required power according to standard 802.3 at (25.5 W), the system stops in the post with an error message. In this case, check your midspan or end-span device.

## Transporting the device



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

Do not unpack them until all transportation manoeuvres are completed.

If the device is brought from a cold environment into the room where it will be used, condensation may occur. Before operating the device, wait until it is absolutely dry and has reached approximately the same temperature as the installation site.

## Cleaning the device



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

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

Do not use any cleaning agents that contain abrasives or may corrode plastic (alcohol, thinner or acetone).

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

Ensure that no liquid enters the system.

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

Use disinfectant wipes to clean the keyboard and the mouse.



## Energy saving, disposal and recycling

You can find information on these subjects in chapter ["Activating power-saving mode", Page 26](#), on the Recovery DVD or on our website (["http://www.fujitsu.com/fts/about/fts/environment-care/"](http://www.fujitsu.com/fts/about/fts/environment-care/)).

**The following sections apply to the FUJITSU Thin Client FUTRO only:**

Information about the "Eco-design directive": Regulation 1275/2008, based on the EU Eco-design Directive (2009/125/EU), defines requirements for the power consumption of electrical and electronic domestic and office devices in stand-by and off mode.

In general, all FUTRO thin client products have been developed for energy-efficient operation and low stand-by losses. Customer-specific requirements and requirements of the operating system, which are a priority for optimal operation, can contradict the requirements of the above-mentioned regulation.

For administrative purposes, such as remote maintenance of systems, the "Wake-on-LAN" (WoL) function is indispensable for our customers and is therefore a default setting. When the WoL function is active, the maximum permissible power draw can be exceeded slightly in OFF mode. By deactivating the WoL function, it is possible to comply with the legal requirements. Please see chapter ["Activating power-saving mode", Page 26](#) for the procedure.

The energy saving mode (ACPI S4 Save-to-disk), which is familiar from many current mobile and desktop systems, is not available in the embedded operating systems for technical reasons. Therefore, it is not possible to switch devices with this operating system automatically into Off mode.

The operating system of a thin client is stored on a flash memory with optimised size and is provided with write protection after configuration has been completed by the customer. This prevents data security from being put at risk through frequent writing to a flash memory, such as when updating the *swapfiles* in the operating system or through other applications. Every flash memory permits only a limited number of write cycles. Both the activated write protection and the available limited flash memory capacity rule out the possibility of activating energy saving mode (ACPI S4).

# Getting started



Please observe the safety information in the ["Important notes", Page 11](#) chapter.

## Setting up the device



In order to ensure that the casing is sufficiently ventilated and to prevent overheating, the device must only be operated with the base foot attached.

If the device is to be built-in, adequate ventilation must be assured.



Fit the base feet for horizontal or vertical operation (see ["Vertical operating position", Page 14](#) and ["Horizontal operating position", Page 17](#)).

## Vertical operating position



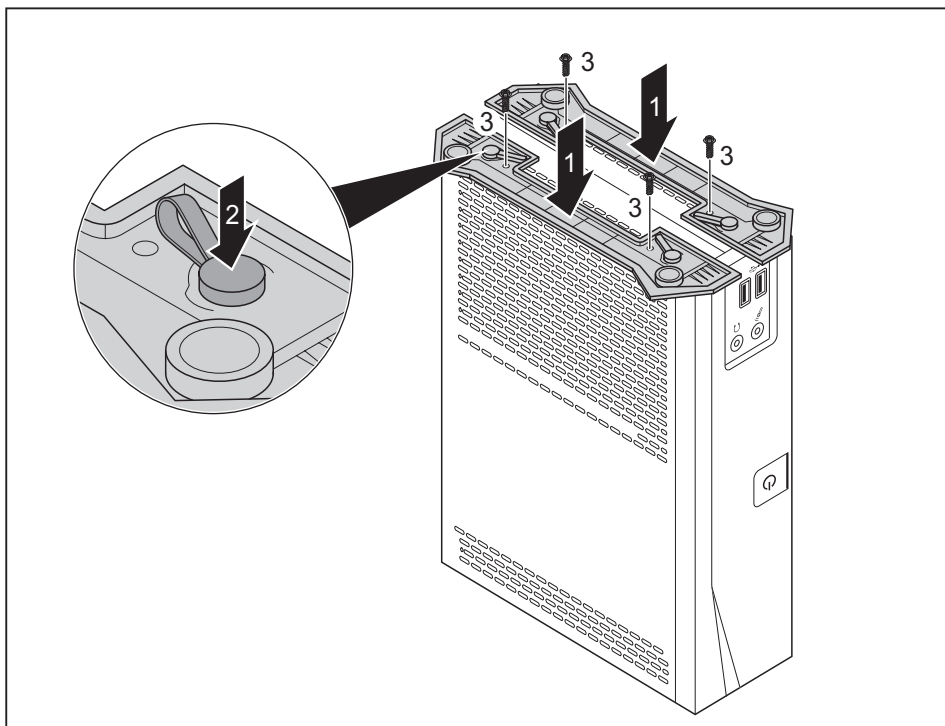
If you wish to operate the device in the vertical operating position, use the two feet supplied for vertical operation.

Only mount the feet on the device side shown in the diagrams.

If connecting many cables to the device, ensure that the device is in a stable position, in order to prevent it from toppling over.

Proceed as follows to prepare the device for the vertical operating position:

- ▶ Disconnect the cables if required.
- ▶ Lay the device on its top (narrow side) as shown, on a stable, flat and clean surface.

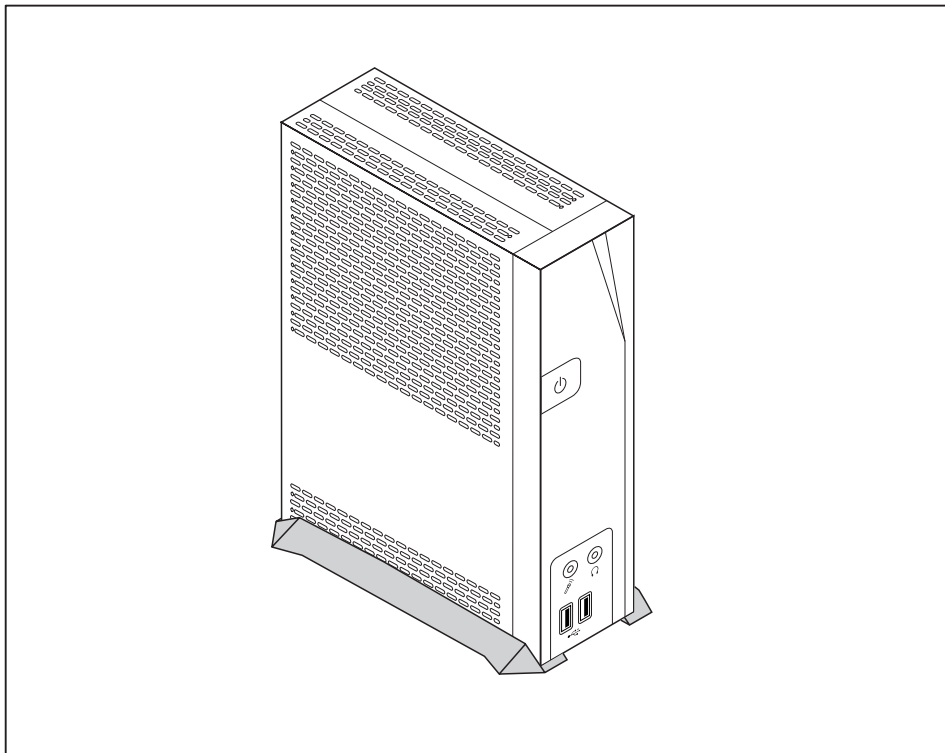


- Place the feet on the casing (1). In doing so, make sure that the 4 clips (2) on the feet are aligned above the corresponding holes in the casing.
- To secure the feet, press the clips in the direction of the arrow (2) until they are felt to engage in the holes.



To protect your device against unauthorised removal of the feet, the feet can also be secured with two screws each, of type M2.5x5 mm. These are not included in the delivery scope.

- Secure the feet with the screws (3).



- ▶ Stand the device on the feet.
- ▶ If necessary, reconnect any cables that were previously disconnected.

## Horizontal operating position

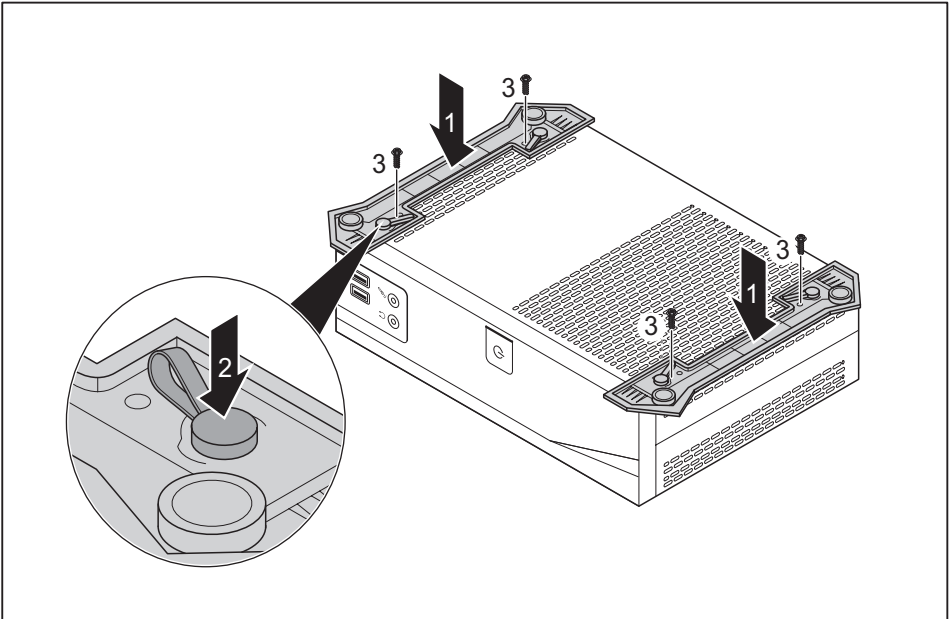


If you wish to operate the device in the horizontal operating position, use the two feet supplied for horizontal operation.

Only mount the feet on the device side shown in the diagrams.

Proceed as follows to prepare the device for the horizontal operating position:

- Disconnect the cables if required.
- Lay the device on its right side as shown, on a stable, flat and clean surface.

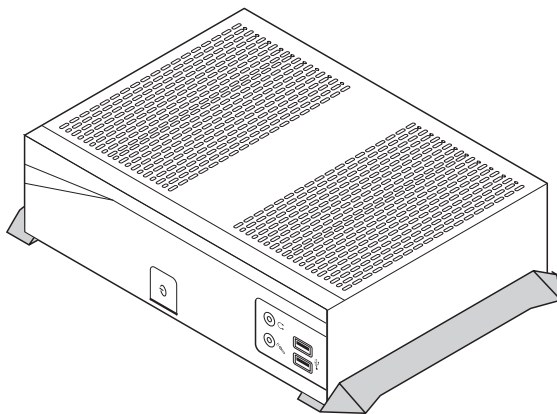


- Place the feet on the casing (1). In doing so, make sure that the 4 clips (2) on the feet are aligned above the corresponding holes in the casing.
- To secure the feet, press the clips in the direction of the arrow (2) until they are felt to engage in the holes.



To protect your device against unauthorised removal of the feet, the feet can also be secured with two screws each, of type M2.5x5 mm. These are not included in the delivery scope.

- Secure the feet with the screws (3).



- Stand the device on the feet.
- If necessary, reconnect any cables that were previously disconnected.

# Connecting external devices



Read the documentation on the external device before connecting it.

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











Do not connect or disconnect cables during a thunderstorm.

Always hold the plug of a cable when removing it. Never unplug a cable by pulling the cable itself.

To ensure that your device works properly, use only the connection cable supplied or use a high-quality connection cable.

## Ports on the device

The ports are located on the front and rear side of the device. The ports available on your device depend on the configuration level you have selected. The standard ports are marked with the symbols shown below (or similar). Detailed information on the location of the ports is provided in the manual for the mainboard.

	Headphone port, black (front of device)		Microphone port, black (front of device)
	Audio output (Line Out), light green		Audio input (Line In), light blue
	Serial port, turquoise		RJ45-LAN port
	USB 2.0 - Universal Serial Bus, type-A, black		USB 3.1 Gen1 - Universal Serial Bus, type-A: blue, type-C: black
DP	DisplayPort		PS/2 mouse port, green
	PS/2 keyboard port, purple		



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

### Connecting a monitor



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

- ▶ Follow the instructions contained in the monitor manual to prepare the monitor for operation (e.g. connecting cables).
- ▶ Connect the data cable to the required monitor port on your device.
- ▶ Plug the monitor power cable into the grounded mains outlet.

### Connecting the mouse

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

#### Connecting a USB mouse

- ▶ Connect the USB mouse to one of the USB ports on the device.

#### Connecting a PS/2 mouse



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

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

### Connecting the keyboard

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

#### Connecting a USB keyboard

Use the supplied keyboard cable only.

- ▶ Plug the flat rectangular USB connector of the keyboard cable into a USB port of the device.

#### Connecting a PS/2 keyboard

Use the supplied keyboard cable only.



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

- ▶ Switch your device off.
- ▶ Plug the round plug of the keyboard cable into a keyboard port of the device.
- ▶ Switch your device on again.



## Connecting external devices to the serial interface



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

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

- ▶ Connect the data cable to the external device.
- ▶ Connect the data cable to the corresponding serial interface.

### Port settings



You can change the settings of the port in the *BIOS Setup*.

### Device drivers



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

## Connecting external devices to the USB ports

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



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

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

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

### Device drivers



External USB devices which you connect to one of the USB ports don't usually need their own drivers because the software required is already included in the operating system. If the device requires separate software, please follow the instructions in the manufacturer's documentation.

## Connecting microphone, headphones, line-out and line-in devices

- ▶ Connect the microphone to the microphone port.
- ▶ Connect the headphones to the headphones port.
- ▶ Connect line-out devices to the audio output.
- ▶ Connect the external line-in devices to the audio input.

## Connecting the device to the network (LAN)

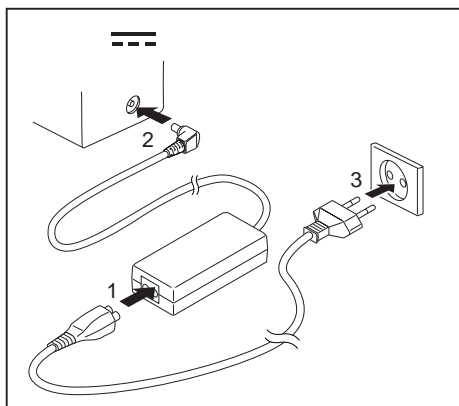
- ▶ Connect the 10/100/1000 Base T network cable to the RJ45 LAN port.

## Connecting the mains adapter



Observe the safety notes in the enclosed "Safety/Regulations" manual.

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



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

# Operation

## Switch the device on

- ▶ If necessary, switch the monitor on (see the operating manual for the monitor).
- ▶ Press the ON/OFF switch on the front of the device.
- ↳ The power indicator lights up and the device starts.

## Operating systems and management (device-dependent)

Depending on the configuration level, your device is fitted with one of the following operating systems:

- eLux®
- Windows® 10 IoT Enterprise LTSC

Regardless of the operating system, your device can be managed with the *Scout Enterprise* management solution.

### eLux®

The eLux Thin Client operating system is based on Linux and is protected against viruses and malware by the write-protected file system.

It has a lean and modular structure, and thus has low demands on the hardware. It enables access to the server via the integrated Citrix and Microsoft clients as well as the optional VMware client. It has a user-friendly licence model, with the possibility of transferring licences to new devices.



Updates for eLux® can be found on the Fujitsu support pages or on the Internet at ["www.mylux.com"](http://www.mylux.com).

For more information on eLux, go to ["http://www.unicon-software.com/produkte/elux/"](http://www.unicon-software.com/produkte/elux/).

# Windows® 10 IoT Enterprise

The Windows® versions approved by Fujitsu are optimally designed for thin client applications due to the pre-installed write filter and client software. In addition they offer an optimum integration into Scout Enterprise or SCCM.



The write protect filter is not enabled in the delivery state, to make it easier to adapt the thin client to your requirements. Fujitsu strongly advises that the write protect filter should be enabled during normal operation, because only then is the typical thin client high security of the device guaranteed. In addition, the enabled write filter has a positive effect on the durability of the flash memory.

You can find updates for Windows® operating systems on the Internet at ["http://support.ts.fujitsu.com"](http://support.ts.fujitsu.com).

Please note the licensing restrictions when running a Windows® version for thin clients, such as for example:

- No desktop functions may be run on the local system.
- Files that are the result of the use of desktop functions are not allowed to be permanently saved on the local system.

## Additional information

This Product is licensed under the AVC, the VC-1 and the MPEG-4 Part 2 Visual patent portfolio licenses for the personal and non-commercial use of a consumer to (i) encode video in compliance with the above standards ("Video Standards") and/or (ii) decode AVC, VC-1 and MPEG-4 Part 2 Visual that was encoded by a consumer engaged in personal and non-commercial activity or was obtained from a video provider licensed to provide such video. None of the licenses extend to any other product regardless of whether such product is included with this product in a single article. No license is granted or will be implied for any other use. Additional information may be obtained from MPEG LA, LLC. See ["www.mpegla.com"](http://www.mpegla.com).

To the extent that non-Product software includes AV Technologies licensed by MPEG LA, LLC under a product category, such license agreement will determine any royalties due for AV Technologies included in non-Product software.

This Product includes audio encoding and decoding technology from Dolby Laboratories. Microsoft has licensed Dolby's two-channel decoder for use in this Product. Company is not licensed for Dolby Digital Plus decoder for decoding more than two channels and the Dolby Digital consumer encoder, and Company must separately license such technologies from Dolby. Company agrees to obtain the license(s) and to pay applicable royalties and other fees. Dolby considers failure to obtain such licenses to be infringement of Dolby Laboratories intellectual property rights. Company may apply for a license from Dolby Laboratories using the following URL: ["http://www.dolby.com/professional/technology/licensing/getting-licensed.html"](http://www.dolby.com/professional/technology/licensing/getting-licensed.html).

If you have questions for Dolby Laboratories, Company may contact Dolby Laboratories at the following email address: ["licensinginquiries@dolby.com"](mailto:licensinginquiries@dolby.com).

Dolby, Dolby Digital Plus, Dolby Digital Stereo Creator and the double-D symbol are registered trademarks of Dolby Laboratories. Any use of those marks requires a separate license from Dolby.

Graphics processor supports DirectX 9. Some games and programs may require DirectX 10 or higher for superior performance and graphics. Check ["www.windows.com/Windows10specs"](http://www.windows.com/Windows10specs) for details.

Some Windows® 10 IoT Enterprise features - such as Windows Hello, support for 5-point touch, USB peripheral support - may require advanced hardware. Check ["ts.fujitsu.com/futro"](http://ts.fujitsu.com/futro) for details.

## Scout Enterprise Management Suite® – The management solution for Thin Clients

### Basic functionalities

- Multi-administrator policy
- Simple scalability and high availability
- Optimal support of complex organisations

### Asset management functions

- Display of serial number and connected monitors
- Illustration of update history
- Flexible licence management
- Display of device, hardware and network information
- Display of installed or connected components, such as mainboard, memory, display adapters, monitors and USB devices

### User-friendliness and handling

- Simple and intuitive operation
- Automatic updates of eLux packages
- Complete audit reporting

### Help Desk support

- Support of Wake-On-LAN and Remote Power On/Off
- Mirroring of desktops, encrypted and audit-proof
- Extensive diagnostic information



For more information on Scout Enterprise, go to ["http://www.unicon-software.com/produkte/scout-enterprise/"](http://www.unicon-software.com/produkte/scout-enterprise/).

More information and manuals are available on the Internet at ["http://www.unicon-software.com/udocs/"](http://www.unicon-software.com/udocs/).

## Switching off the device

- ▶ Shut down the operating system in the proper way. In Windows: from the *Start* menu select the *Shut Down* option.
- ▶ If the operating system does not automatically switch the device into energy-saving mode or switch it off, press the ON/OFF switch. Warning, this could lead to a loss of data!
- ↳ If the device is switched off, it consumes a minimum of energy.



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

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

## Activating power-saving mode

Due to customer requirements and requirements of the operating system, the "Wake-on-LAN" (WoL) function is switched on by default. With the WoL function, the power draw in OFF mode increases slightly.

To meet the requirements of EC regulation 1275/2008 regarding the implementation of the Ecodesign directive (2009/125/EC), the default WoL setting must be changed as follows:

- ▶ To start the *BIOS Setup utility* after the system start, press the ON/OFF switch for two to three seconds.
- or
- ▶ Press the **[F2]** function key or the **[Del]** key.
  - ▶ In the *Power* sub-menu, change the *External Power Button Control*, *LAN* and *Keyboard* settings to *disabled*.
  - ▶ To save the setting and exit the *BIOS Setup Utility*, press function key **[F4]**.
- ↳ After making this change, the system will achieve the lowest energy saving mode during shut-down.
- In this status, the "Wake-on-LAN" function can no longer be used.

## Open BIOS Setup

- ▶ When the system starts, press the ON/OFF switch for two to three seconds.
- or
- ▶ Press (possibly several times) the **[F2]** key.
- ↳ *BIOS Setup* will be started. Select one of the tabs to access other setting options in *BIOS Setup*.

## PXE system boot

- ▶ Switch the device on with the ON/OFF switch.
- ▶ When starting the system, press the F12 key several times.
- ↳ The boot menu is displayed.
- ▶ Select the desired boot option.

## BIOS Update

### When should a BIOS update be performed?

Fujitsu Technology Solutions makes new BIOS versions available to ensure compatibility with new operating systems, new software or new hardware. In addition, new BIOS functions can be integrated.

A BIOS update should also always be performed if there is a problem that cannot be solved using new drivers or new software.

### Where can I obtain BIOS updates?

You can find the BIOS updates on the Internet at "<http://support.ts.fujitsu.com/>".

## Making system settings

Make the system settings as described in the documentation for your operating system.

## Executing a system update

There are two ways of updating your system software:

- via the Unicon Product Scout Enterprise
- via an external USB data carrier

For information on the system update, see the documentation on your operating system.

# System expansions



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

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



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

A component holder will be needed to install certain components. If the component holder is not pre-installed, follow the installation instructions in the enclosed supplement "System expansions for FUJITSU Thin Client FUTRO S940".

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

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

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



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

Remove the power plug before opening the device.

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

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



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



# Overview of optional system components

The following optional system components can be installed or combined:

System component	Smart Card reader	Speaker	Power over Ethernet module	USB3.1 PCIEX4 Card	Parallel port	PCIe Dual Serial Card	PCIe graphics card (Low Power Version)	USB3.1 (Type-C) with double screw security
Smart Card reader	—	✓	✓	✓	✓	✓	✓	✓
Speaker	✓	—	✓	✓	✓	✓	✓	✓
Power over Ethernet module	✓	✓	—	—	—	—	—	—
Parallel port	✓	✓	—	—	—	—	—	✓
USB3.1 PCIEX4 Card	✓	✓	—	—	—	—	—	✓
PCIe Dual Serial Card	✓	✓	—	—	—	—	—	✓
PCIe graphics card (Low Power Version)	✓	✓	—	—	—	—	—	✓
USB3.1 (Type-C) with double screw security	✓	✓	—	✓	✓	✓	✓	—

# Information about boards

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

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

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

Never use sharp objects (screwdrivers) for leverage.



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

When handling boards fitted with ESDs, you must always observe the following points:

- You must always discharge static build up (e.g. by touching a grounded object) before working.
- The equipment and tools you use must be free of static charges.
- Only touch or hold the boards by the edge or, if present, at the areas marked green (Touch Points).
- Never touch pins or conductors on boards fitted with ESDs.

## Opening the casing

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



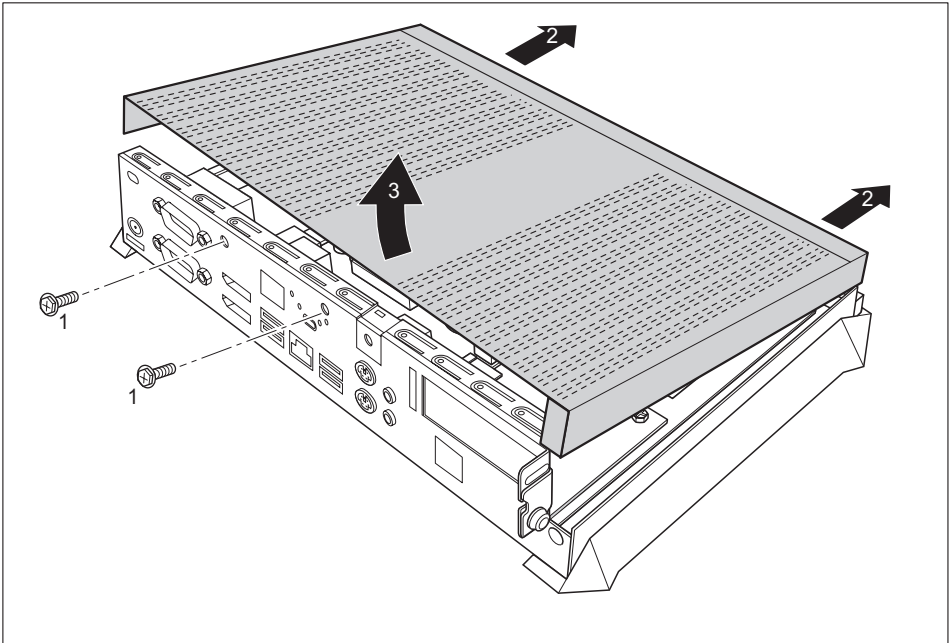
Please observe the safety information in ["Important notes", Page 11](#).

Disconnect the mains plug from the mains outlet.

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

Open the casing carefully because there are WLAN cables that lead from the casing cover to the system and these may break if the casing is opened carelessly.

- Remove any connected wires which are in the way.



- Loosen the screws at the rear (1).
- Slide the casing cover in the direction of the arrow (2) and swing out the casing cover towards the front (3).

## Adding memory

If you want to remove or add memory, proceed as follows:



Please observe the safety information in chapter ["Important notes", Page 11](#).

Use only memory expansions of type DDR4-2400.

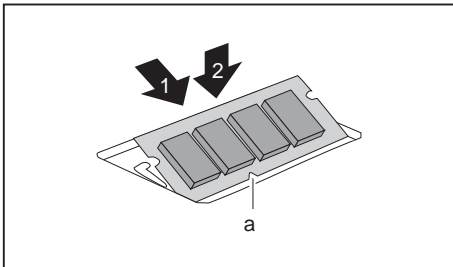
Never use force when installing or removing a memory extension.

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

Individual components (e.g. the processor heat sink) can become very hot during operation. We therefore recommend that you wait one hour after switching off the device before removing or installing the memory modules. Otherwise, there is a risk of suffering burns!

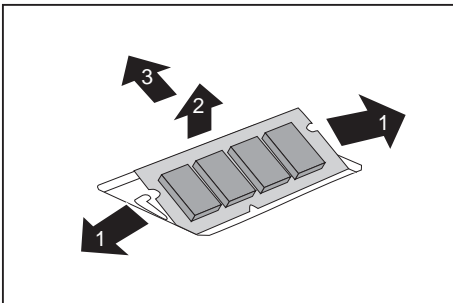
As some components are exposed that are sensitive to static electricity, please take note of chapter ["Information about boards", Page 30](#).

## Installing a memory module



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

## Removing memory modules



- ▶ Carefully push the two mounting clips outwards (1).
- ↳ The memory module snaps upwards (2).
- ▶ Pull the memory module out of its slot in the direction of the arrow (3).

## Install and remove SmartCard reader (optional)

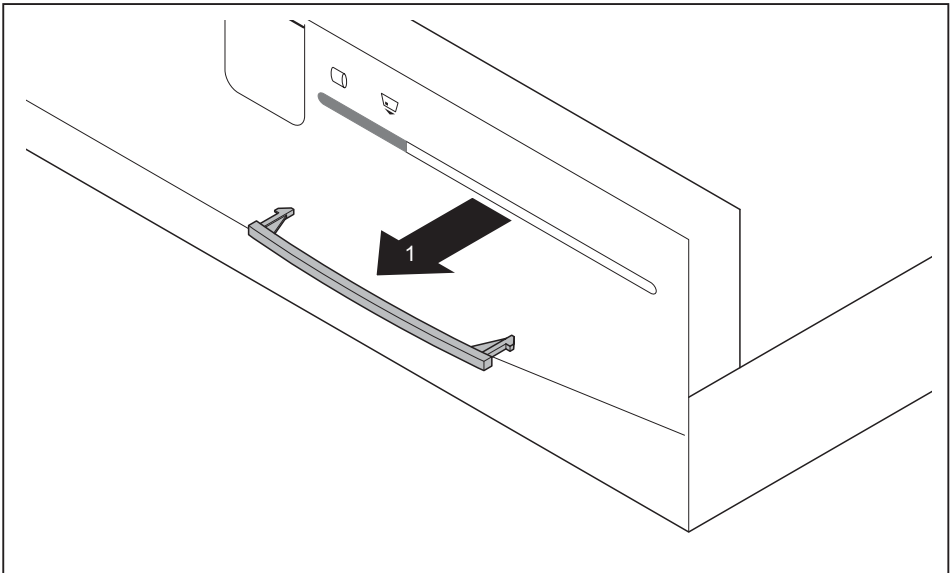


If you are also installing the optional loudspeaker, install the SmartCard reader before the loudspeaker.

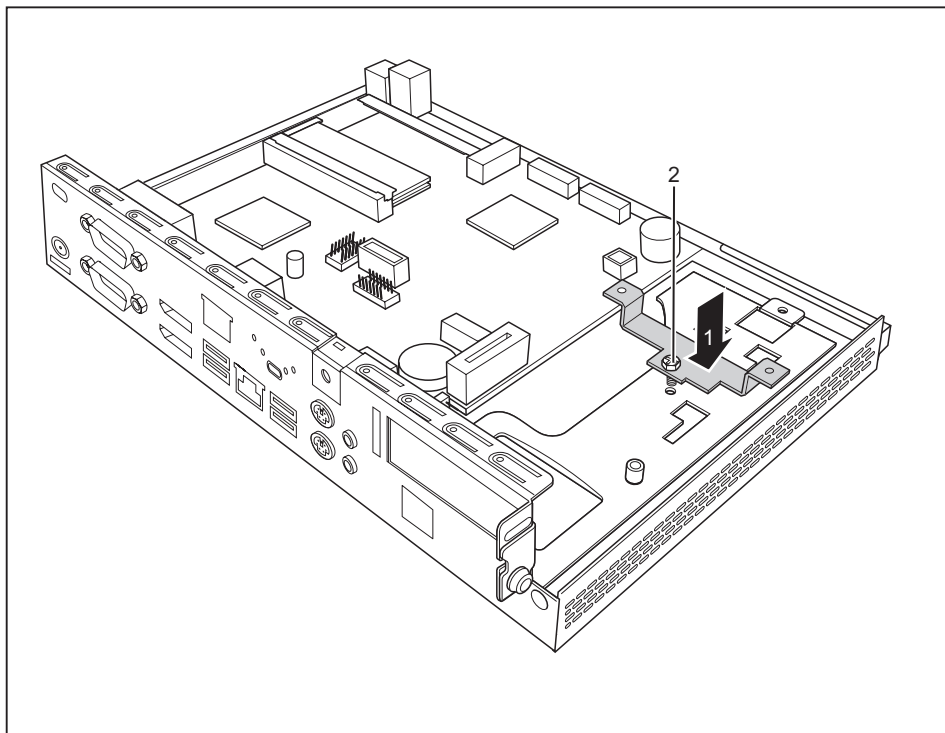
### Installing the SmartCard reader

If not already installed, you can fit a SmartCard reader.

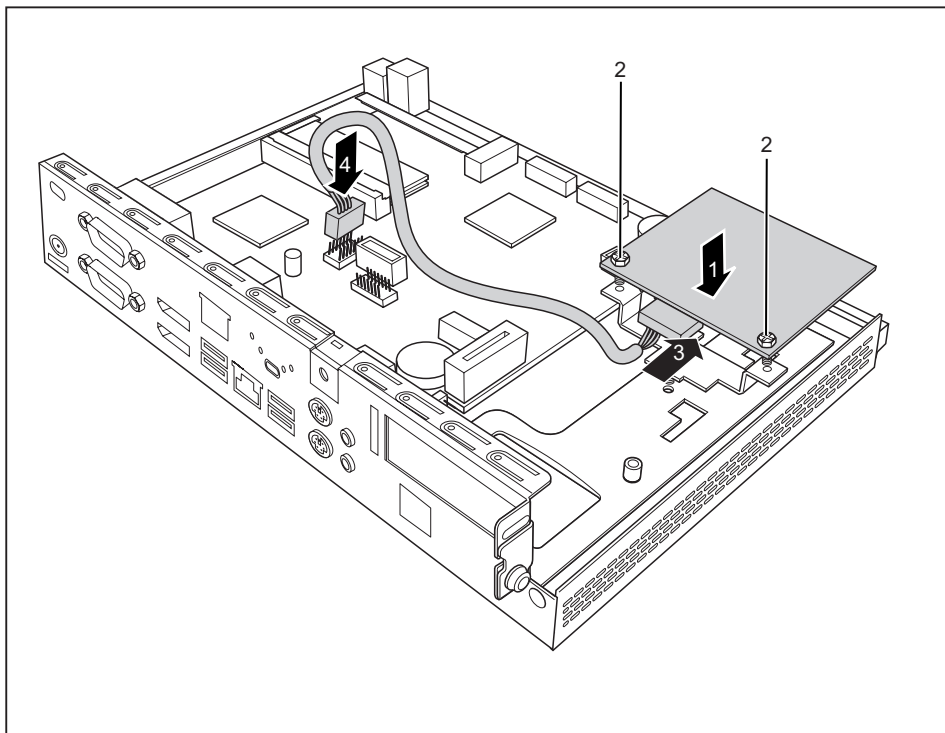
- ▶ Open the casing (see ["Opening the casing", Page 31](#)).
- ▶ If a PCIe board or power supply is installed, remove the cross piece and PCIe board or power supply (see ["Removing the board", Page 47](#)/["Remove power supply", Page 51](#)).



- ▶ Carefully remove the cover of the SmartCard reader bay from the casing cover (1).



- Place the carrier for the SmartCard reader in the casing (1).
- Fasten the carrier with the screw (2).



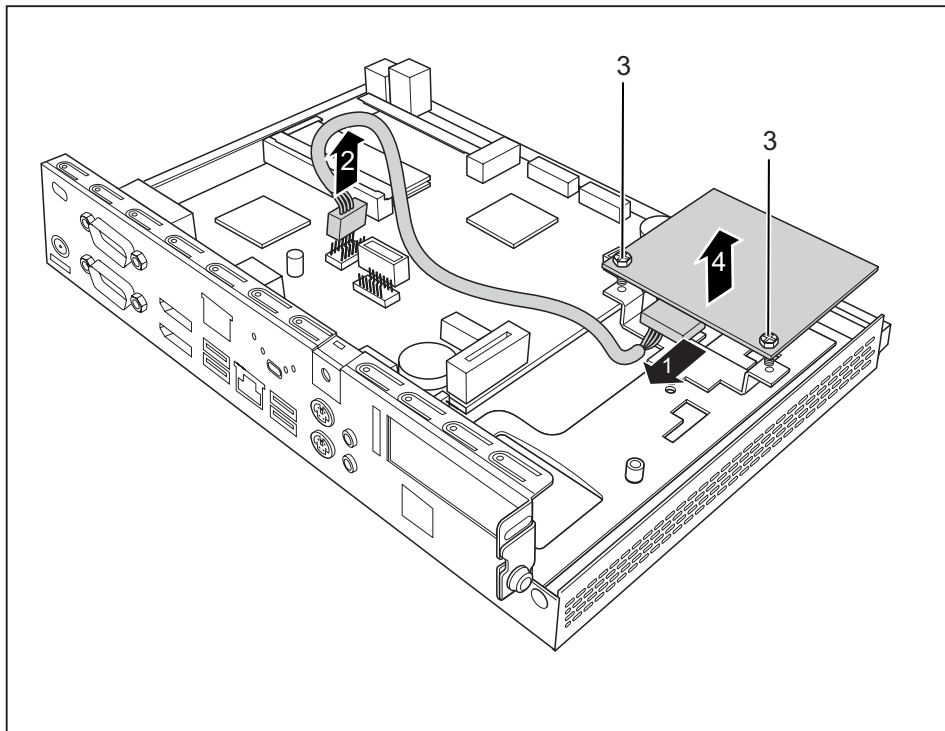
- Place the SmartCard reader on the carrier with the component side facing downwards, in the direction of the arrow (1).
- Fasten the SmartCard reader onto the carrier with the screws (2).
- Connect the cable to the SmartCard reader (3) and to the connector on the mainboard (4).
- When required, reinstall the cross piece and PCIe board or the power supply (see ["Installing the board", Page 45](#)/["Install power supply", Page 48](#)).
- Close the casing (see ["Closing the casing", Page 55](#)).



Make sure that the cables are not trapped between the casing and the components.

## Removing the SmartCard reader

- ▶ Open the casing (see ["Opening the casing", Page 31](#)).
- ▶ If a PCIe board or power supply is installed, remove the cross piece and PCIe board or power supply (see ["Removing the board", Page 47](#)/["Remove power supply", Page 51](#)).



- ▶ Disconnect the cable from the SmartCard reader (1) and from the mainboard (2).
- ▶ Undo the screws (3).
- ▶ Lift the SmartCard reader from the carrier (4).
- ▶ When required, reinstall the cross piece and PCIe board or power supply (see ["Installing the board", Page 45](#)/["Install power supply", Page 48](#)).
- ▶ Close the casing (see ["Closing the casing", Page 55](#)).



Ensure that cables are not trapped between the casing and the components.

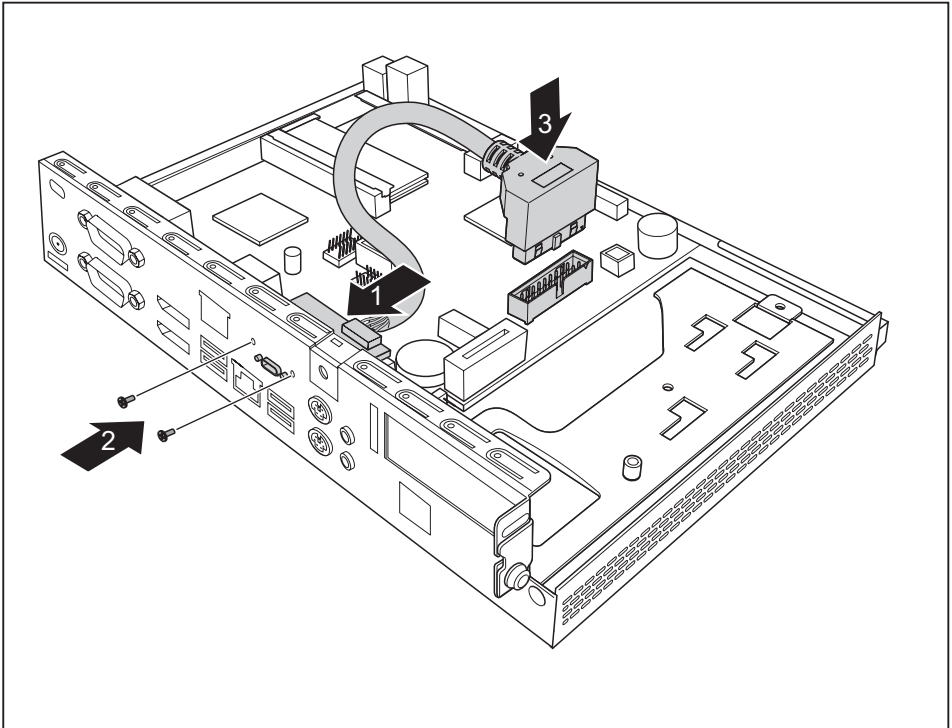


## Install and remove USB port

Depending on the configuration level of your device, there may be a location intended for a USB port on the rear panel of the device.

### Install USB port

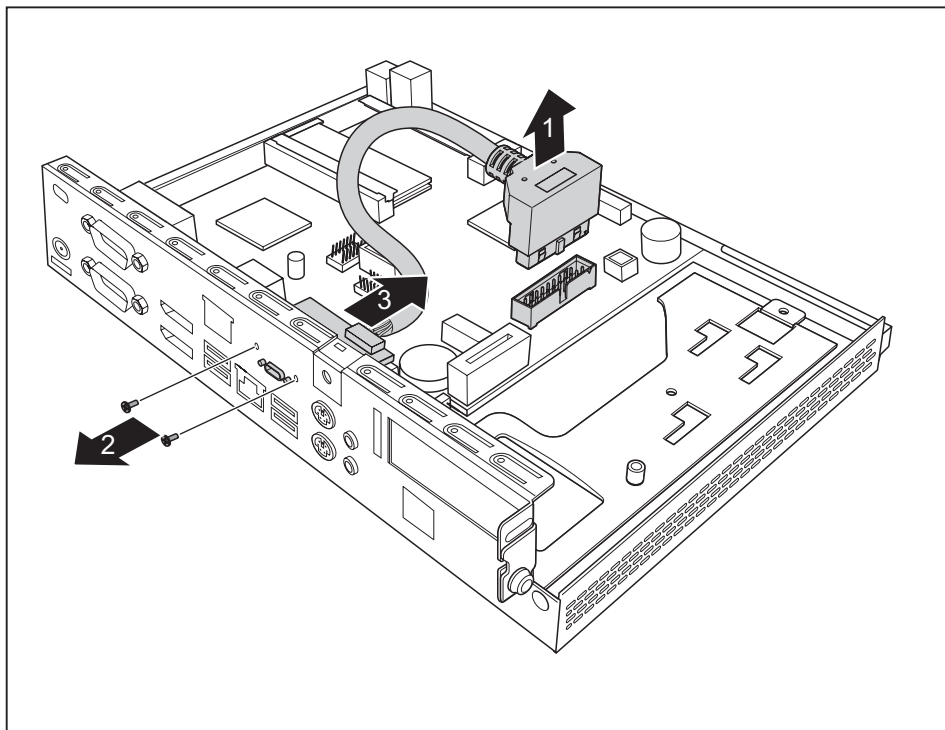
- Remove the casing cover (see chapter ["Opening the casing", Page 31](#)).



- Put the USB port into position with the board side upwards on the inside of the device at the flagged location (1).
- Secure the USB port using the 2 x M2.5 screws provided (3), max. torque 0,4 Nm.
- Connect the cable of the USB port to the connector on the mainboard (3).
- Refit the casing cover on the casing (see chapter ["Closing the casing", Page 55](#)).

## Remove USB port

- ▶ Remove the casing cover (see chapter ["Opening the casing", Page 31](#)).



- ▶ Disconnect the cable of the USB port from the connector on the mainboard (1).
- ▶ Undo the screws (2) on the USB port.
- ▶ Remove the USB port (3).
- ▶ Refit the casing cover on the casing (see chapter ["Closing the casing", Page 55](#)).

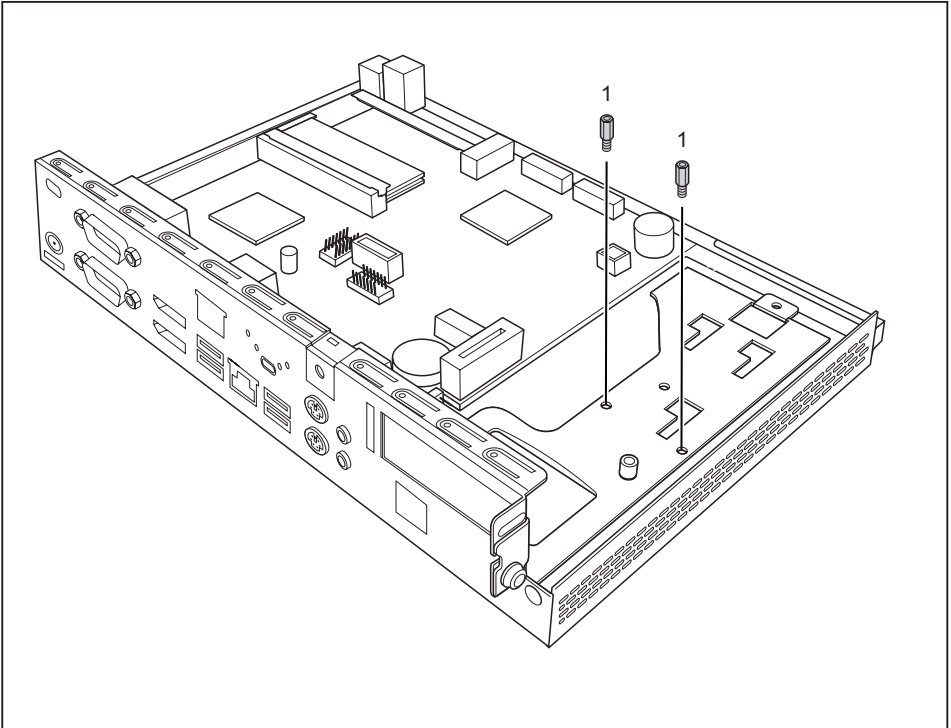
# Install and remove loudspeaker (optional)

## Installing the loudspeaker

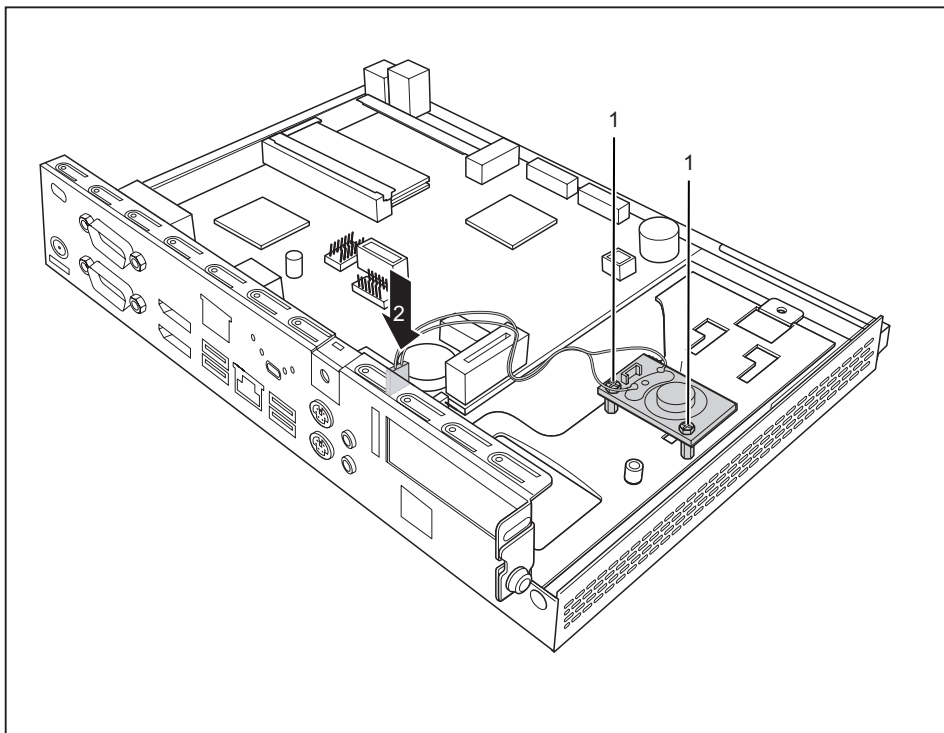
**i**

The required hexagon head bolts are included in the delivery scope of the loudspeaker.

- ▶ Open the housing (see ["Opening the casing", Page 31](#)).
- ▶ If a PCIe board or power supply is installed, remove the cross piece and PCIe board or power supply (see ["Removing the board", Page 47](#)/["Remove power supply", Page 51](#)).



- ▶ Secure the hexagon head bolts provided into the screw holes (1).



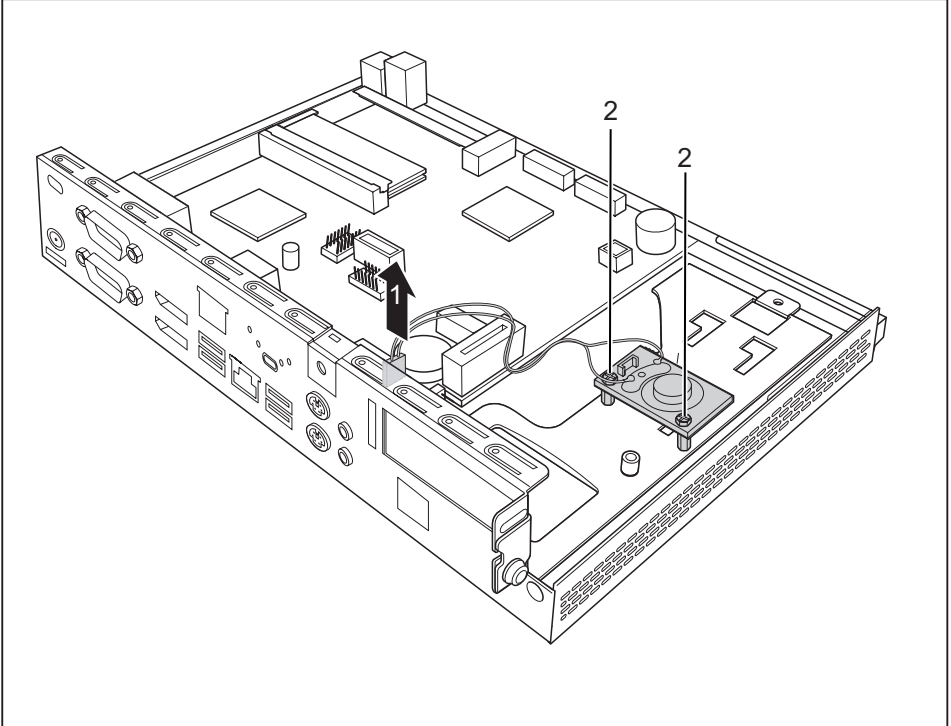
- ▶ Insert the loudspeaker into the housing as illustrated.
- ▶ Secure the loudspeaker with the screws (1).
- ▶ Connect the loudspeaker cable to the connector on the mainboard (2).
- ▶ When required, reinstall the cross piece and PCIe board or power supply (see ["Installing the board", Page 45](#)/["Install power supply", Page 48](#)).
- ▶ Close the housing (see ["Closing the casing", Page 55](#)).



Ensure that the cables are not trapped between the housing and the components.

## Removing the loudspeaker

- ▶ Open the housing (see ["Opening the casing", Page 31](#)).
- ▶ If a PCIe board or power supply is installed, remove the cross piece and PCIe board or power supply (see ["Removing the board", Page 47](#)/["Remove power supply", Page 51](#)).



- ▶ Disconnect the loudspeaker cable from the mainboard (1).
- ▶ Undo the screws (2).
- ▶ Lift the loudspeaker out of the casing and remove the two hexagon bolts.
- ▶ When required, reinstall the cross piece and PCIe board or power supply (see ["Installing the board", Page 45](#)/["Install power supply", Page 48](#)).
- ▶ Close the housing (see ["Closing the casing", Page 55](#)).

## Installing and removing a Power over Ethernet module (optional)



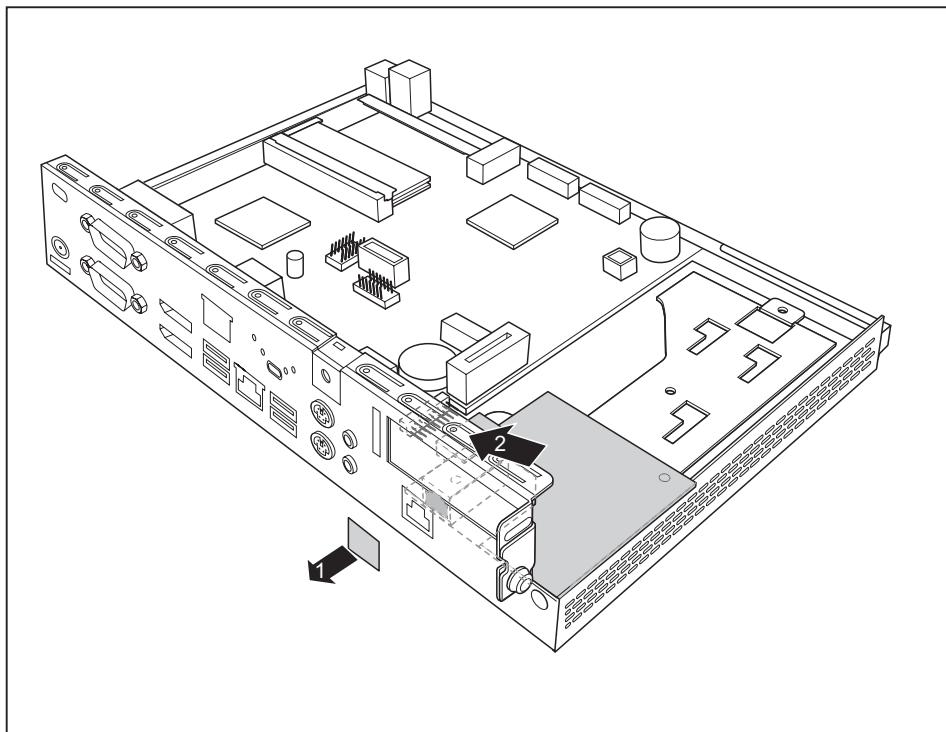
You can install an additional Power over Ethernet module in your device.

Before using the module for the first time, please observe the notes in chapter ["Getting started", Page 14](#).

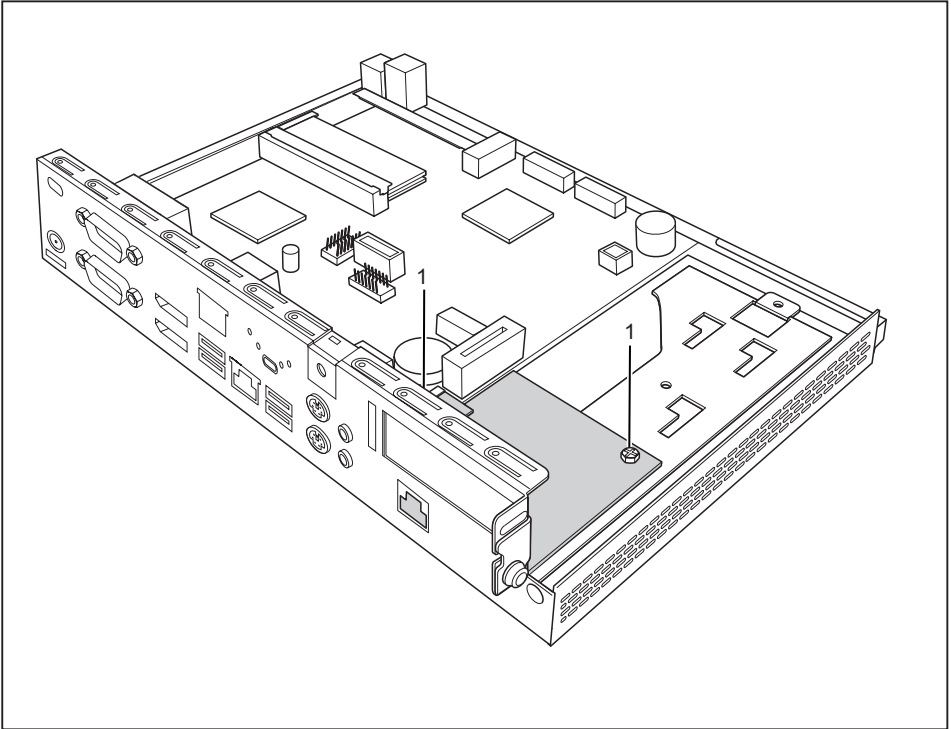
If you are supplying the system with power via the PoE module, ensure that no additional power supply (mains adapter) is connected.

### Installing the Power over Ethernet module

- ▶ Open the casing (see ["Opening the casing", Page 31](#)).
- ▶ If a PCIe board or power supply is installed, remove the cross piece and PCIe board or power supply (see ["Removing the board", Page 47](#)/["Remove power supply", Page 51](#)).



- ▶ Break the cover (1) out of the casing.
- ▶ Place the Power over Ethernet module in the casing with the component side facing upwards (2). Ensure that it engages in the slot.



- Secure the Power over Ethernet module with the screws (1).
- Close the casing (see ["Closing the casing", Page 55](#)).

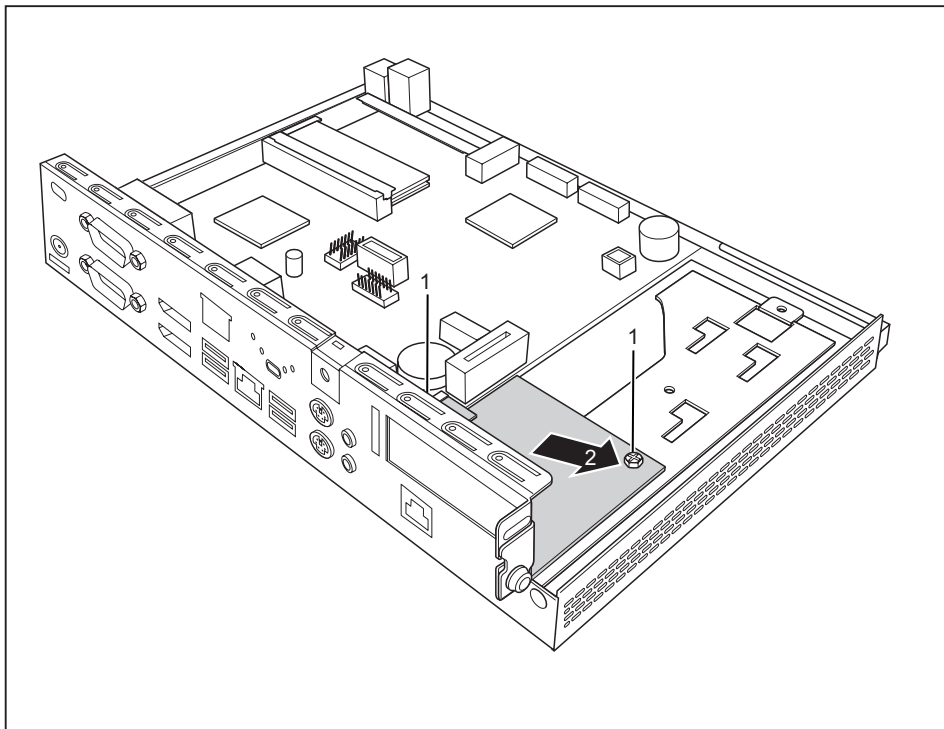


Make sure that the cables are not trapped between the casing and the components.

Please note that no PCIe board may be installed when operating via the Power over Ethernet module (see ["Important notes for the preparation for use of your device using the Power-over-Ethernet module", Page 12](#))!

## Removing the Power over Ethernet module

- Open the casing (see ["Opening the casing", Page 31](#)).



- Undo the screws (1).
- Pull the Power over Ethernet module in the direction of the arrow (2) out of the slot and lift it out of the casing.
- When required, reinstall the cross piece and the PCIe board (see ["Installing the board", Page 45](#)).
- Close the casing (see ["Closing the casing", Page 55](#)).



Ensure that cables are not trapped between the casing and the components.



## Install and remove board (optional)



You can install various boards (e.g. a graphics card) in the PCI/PCIe slot of your device.

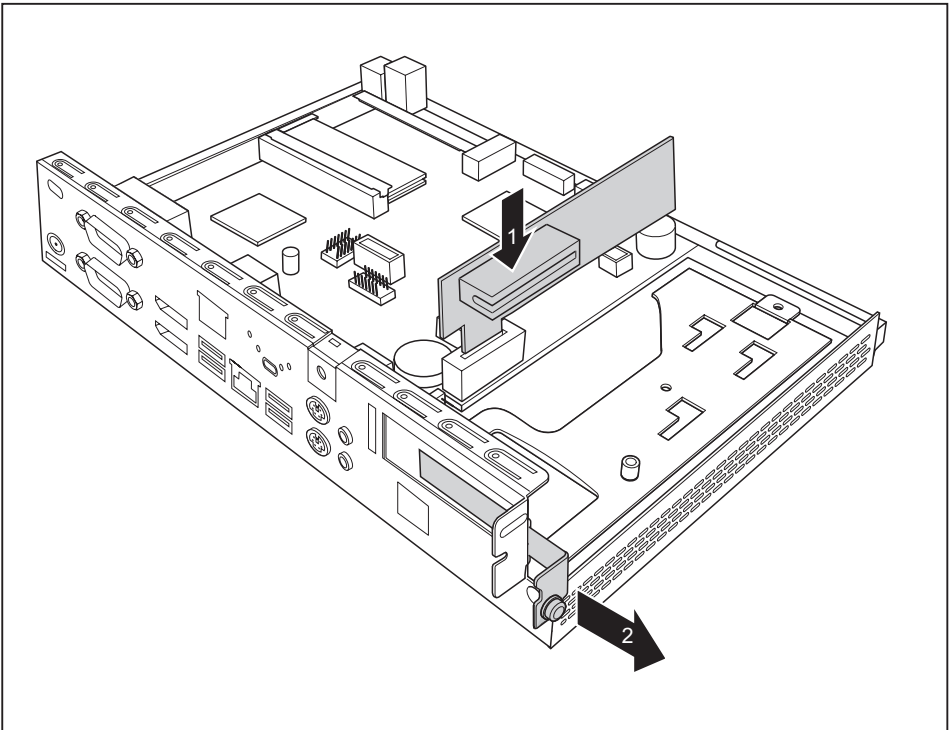
Before using a graphics card for the first time, please pay attention to the notes in chapter ["Important notes for the preparation for use of your device using the Power-over-Ethernet module", Page 12.](#)

A PCIe board is shown below. The installation and removal procedure is the same for all types of board, with the exception of the power supply. You can find information about the installation of an own power supply in chapter ["Install and remove power supply \(PSU, Power Supply Unit\) \(optional\)", Page 48.](#)

### Installing the board

You can only install boards with a maximum length of 170 mm.

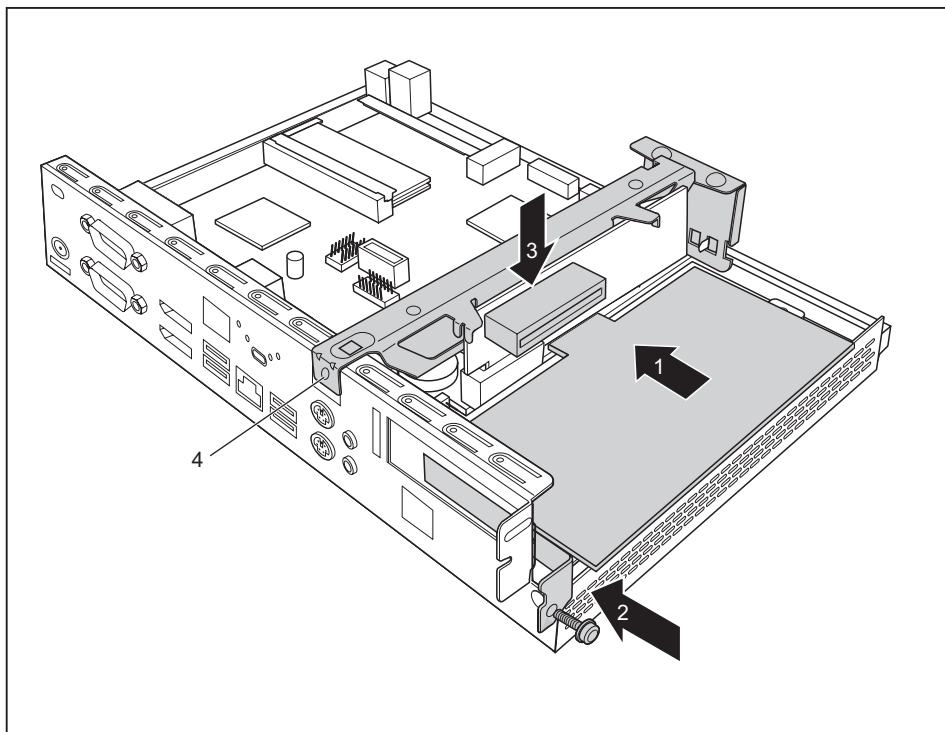
- ▶ Enter the required settings for the board.
- ▶ Open the casing (see ["Opening the casing", Page 31.](#))



- ▶ Insert the riser card in its slot (1).
- ▶ Undo the screw (1) and remove the rear slot cover plate of the slot (2).



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



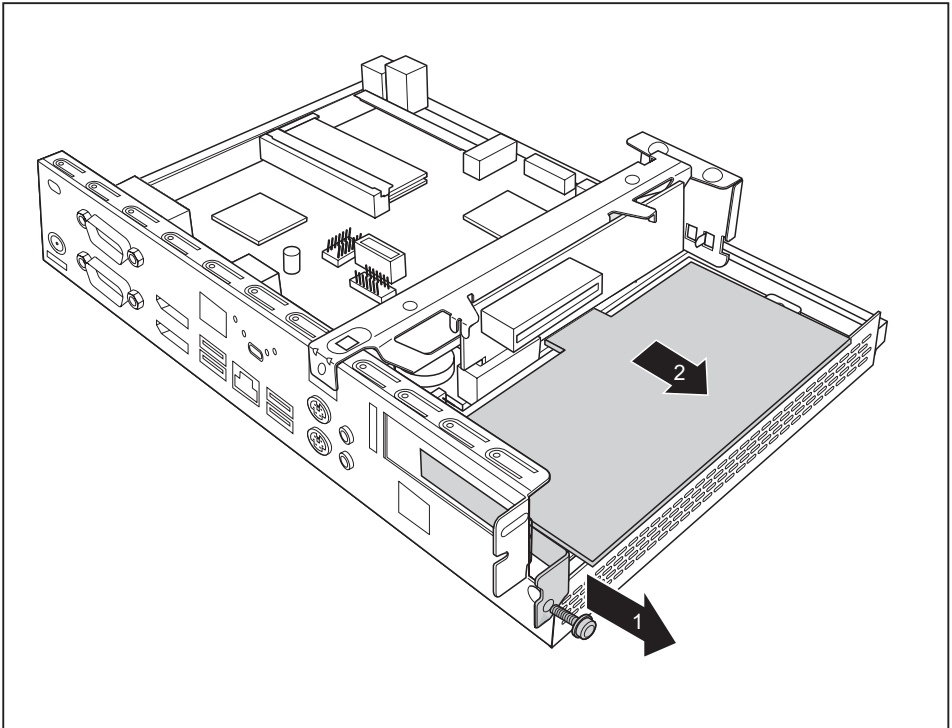
- ▶ Insert the board into the riser card (1).
- ▶ Fix the board with the screw (2).
- ▶ Install the cross piece (3).
- ▶ Secure the cross piece with the screw (4).
- ▶ Close the casing (see ["Closing the casing", Page 55](#)).



Make sure that the cables do not become trapped between the casing and the components!

## Removing the board

- Open the casing (see ["Opening the casing", Page 31](#)).



- Loosen the screw (1).
- Remove the board from the riser card (2).



You must reinstall the rear slot cover plate for protection against fire and to comply with the Electromagnetic Compatibility (EMC) Directive).

- Reinstall the rear slot cover plate by inserting it in the installation slot from the inside and securing it with the screw.
- Close the casing (see ["Closing the casing", Page 55](#)).



Make sure that the cables do not become trapped between the casing and the components!

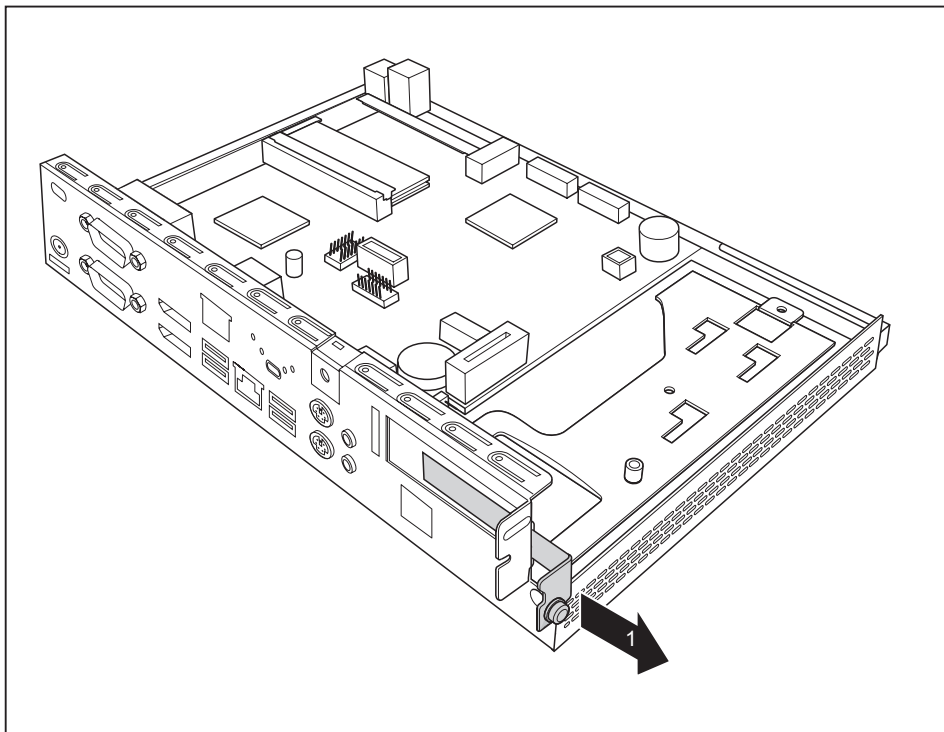
## Install and remove power supply (PSU, Power Supply Unit) (optional)



In addition to having power supplied via the DC input connector (DC IN) on the rear of the device, you can also operate the device via its own power supply. This will be installed in the PCI/PCIe slot.

### Install power supply

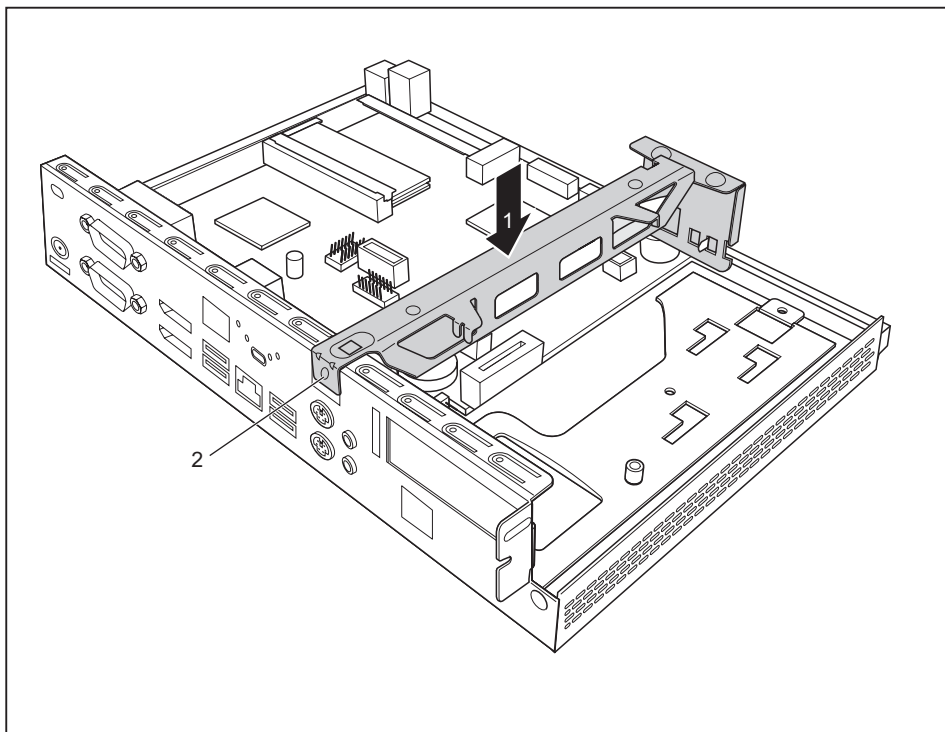
- Open the casing (see ["Opening the casing", Page 31](#)).



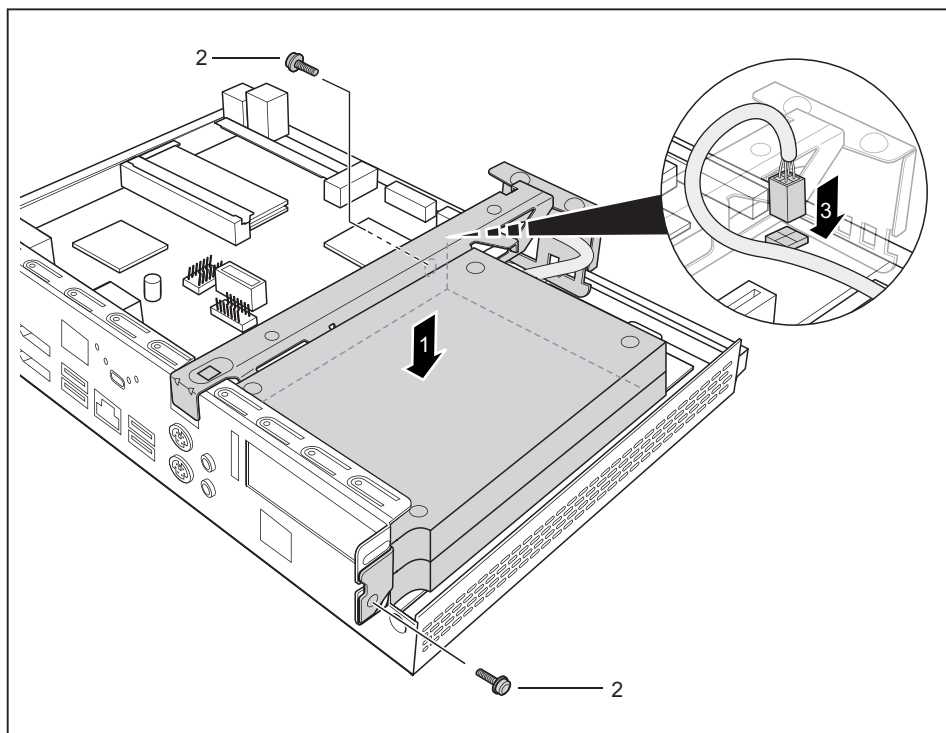
- Loosen the screw and the slot's rear cover plate (1).



Do not discard the rear slot cover plate. If you remove the assembly again, you must reinstall the rear slot cover plate for cooling, protection against fire, and on account of the EMC regulations to be adhered to (regulations for electromagnetic compatibility).



- ▶ Insert the cross piece (1).
- ▶ Fasten the cross piece with the screw (2).



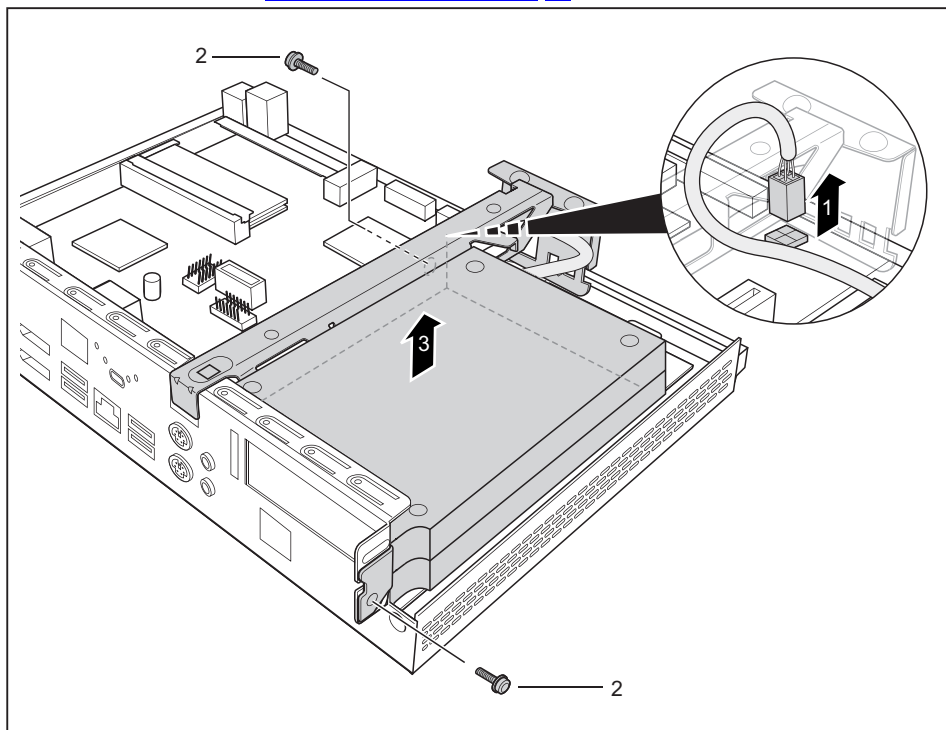
- Place the power supply in its location (1).
- Secure the power supply with the screws (2).
- Connect the cables on the mainboard (3).
- Close the casing (see ["Closing the casing", Page 55](#)).



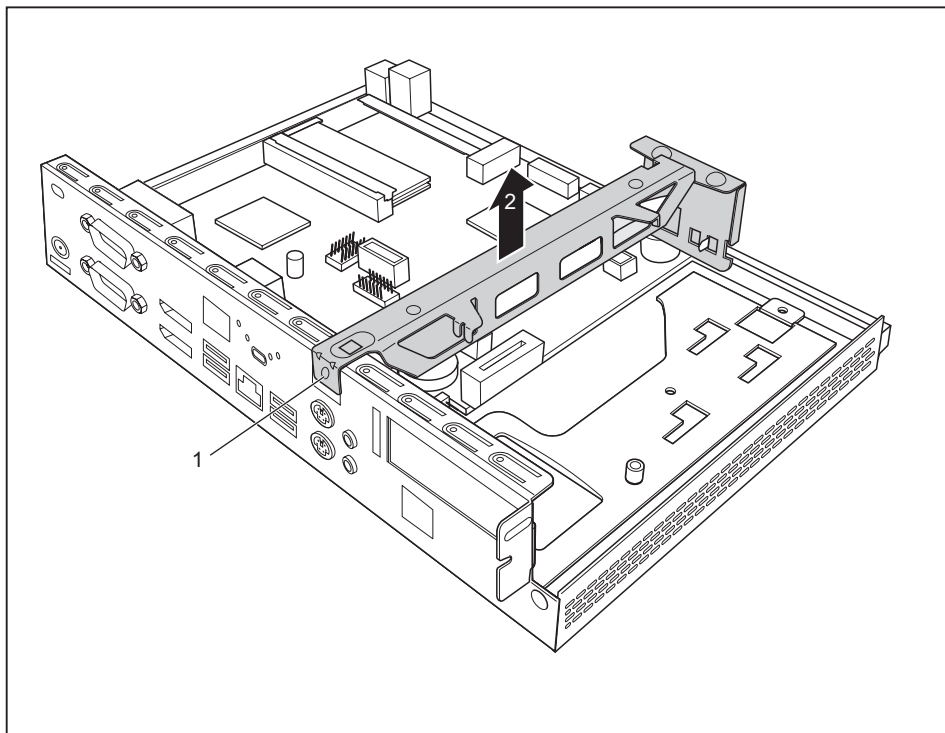
Make sure that the cables do not become trapped between the casing and the components!

## Remove power supply

- Open the casing (see ["Opening the casing", Page 31](#)).



- Disconnect the cables from the mainboard (1).
- Undo the screws (2).
- Lift the power supply out of the casing (3).

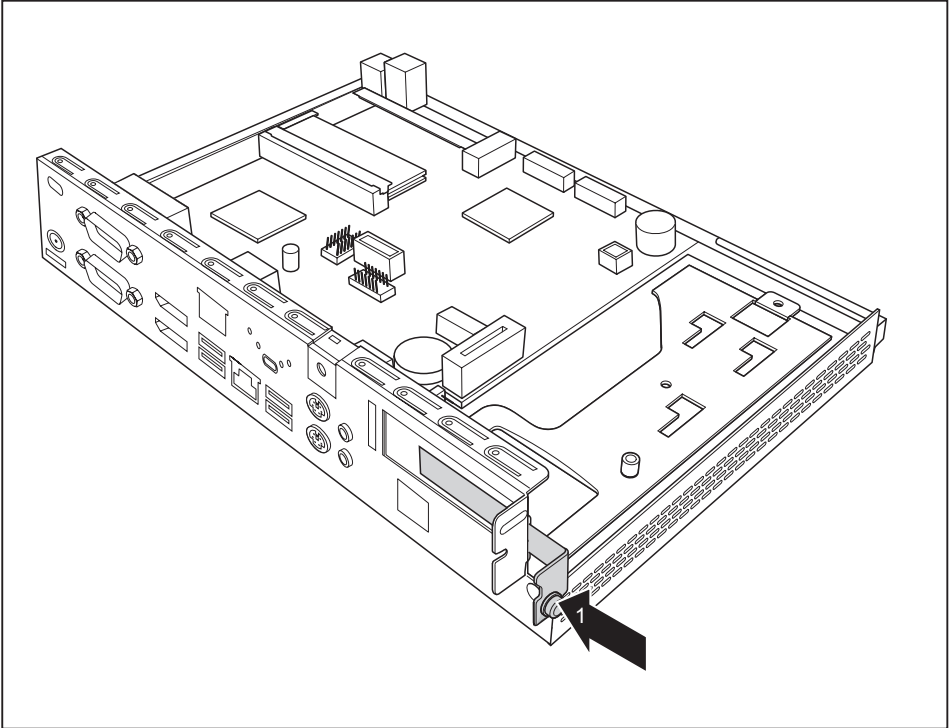


- Loosen the screw on the crosspiece (1).
- Lift the crosspiece out of the housing (2).





You must reinstall the rear slot cover plate for protection against fire and to comply with the Electromagnetic Compatibility (EMC) Directive).



- ▶ Re-insert the rear slot cover plate by placing it in the slot from the inside, and fastening it with the screw (1).
- ▶ Close the casing (see ["Closing the casing", Page 55](#)).



Make sure that the cables do not become trapped between the casing and the components!

## Replacing the lithium battery

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



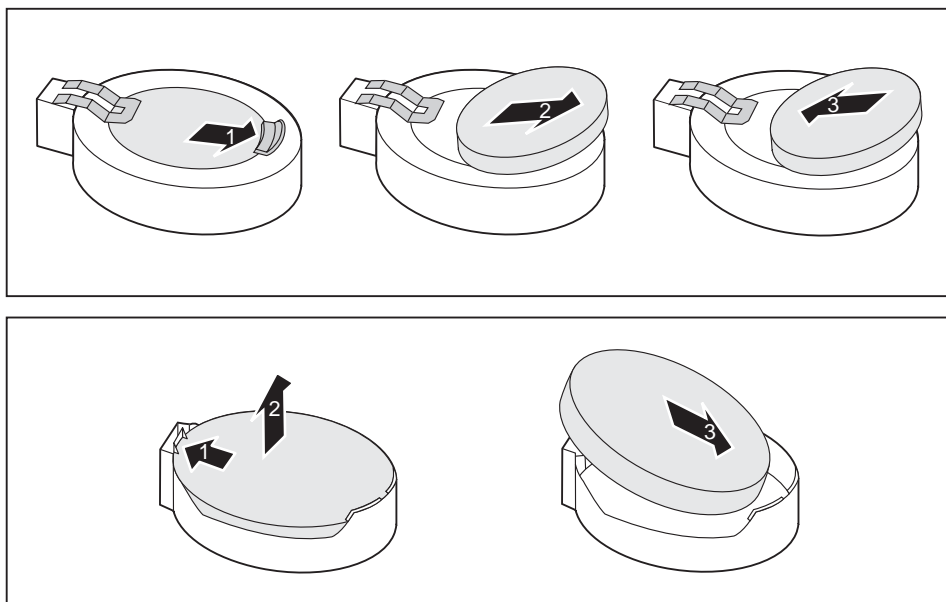
Incorrect replacement of the lithium battery may lead to a risk of explosion!

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

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

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

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



- ▶ Press the catch in the direction of the arrow (1).
- ↳ The battery jumps out of the holder slightly.
- ▶ Remove the battery (2).
- ▶ Push the new lithium battery of the identical type into the holder (3) and press it down until it engages.

## Closing the casing

- ▶ Replace the casing cover on the device and push it backwards.
- ▶ Secure the casing cover with the two screws on the rear of the device.



Make sure that the cables are not trapped between the casing and the components.

- ▶ Connect all the cables removed before.

# Technical data

## FUJITSU Thin Client FUTRO S940

Electrical data	
Processor:	Intel Pentium J5005, Gemini Lake Quad Core 1,5 GHz (max. 2,8 GHz Single Core Burst Freq.) with integrated Intel UHD Graphics 605
Rated voltage:	With AC adapter: 19 – 20 V With internal PSU: 100 – 240 V
Max. rated current:	With AC adapter: 2,0 A or 3,25 A With internal PSU: 1,0 A
Dimensions (vertical operating position)	
Width x Depth x Height (with foot):	90 mm x 193 mm x 261 mm / 3,54 inches x 7,60 inches x 10,28 inches
Width x Depth x Height (without foot):	52 mm x 193 mm x 250 mm / 2,05 inches x 7,60 inches x 9,84 inches
Dimensions (horizontal operating position, without WLAN)	
Width x Depth x Height (with foot):	289 mm x 193 mm x 63 mm / 11,38 inches x 7,60 inches x 2,48 inches
Width x Depth x Height (without foot):	250 mm x 193 mm x 52 mm / 9,84 inches x 7,60 inches x 2,05 inches
Weight	
in basic configuration:	approx. 1.3 kg / 2.87 lbs
Environmental conditions	
Temperature:	
• Operation	15 °C .... 35 °C / 59 °F ... 95 °F
• Transportation	–25 °C .... 60 °C / –13 °F ... 140 °F
Clearance required to ensure adequate ventilation:	Minimum of 200 mm / 7.87 inches on all sides
Maximum permissible operating height	3000 m (9842 ft), for China only 2000 m (6557 ft)



Condensation must be avoided during operation.

## AC adapter

Electrical data	
Rated voltage:	100 – 240 V
Max. rated current:	1.2 A (40 W) or 1.5 A (65 W)
Rated frequency:	50 – 60 Hz



Only the following adapters with Limited Power Source may be used:

- 40W: S26113-E622-V55 Model: ADP-40HH A
- 65W: S26113-E623-V55 Model: ADP-65JH AB

## Internal AC adapter

Electrical data	
Rated voltage:	100 - 240 V
Max. rated current:	1,0 A
Rated frequency:	50 – 60 Hz



Only the following internal adapter may be used: S26113-E598-V50 Model: DPS-65AB-2A

# Index

## A

- Audio input 19
  - line in 7
- Audio output 19
  - line out 6
  - Line Out 7

## B

- Base feet 14, 17
- Battery 54
- BIOS-Setup
  - opening 26
- Board,
  - installing 45, 48
  - removing 47, 51

## C

- Casing
  - closing 55
- Casing cover 55
- Casing,
  - opening 31
- Components
  - installing/removing 28
- Connecting a PS/2 keyboard 20
- Connecting,
  - keyboard 20
  - mouse 20
  - PS/2 keyboard 20
  - PS/2 mouse 20
  - USB keyboard 20

## D

- Data protection 8
- DC input connector
  - DC IN 7
- Device
  - Ports 19
- Device drivers,
  - serial interface 21
- Device,
  - opening 31
  - switching off 26
  - switching on 23
  - transporting 12
  - upgrades 28
- Devices,
  - connecting 21

- DisplayPort 19
- Disposal 13

## E

- Energy saving 13
- External devices
  - Ports 19
- External devices,
  - connecting 21

## F

- Flash memory access 6

## G

- Getting started 14

## H

- Headphone port 6
- Headphones 19
  - connecting 22
- Horizontal operating position 17

## I

- Important notes 11
- Installation opening
  - for modules 7

## K

- Keyboard port 19
- Keyboard,
  - connecting 20
  - port 20

## L

- LAN 22
- LAN port 19
- LAN socket 7
- Line in 19
- Line out 19
- Line-out devices
  - connecting 22
- Lithium battery,
  - replacing 54
- Loudspeaker
  - installing 39
  - removing 41

**M**

Main memory  
    see Adding memory 32

Memory expansion

    installing 32

    removing 32

Memory module

    important notes 32

    installing 32

    removing 32

Microphone

    connecting 22

Microphone port 6, 19

Monitor port 7

Monitor,

    Connecting 20

    switching off 26

    switching on 23

Mouse port 19

Mouse,

    connecting 20

**N**

Note

    safety 11

Notes

    important 11

**O**

Off switch 6

On switch 6

Operating position, horizontal 17

Operating position, vertical 14

**P**

PCI slot 7

PCIe slot 7

Ports 6, 19

Power cable

    connection 22

Power over Ethernet module,

    installing 42

    removing 44

Power-on indicator 6

Preparing for operation 22

Property protection 8

Protection, property and data 8

PS/2 keyboard port 7

PS/2 mouse port 7, 19

PS/2 mouse,

    connecting 20

    port 20

PXE system boot 27

**R**

Recycling 13

Removing memory

    see Adding memory 32

Replacing,

    lithium battery 54

Replacing, lithium battery 54

Retransportation 12

**S**

Safety notes 11

Security Lock

    Security Lock device 7

Serial interface 21

Serial interface,

    connecting devices 21

    settings 21

Serial port 7, 19

Servicing 28

Side cover 14

SmartCard reader

    indicator 6

    installing 33

    removing 36

System expansion 28, 32

    see Adding memory 32

System unit, see Device 12

**T**

Technical data 56

Transportation 12

**U**

Universal Serial Bus 19

Upgrades,

    device 28

USB

    ports 6

USB devices,

    connecting 21

USB port 20

USB port,

    connecting devices 21

    connecting keyboard 20

    connecting the mouse 20

USB ports 7

**V**

Vertical operating position 14

