

Dell Pro Micro Thin Client

Q9M1260

Service Manual

Notes, cautions, and warnings

 **NOTE:** A NOTE indicates important information that helps you make better use of your product.

 **CAUTION:** A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

 **WARNING:** A WARNING indicates a potential for property damage, personal injury, or death.

Chapter 1: Working inside your computer.....	6
Safety instructions.....	6
Before working inside your computer.....	6
Safety precautions.....	7
Electrostatic discharge—ESD protection.....	7
ESD Field Service kit	8
Transporting sensitive components.....	9
After working inside your computer.....	9
BitLocker.....	9
Recommended tools.....	9
Screw list.....	10
Major components of Dell Pro Micro Thin Client Q9M1260.....	11
Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list.....	13
Chapter 2: Removing and installing side cover.....	14
Removing the side cover.....	14
Installing the side cover.....	16
Chapter 3: Removing and installing coin-cell battery.....	19
Removing the coin-cell battery.....	19
Installing the coin-cell battery.....	19
Chapter 4: Removing and installing Customer Replaceable Units (CRUs).....	21
Memory module.....	21
Removing the memory module.....	21
Installing the memory module.....	22
Solid-state drive.....	23
Removing the M.2 2230 solid-state drive.....	23
Installing the M.2 2230 solid-state drive.....	24
Solid-state drive heat sink.....	24
Removing the SSD-heat sink.....	24
Installing the SSD-heat sink.....	25
Speaker.....	26
Removing the speaker.....	26
Installing the speaker.....	27
Speaker holder.....	28
Removing the speaker holder.....	28
Installing the speaker holder.....	29
Wireless card.....	30
Removing the wireless card.....	30
Installing the wireless card.....	31
Removing the wireless card.....	33
Installing the wireless card.....	34
Wireless module.....	35

Removing the wireless card module	35
Installing the wireless card module.....	36
Optional Input/Output modules.....	37
Dual USB 3.2 Gen 2 ports module.....	37
USB Type-C port module with DisplayPort Alt mode and Power Delivery.....	39
DisplayPort module.....	42
HDMI port module.....	45
VGA port module.....	48
PS2 port module.....	51
Serial port module.....	54
Video expansion module	57
Fiber optic port module.....	60
Chapter 5: Removing and installing Field Replaceable Units (FRUs).....	64
Heat sink.....	64
Removing the processor - heat sink.....	64
Installing the processor - heat sink.....	65
System board.....	66
Removing the system board.....	66
Installing the system board.....	69
Internal antenna.....	72
Removing the internal antenna—location one.....	72
Installing the internal antenna—location one.....	73
Removing the internal antenna—location two.....	75
Installing the internal antenna—location two.....	76
Removing the internal antenna—location one.....	78
Installing the internal antenna—location one.....	79
Removing the internal antenna—location two.....	80
Installing the internal antenna—location two.....	82
Chapter 6: Software.....	85
Operating system.....	85
Drivers and downloads.....	85
Chapter 7: BIOS Setup.....	86
Entering BIOS Setup program.....	86
Navigation keys.....	86
F12 One Time Boot menu.....	86
View Advanced Setup options.....	87
View Service options.....	87
BIOS Setup options.....	87
Updating the BIOS.....	99
Updating the BIOS in Windows.....	99
Updating the BIOS using the USB drive in Windows.....	100
Updating the BIOS from the One-Time boot menu.....	100
System and setup password.....	100
Assigning a System Setup password.....	101
Deleting or changing an existing system password or setup password.....	101
Clearing system and setup passwords.....	101

Clearing CMOS settings.....	102
Chapter 8: Troubleshooting.....	103
Dell SupportAssist Pre-boot System Performance Check diagnostics.....	103
Running the SupportAssist Pre-Boot System Performance Check.....	103
Power-Supply Unit Built-in Self-Test	103
System-diagnostic lights.....	103
Recovering the operating system.....	104
Real-Time Clock (RTC Reset).....	105
Backup media and recovery options.....	105
Network power cycle.....	105
Chapter 9: Getting help and contacting Dell.....	106
Chapter 10: Revision history.....	107

Working inside your computer

Safety instructions

Use the following safety guidelines to protect your computer from potential damage and to ensure your personal safety. Unless otherwise noted, each procedure in this document assumes that you have read the safety information that shipped with your computer.

 **WARNING:** Before working inside your computer, read the safety information that is shipped with your computer. For more safety best practices, see [Dell Regulatory Compliance Home Page](#).

 **WARNING:** Disconnect your computer from all power sources before opening the computer cover or panels. After you finish working inside the computer, replace all covers, panels, and screws before connecting your computer to an electrical outlet.

 **CAUTION:** To avoid damaging the computer, ensure that the work surface is flat, dry, and clean.

 **CAUTION:** You should only perform troubleshooting and repairs as authorized or directed by the Dell technical support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty.

 **CAUTION:** Before touching anything inside your computer, ground yourself by touching an unpainted metal surface, such as the metal at the back of the computer. While you work, periodically touch an unpainted metal surface to dissipate static electricity which could harm internal components.

 **CAUTION:** To avoid damaging the components and cards, handle them by their edges, and avoid touching the pins and the contacts.

 **CAUTION:** When you disconnect a cable, pull it by its connector or its pull tab, not the cable itself. Some cables have connectors with locking tabs or thumbscrews that you must disengage before disconnecting the cable. When disconnecting cables, keep them evenly aligned to avoid bending the connector pins. When connecting cables, ensure that the connector on the cable is correctly oriented and aligned with the port.

 **CAUTION:** Press and eject any installed card from the media-card reader.

Before working inside your computer

About this task

 **NOTE:** The images in this document may differ from your computer depending on the configuration you ordered.

Steps

1. Save and close all open files and exit all open applications.

2. Shut down your computer. For Windows operating system, click **Start** >  **Power** > **Shut down**.

 **NOTE:** If you are using a different operating system, see the documentation of your operating system for shut-down instructions.

3. Turn off all the attached peripherals.

4. Disconnect your computer from the electrical outlet.

5. Disconnect all attached network devices and peripherals, such as keyboard, mouse, and monitor from your computer.

 **CAUTION:** To disconnect a network cable, unplug the cable from your computer.

6. Remove any media card and optical disc from your computer, if applicable.

Safety precautions

This section details the primary steps to be followed before disassembling any device or component.

Observe the following safety precautions before any installation or break-fix procedures involving disassembly or reassembly:

- Turn off the computer and all attached peripherals.
- Disconnect the computer from AC power.
- Disconnect all network cables and peripherals from the computer.
- Use an ESD field service kit when working inside your computer to avoid electrostatic discharge (ESD) damage.
- Place the removed component on an anti-static mat after removing it from the computer.
- Press and hold the power button for 15 seconds to discharge the residual power in the system board.

Bonding

Bonding is a method for connecting two or more grounding conductors to the same electrical potential. This is done by using a field service electrostatic discharge (ESD) kit. When connecting a bonding wire, ensure that it is connected to bare metal and never to a painted or nonmetal surface. Ensure that the wrist strap is secure and in full contact with your skin. Remove all jewelry, watches, bracelets, or rings before grounding yourself and the equipment.

Electrostatic discharge—ESD protection

ESD is a major concern when you handle electronic components, especially sensitive components such as expansion cards, processors, memory modules, and system boards. A slight charge can damage circuits in ways that may not be obvious, such as intermittent problems or a shortened product life span. As the industry pushes for lower power requirements and increased density, ESD protection is an increasing concern.

Two recognized types of ESD damage are catastrophic and intermittent failures.

- **Catastrophic** – Catastrophic failures represent approximately 20 percent of ESD-related failures. The damage causes an immediate and complete loss of device functionality. An example of catastrophic failure is a memory module that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code that is emitted for missing or nonfunctional memory.
- **Intermittent** – Intermittent failures represent approximately 80 percent of ESD-related failures. The high rate of intermittent failures means that most of the time when damage occurs, it is not immediately recognizable. The memory module receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms that are related to the damage. The weakened trace may take weeks or months to melt, and in the meantime may cause degradation of memory integrity, intermittent memory errors, and so on.

Intermittent failures that are also called latent or "walking wounded" are difficult to detect and troubleshoot.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. Wireless anti-static straps do not provide adequate protection. Touching the chassis before handling parts does not ensure adequate ESD protection on parts with increased sensitivity to ESD damage.
- Handle all static-sensitive components in a static-safe area. If possible, use anti-static floor pads and workbench pads.
- When unpacking a static-sensitive component from its shipping carton, do not remove the component from the anti-static packing material until you are ready to install the component. Before unwrapping the anti-static packaging, use the anti-static wrist strap to discharge the static electricity from your body.

NOTE: You can protect against ESD and discharge static electricity from your body by touching a metal-grounded object before you interact with anything electronic, for example, an unpainted metal surface on your computer's I/O panel. When connecting a peripheral (including handheld digital assistants) to your computer, you should always ground both yourself and the peripheral before connecting it to the computer. In addition, as you work inside the computer, periodically touch a metal-grounded object to remove any static charge that your body may have accumulated.

For more information about the wrist strap and ESD wrist strap tester, see [Components of an ESD Field Service Kit](#).

- Before transporting a static-sensitive component, place it in an anti-static container or packaging.

ESD Field Service kit

The unmonitored field service kit is the most commonly used service kit. Each Field Service kit includes three main components: anti-static mat, wrist strap, and bonding wire.

 **CAUTION:** It is critical to keep ESD-sensitive devices away from internal parts that are insulated and often highly charged, such as plastic heat sink casings.

Working environment

Before the ESD Field Service kit is deployed, conduct an evaluation of the site to ensure proper setup and readiness. For example, deploying the kit for a server environment is different than for a desktop or laptop environment. Servers are typically installed in a rack within a data center; desktops or laptops are typically placed on office desks or cubicles. Always look for a large open flat work area that is free of clutter and large enough to deploy the ESD kit with additional space to accommodate the type of computer that is being repaired. The workspace should also be free of insulators that can cause an ESD event. On the work area, insulators such as styrofoam and other plastics should always be moved at least 12 inches or 30 centimeters away from sensitive parts before physically handling any hardware components.

ESD packaging

All ESD-sensitive devices must be shipped and received in static-safe packaging. Metal, static-shielded bags are preferred. However, you should always return the damaged component using the same ESD bag and packaging that the new part arrived in. The ESD bag should be folded over and taped shut and all the same foam packing material should be used in the original box that the new part arrived in. ESD-sensitive devices should be removed from packaging only at an ESD-protected work surface, and parts should never be placed on top of the ESD bag because only the inside of the bag is shielded. Always place parts in your hand, on the anti-static mat, in the computer, or inside an ESD bag.

Components of an ESD Field Service kit

The components of an ESD Field Service kit are:

- **Anti-Static Mat** – The anti-static mat is dissipative and parts can be placed on it during service procedures. When using an anti-static mat, your wrist strap should be snug and the bonding wire should be connected to the anti-static mat and to any bare metal on the computer being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the anti-static mat. ESD-sensitive items are safe in your hand, on the anti-static mat, in the computer, or inside an ESD bag.
- **Wrist Strap and Bonding Wire** – If an anti-static mat is not being used, the wrist strap and bonding wire should be connected directly between your wrist and an exposed metal part of the hardware. If you are using an anti-static mat, connect the wrist strap and bonding wire to the anti-static mat to ensure protection for any hardware placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the anti-static mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, anti-static mat, and bonding wire. Never use wireless wrist straps. Always be cautious that the internal wires of a wrist strap are prone to damage from normal wear and tear, and must be checked regularly with a wrist strap tester in order to avoid accidental ESD hardware damage. It is recommended to test the wrist strap and bonding wire at least once per week.
- **ESD Wrist Strap Tester** – The wires inside an ESD strap are prone to damage over time. When using an unmonitored ESD kit, it is recommended to test the wrist strap regularly—ideally before each service session, and at a minimum, once per week. The most reliable method for testing is with a wrist strap tester. To perform the test, connect the bonding wire of the wrist strap to the tester while wearing the strap. Press the test button to initiate the check. A green LED indicates a successful test, while a red LED and audible alarm signal a failure.

 **NOTE:** It is recommended to always use the traditional wired ESD grounding wrist strap and protective anti-static mat when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while servicing the computer.

Transporting sensitive components

When transporting ESD sensitive components such as replacement parts or parts to be returned to Dell, it is critical to place these parts in anti-static bags for safe transport.

Lifting equipment

Adhere to the following guidelines when lifting heavy equipment:

 **CAUTION:** Do not lift greater than 50 pounds. Always obtain additional resources or use a mechanical lifting device.

1. Get a firm balanced footing. Keep your feet apart for a stable base, and point your toes out.
2. Tighten stomach muscles. Abdominal muscles support your spine when you lift, offsetting the force of the load.
3. Lift with your legs, not your back.
4. Keep the load close. The closer it is to your spine, the less force it exerts on your back.
5. Keep your back upright, whether lifting or setting down the load. Do not add the weight of your body to the load. Avoid twisting your body and back.
6. Follow the same technique in reverse to set the load down.

After working inside your computer

About this task

 **CAUTION:** Leaving stray or loose screws inside your computer may severely damage your computer.

Steps

1. Replace all screws and ensure that no stray screws remain inside your computer.
2. Connect any external devices, peripherals, or cables you removed before working on your computer.
3. Replace any media cards, discs, or any other components that you removed before working on your computer.
4. Connect your computer and all attached devices to their electrical outlets.
5. Turn on your computer.

BitLocker

When updating the BIOS on a computer with BitLocker enabled, consider the following precautions.

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer [Updating the BIOS on Dell systems with BitLocker enabled](#).

The installation of the following components triggers BitLocker:

- Hard disk drive or solid state drive
- System board

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Phillips screwdriver #1
- Plastic scribe

Screw list

- NOTE:** When removing screws from a component, it is recommended to note the screw type and the quantity of screws, and then place them in a screw storage box. This is to ensure that the correct number of screws and correct screw type is restored when the component is replaced.
- NOTE:** Some computers have magnetic surfaces. Ensure that the screws are not left attached to such surfaces when replacing a component.
- NOTE:** Screw color may vary depending on the configuration ordered.

Table 1. Screw list

Component	Screw type	Quantity	Screw image
CRU			
Side cover	#6-32x9.3	1	
M.2 2230 SSD	M2x3.5	1	
Speaker holder	M3x5	1	
Wireless card	M2x3.5	1	
Wireless module	Captive screw	1	
Optional input/output module (Dual USB 3.2 Gen 2 / USB 3.2 Gen 2 Type-C/ DisplayPort / HDMI / VGA / PS2 / Serial/ video expansion module)	Captive screw	1	
		1	
Optional optical fiber ready Small Form-factor Pluggable (SFP) module	Captive screws	2	
		1	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw image
Heat sink	Captive screws	4	
SSD heat sink	Captive screws	2	
System board	M3x5	4	
	M3x4 (Standoff)	1	
Internal antenna - location one	M3x3	1	
Internal antenna - location two	M3x3	1	
	Captive screw	1	

Major components of Dell Pro Micro Thin Client Q9M1260

The following image shows the major components of Dell Pro Micro Thin Client Q9M1260.

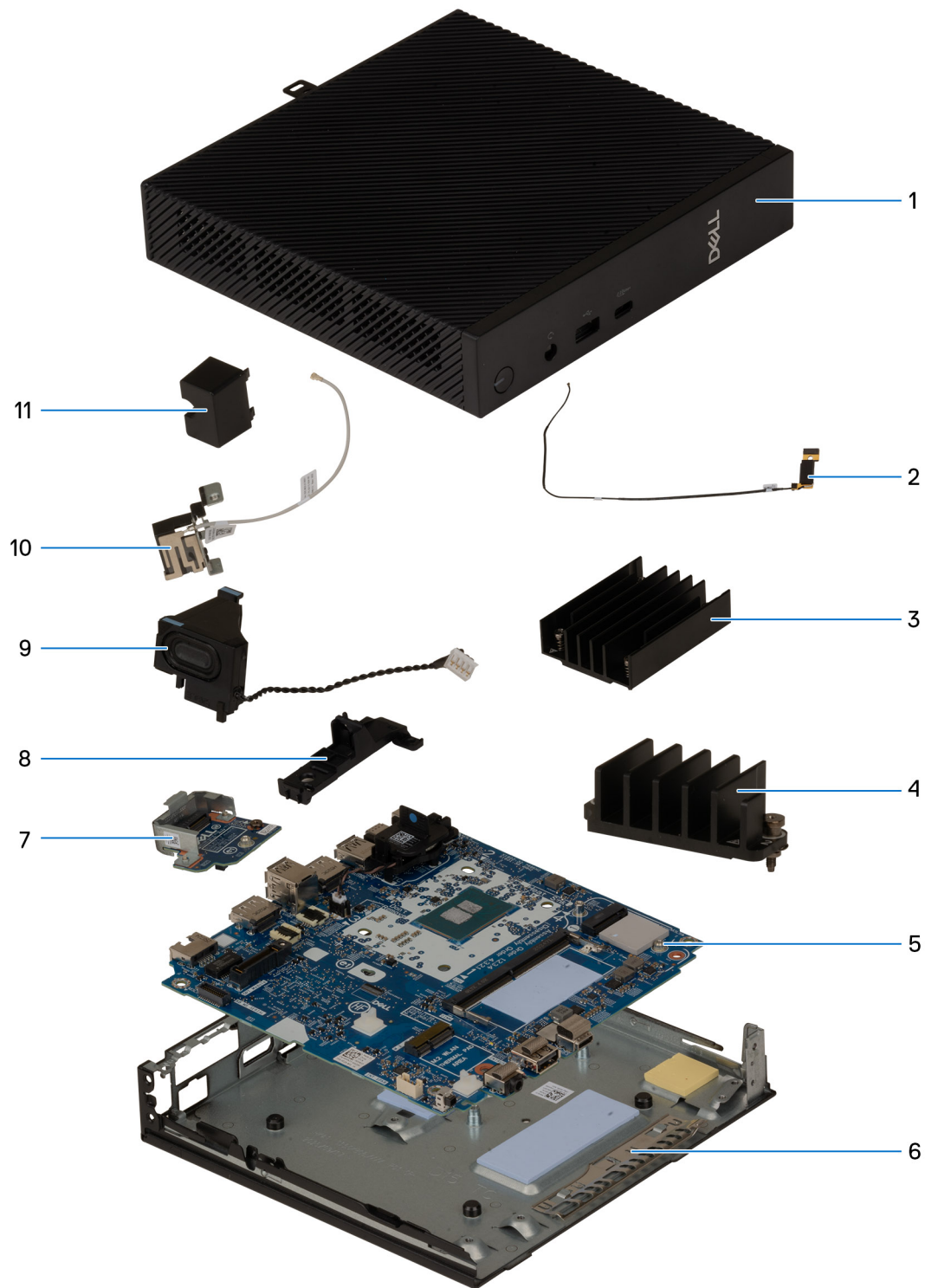


Figure 1. Major components of Dell Pro Micro Thin Client Q9M1260

1. Side cover
2. Wireless antenna cable—location one
3. Heat sink
4. SSD-heat sink
5. System board
6. Chassis
7. Wireless module

8. Speaker holder
9. Speaker with cable
10. Wireless antenna cable—location two
11. Antenna cover

 **NOTE:** Dell provides a list of components and their part numbers for the original computer configuration purchased. These parts are available depending on the warranty coverage that is selected at the time of purchase. Components from upsell or upgraded variants may not be covered under the standard system warranty. For more details or to explore purchase options, contact your Dell sales representative.

Customer Replaceable Units (CRUs) and Field Replaceable Units (FRUs) list

The replaceable components in Dell Pro Micro Thin Client Q9M1260 are either Customer Replaceable Units (CRUs) or Field Replaceable Units (FRUs).

 **CAUTION:** CRUs may be replaced by the customer, following the safety precautions and replacement procedures.

 **CAUTION:** FRUs should be replaced by an authorized service technician, who is a trained technical repair specialist.

 **CAUTION:** Replacement of FRUs by persons other than authorized service technicians may result in damage to the computer or data loss.

 **NOTE:** Damages resulting from improper replacement or from failure to follow instructions are not covered by your warranty. Consider having a trained technical repair specialist perform replacements of FRU components.

Table 2. CRU and FRU list

Customer Replaceable Unit (CRU)	Field Replaceable Unit (FRU)
Side cover	Heat sink
Coin-cell battery	Speaker holder
Memory module	Small Form Factor Pluggable (SFP) port
Solid-state drive (SSD)	System board
SSD-heat sink	Internal wireless antennas
Speaker	Processor
Wireless card	
Wireless card module	
Optional I/O modules • USB 3.2 Gen 2 Type-C port with DisplayPort 1.4 (HBR3) Alt Mode • HDMI 2.1 (TMDS) port • DisplayPort 1.4 (HBR3) port • VGA port • Video expansion module with 2x DisplayPort 1.4 (HBR2) ports using fan-out cable • Optical Fiber Ready Small Form-factor Pluggable (SFP) network adapter, 1 GbE	

Removing and installing side cover

The replaceable components in this chapter are Customer Replaceable Units (CRUs).

CAUTION: CRUs may be replaced by the customer, following the safety precautions and replacement procedures.

NOTE: The images in this document may differ from your computer depending on the configuration you ordered.

Removing the side cover

Prerequisites

1. Follow the procedure in [before working inside your computer](#).

NOTE: Ensure that you remove the security cable from the security-cable slot (if applicable).

About this task

The following images indicate the location of the side cover and provide a visual representation of the removal procedure.



Figure 2. Removing the side cover



Figure 3. Removing the side cover

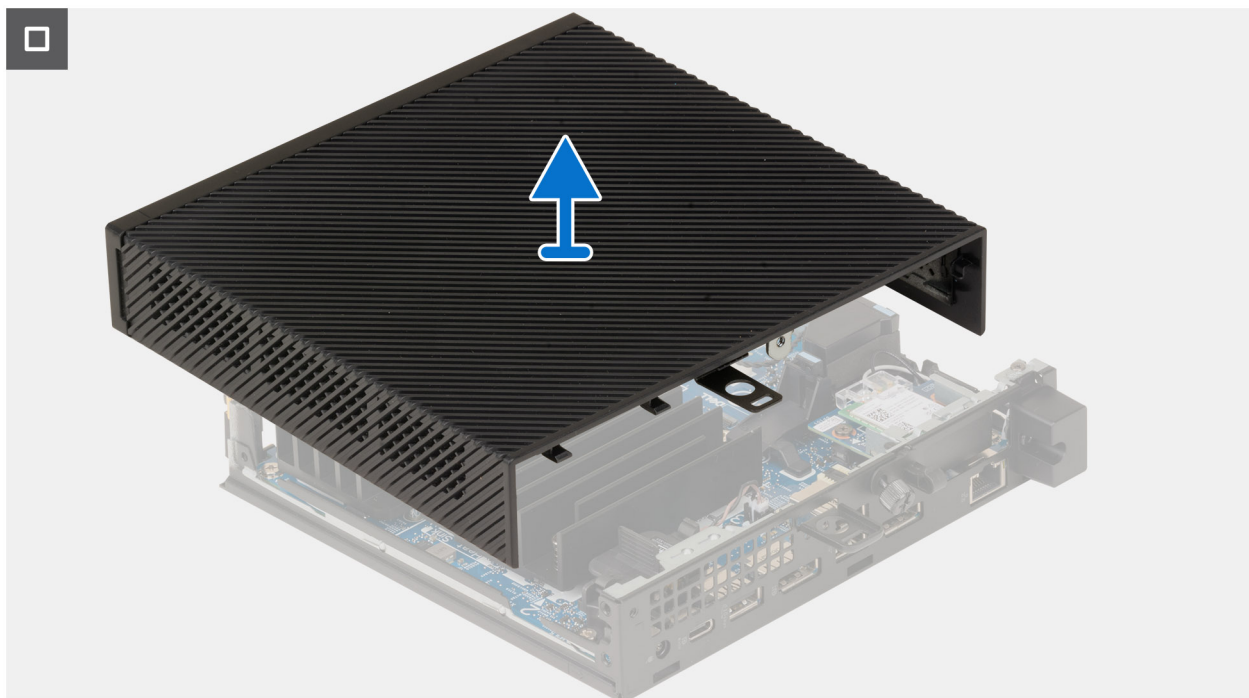


Figure 4. Removing the side cover

Steps

1. Loosen the thumbscrew (#6-32x9.3) that secures the side cover to the chassis.
2. Slide the side cover towards the front of the computer to remove the padlock ring through the slot in the chassis.
3. Lift to remove it from the chassis.

Installing the side cover

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the side cover and provides a visual representation of the installation procedure.

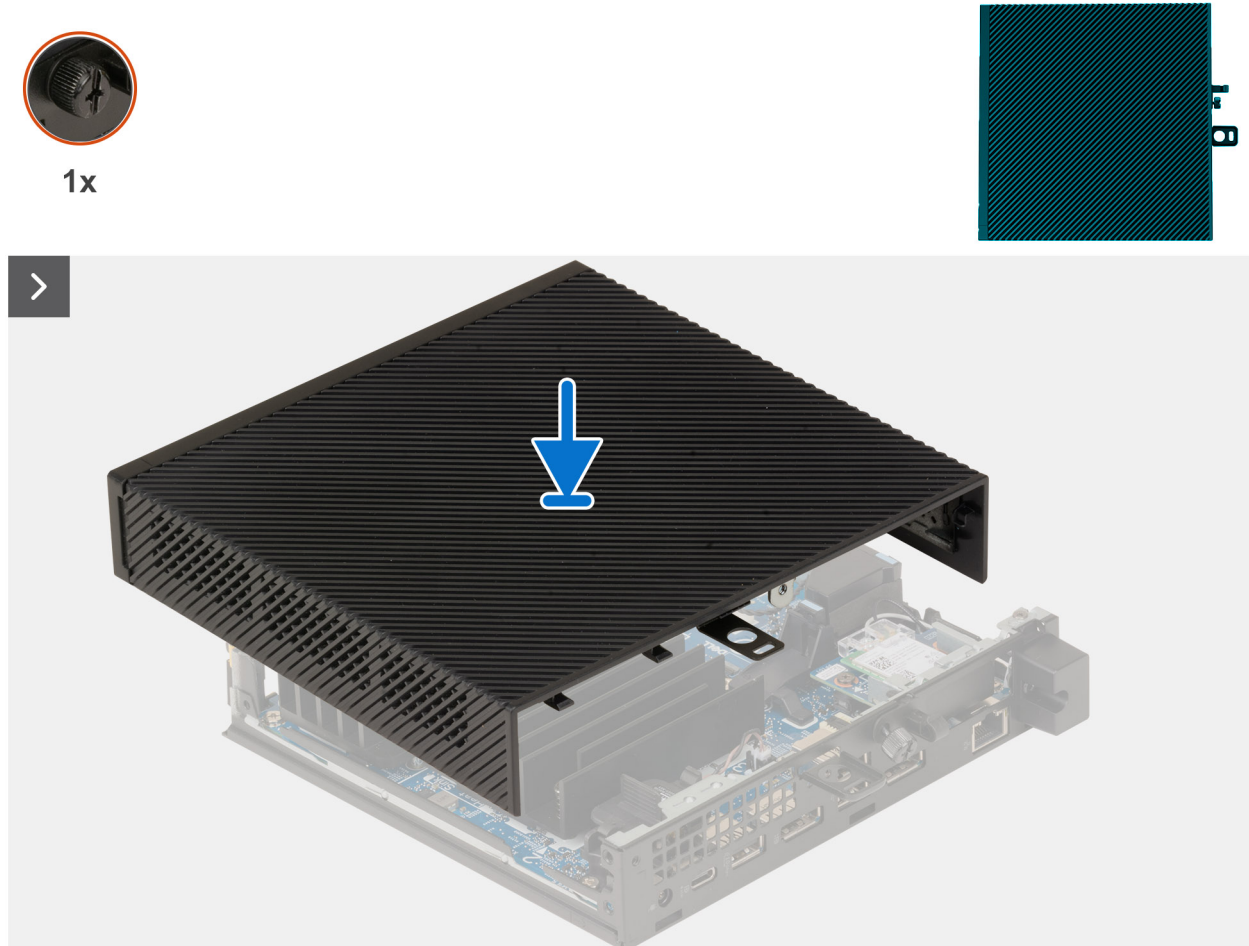


Figure 5. Installing the side cover



Figure 6. Installing the side cover



Figure 7. Installing the side cover

Steps

1. Align the side cover with the grooves on the chassis.
2. Slide the side cover into the chassis towards the front of the computer.
NOTE: Ensure to slide the padlock ring through the slot in the chassis.
3. Tighten the thumbscrew (#6-32x9.3) to secure the side cover to the chassis.

Next steps

1. Follow the procedure in [after working inside your computer](#).

Removing and installing coin-cell battery

Removing the coin-cell battery

CAUTION: Removing the coin-cell battery clears the CMOS and resets BIOS settings.

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following image indicates the location of the coin-cell battery and provides a visual representation of the removal procedure.

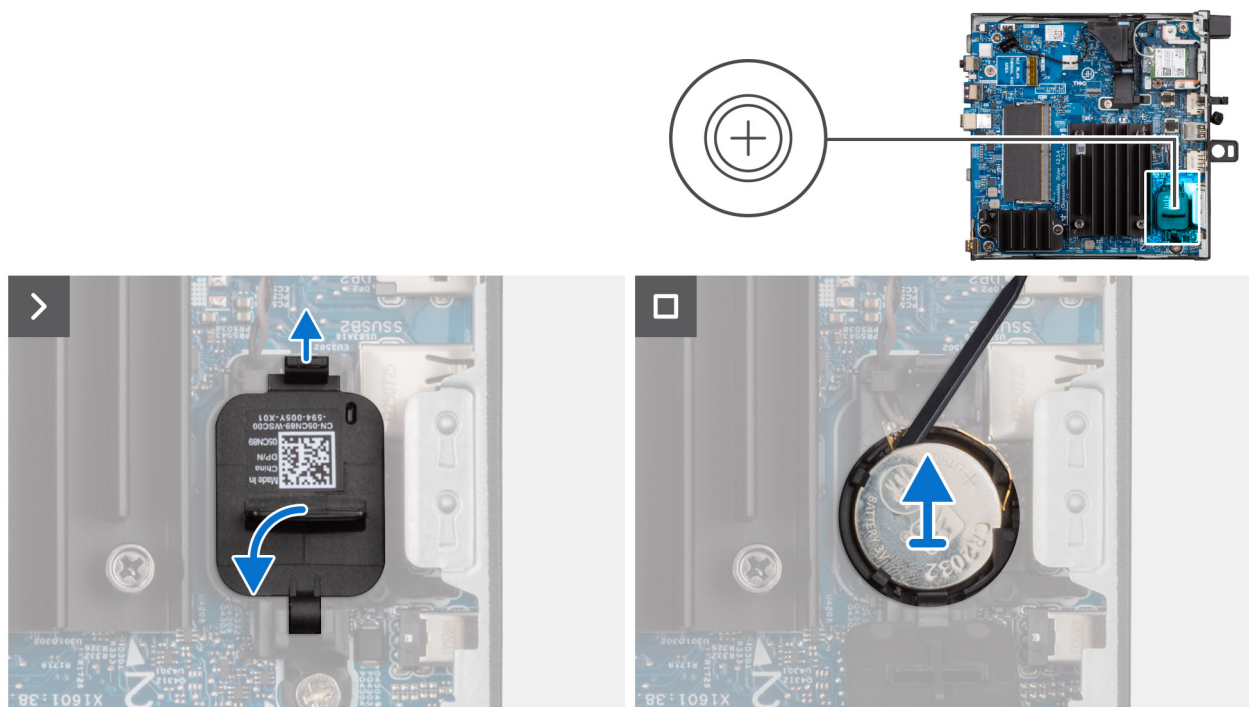


Figure 8. Removing the coin-cell battery

Steps

1. Push the tab to open and release the coin-cell battery cover.
2. Flip the coin-cell battery cover open.
3. Using a plastic scribe, pry to remove the coin-cell battery from the computer.

Installing the coin-cell battery

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the coin-cell battery and provides a visual representation of the installation procedure.

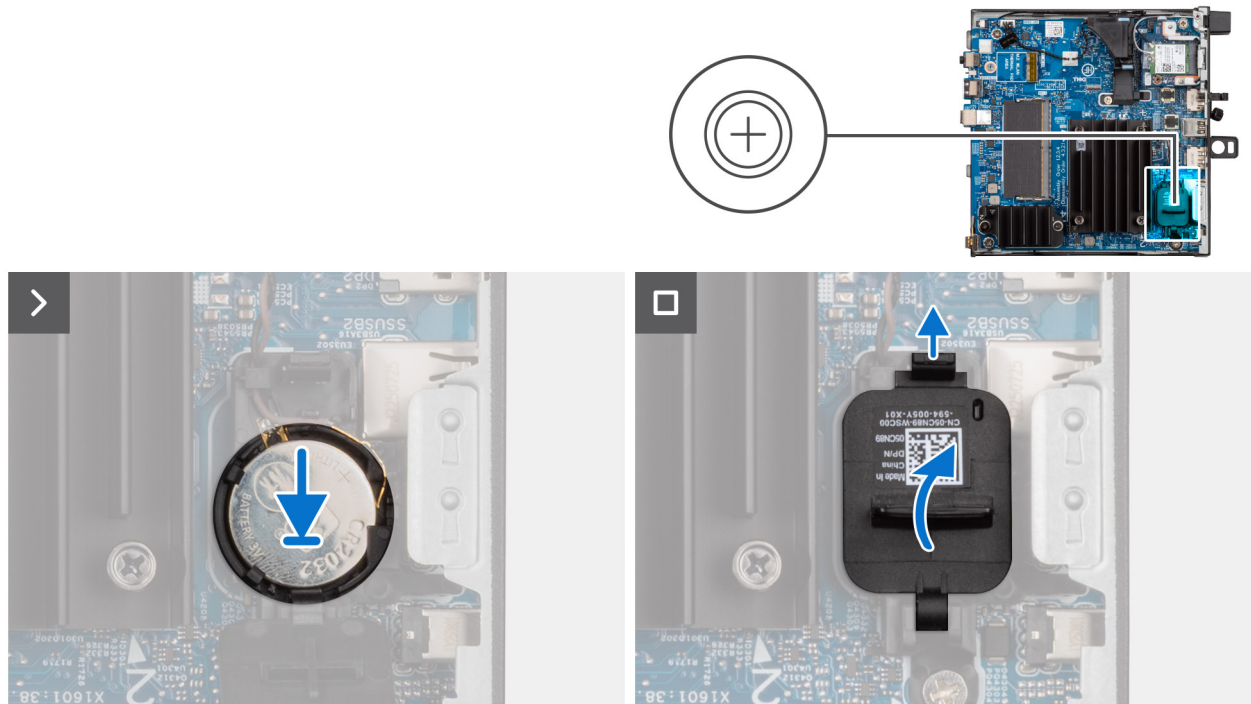


Figure 9. Installing the coin-cell battery

Steps

1. Insert the coin-cell battery into the socket with the positive side (+) label facing up and snap the battery in the socket.
2. Close and press the coin-cell battery cover until it latches into place.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing and installing Customer Replaceable Units (CRUs)

The replaceable components in this chapter are Customer Replaceable Units (CRUs).

CAUTION: CRUs may be replaced by the customer, following the safety precautions and replacement procedures.

NOTE: The images in this document may differ from your computer depending on the configuration you ordered.

Memory module

Removing the memory module

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the memory module and provide a visual representation of the removal procedure.

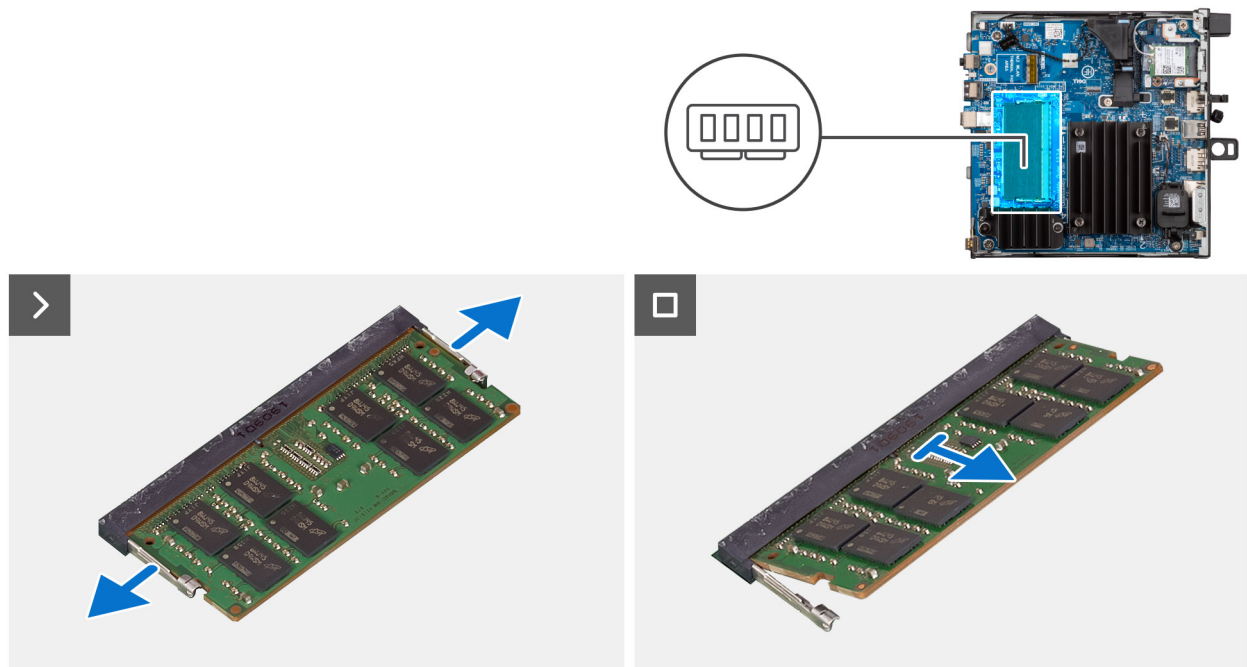


Figure 10. Removing the memory module

Steps

1. Place the computer on its side.
2. Pull the securing clips from both sides of the memory module until the memory module pops up.
3. Slide to remove the memory module from the memory-module slot (DIMM).

CAUTION: To prevent damage to the memory module, hold the memory module by the edges. Do not touch the components or metallic contacts on the memory module as electrostatic discharge(ESD) can inflict severe damage on the components. To read more about ESD protection, see [ESD protection](#).

Installing the memory module

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the memory module and provide a visual representation of the installation procedure.

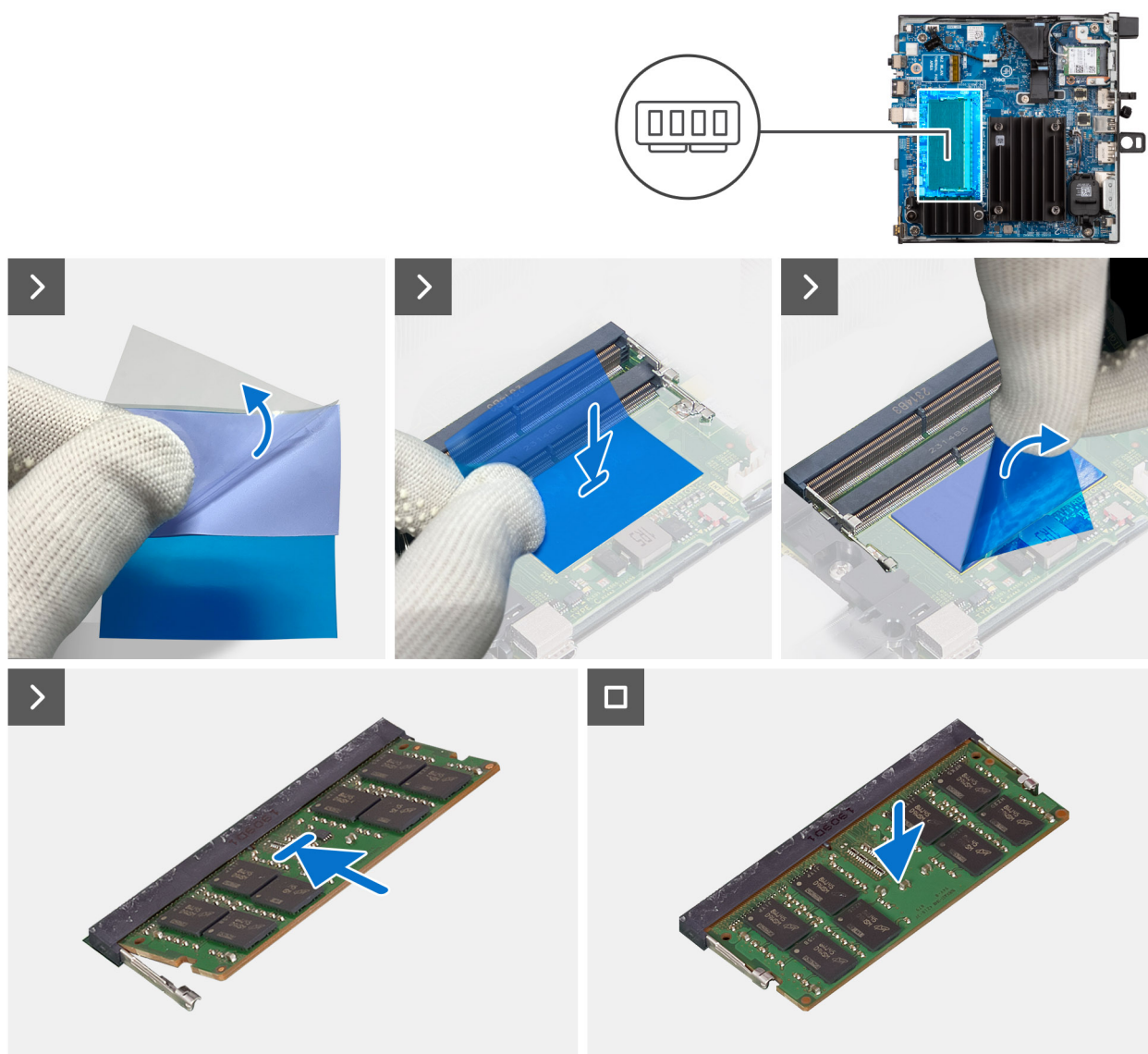


Figure 11. Installing the memory module

Steps

- NOTE:** The replacement memory module that are purchased from Dell come with thermal pads and must be adhered to the system board.

If the thermal pad must be replaced, peel the transparent cover off the new thermal pad.

2. Align the sticky side of the thermal pad to the area of the system board where the memory module is installed.
3. Peel the blue tape off the thermal pad.
4. Align the notch on the memory module with the tab on the memory-module slot (DIMM).
5. Slide the memory module firmly into the slot at an angle and press the memory module down until it secures into place.

CAUTION: To prevent damage to the memory module, hold the memory module by the edges. Do not touch the components or metallic contacts on the memory module as electrostatic discharge(ESD) can inflict severe damage on the components. To read more about ESD protection, see [ESD protection](#).

NOTE: The securing clips return to the locked position. If you do not hear the click, remove the memory module and reinstall it.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Solid-state drive

Removing the M.2 2230 solid-state drive

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following image indicates the location of the M.2 2230 solid-state drive and provides a visual representation of the removal procedure.

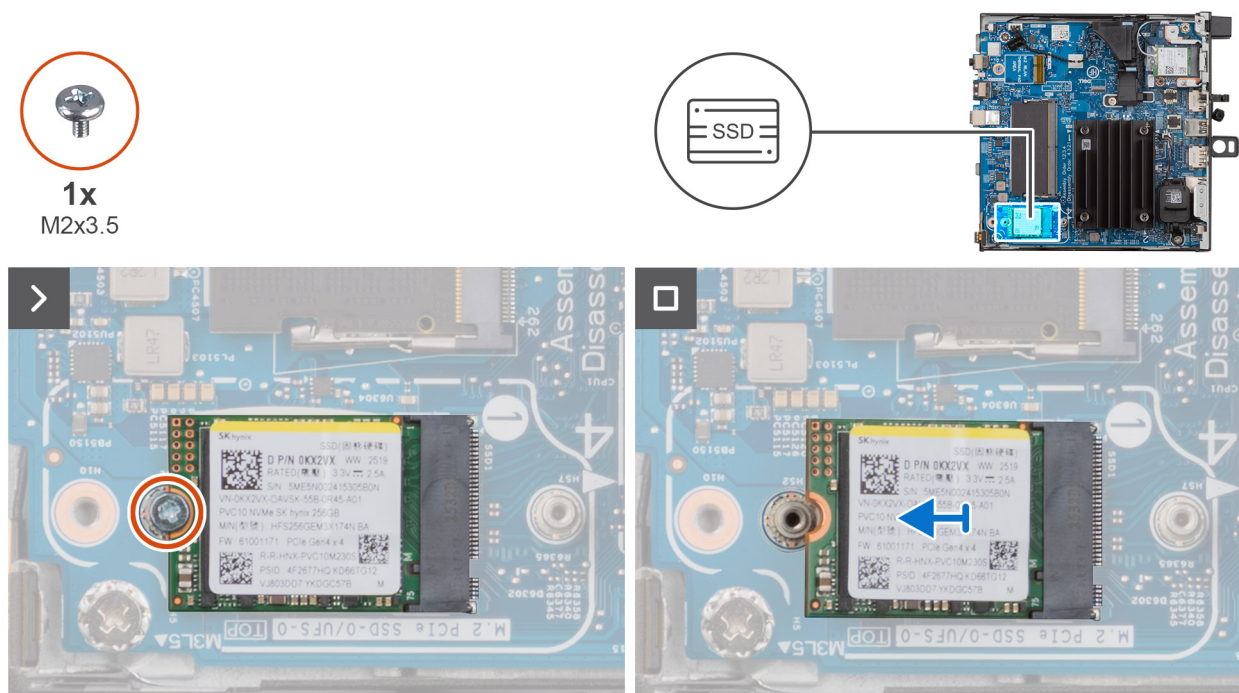


Figure 12. Removing the M.2 2230 solid-state drive

Steps

1. Remove the screw (M2x3.5) that secures the M.2 2230 SSD to the system board.
2. Slide and lift the M.2 2230 SSD from the M.2 card slot (M.2 PCIe SSD-0/UFS-0) on the system board.

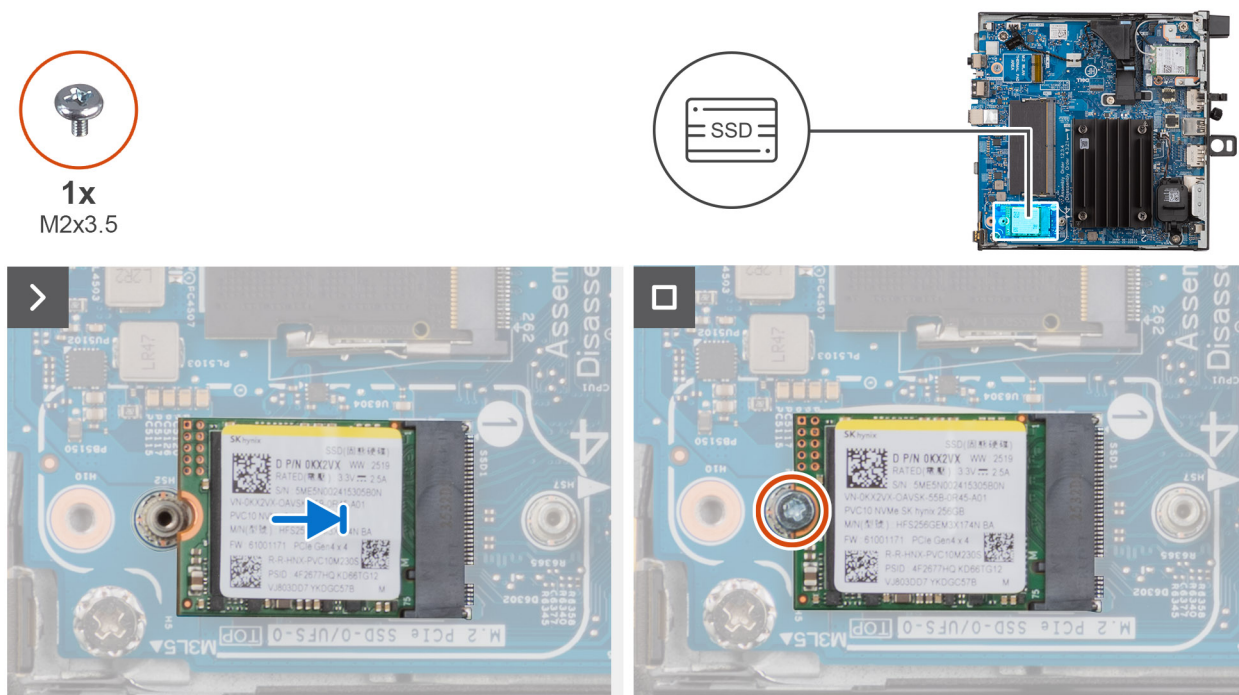
Installing the M.2 2230 solid-state drive

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the M.2 2230 solid-state drive and provides a visual representation of the installation procedure.



Steps

1. Align the notch on the SSD with the tab on the SSD slot (M.2 PCIe SSD-0/UFS-0) on the system board.
2. Replace the screw (M2x3.5) that secures the M.2 2230 SSD card to the system board.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Solid-state drive heat sink

Removing the SSD-heat sink

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

NOTE: The SSD-heat sink may become hot during normal operation. Allow sufficient time for the SSD-heat sink to cool before you touch it.

The following images indicate the location of the SSD-heat sink and provide a visual representation of the removal procedure.

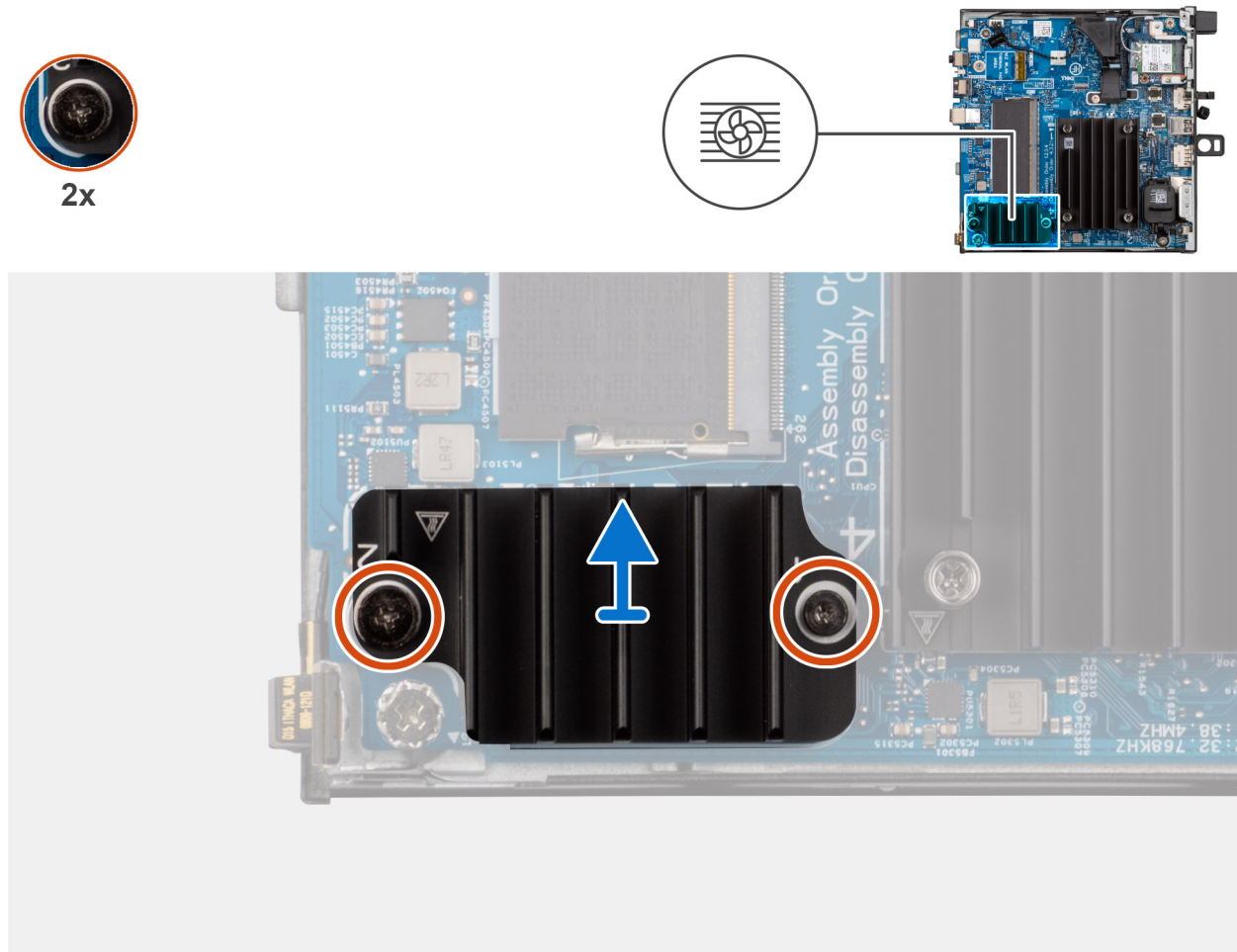


Figure 13. Removing the SSD-heat sink

Steps

1. In sequential order (2 > 1), loosen the two captive screws that secure the SSD-heat sink to the computer.
2. Lift the SSD-heat sink from the system board.

Installing the SSD-heat sink

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the SSD-heat sink and provides a visual representation of the installation procedure.

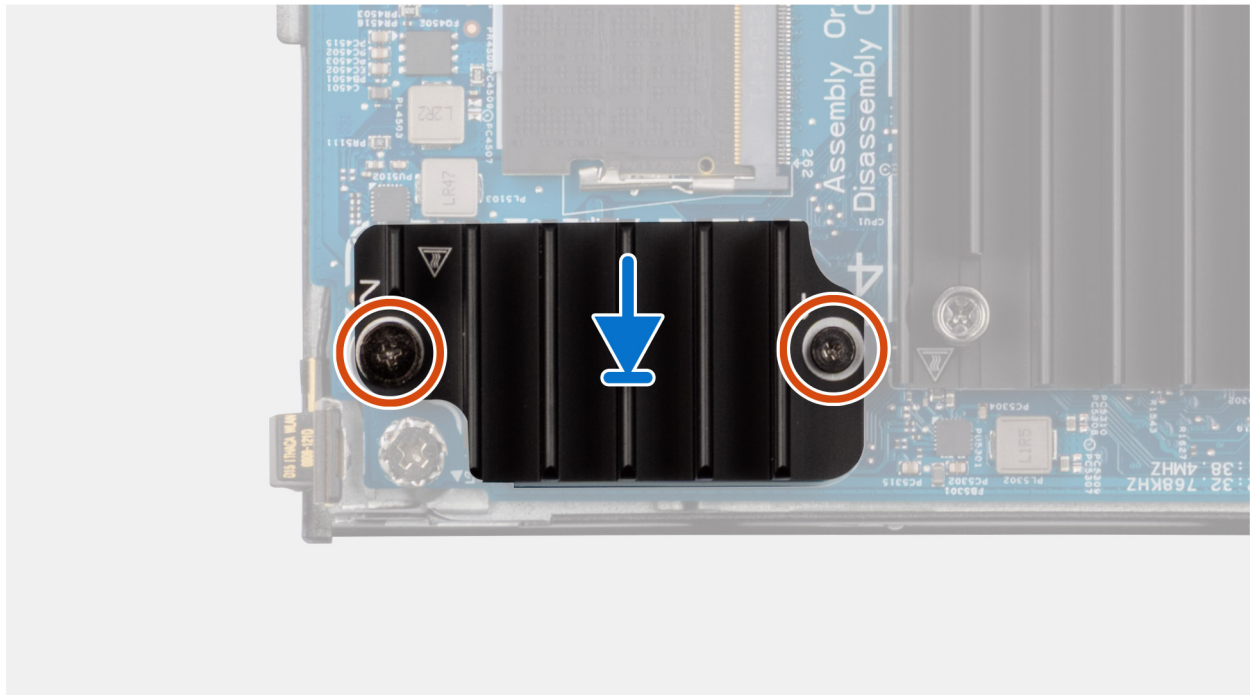
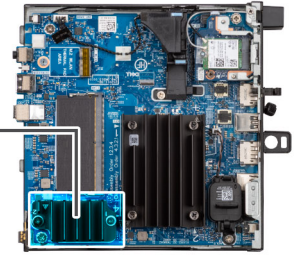


Figure 14. Installing the SSD-heat sink

Steps

1. Align the screw holes of the SSD-heat sink with the screw holes on the system board.
2. Tighten the two captive screws in a sequential order (1 > 2) to secure the SSD-heat sink to the system board.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Speaker

Removing the speaker

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following image indicates the location of the speaker and provides a visual representation of the removal procedure.

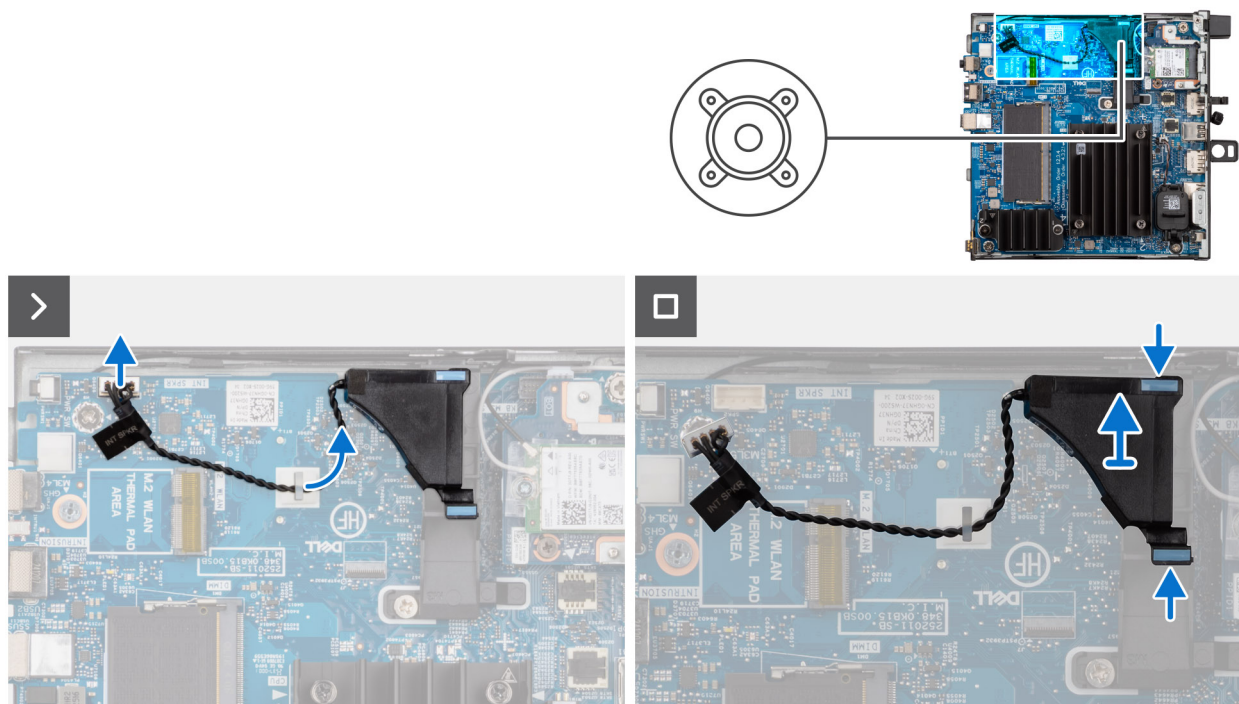


Figure 15. Removing the speaker

Steps

1. Disconnect the speaker cable from the connector (INT SPKR) on the system board.
2. Press the release tabs and lift the speaker along with the cable from the system board.

Installing the speaker

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the speaker and provides a visual representation of the installation procedure.

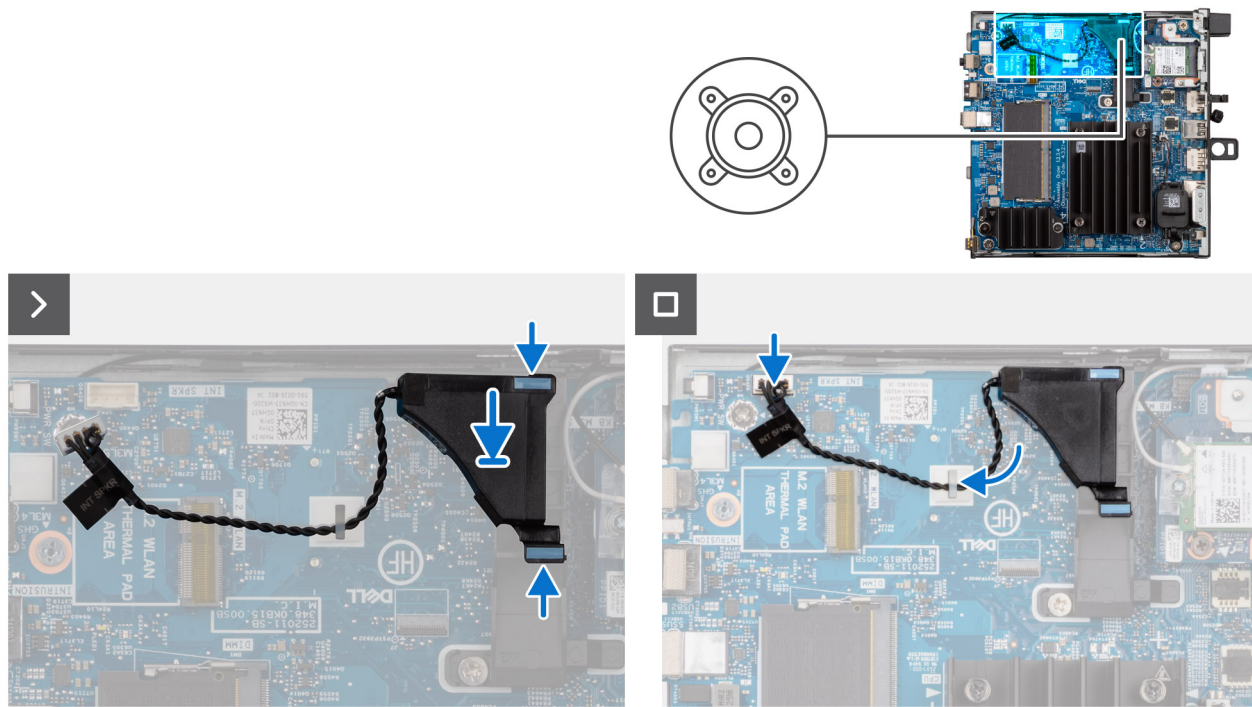


Figure 16. Installing the speaker

Steps

1. Align and insert the speaker into the slot and press it until the release tabs click.
2. Connect the speaker cable to the connector (INT SPKR) on the system board.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Speaker holder

Removing the speaker holder

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).
3. Remove the [speaker](#).

About this task

The following image indicates the location of the speaker holder and provides a visual representation of the removal procedure.



1x
M3x5

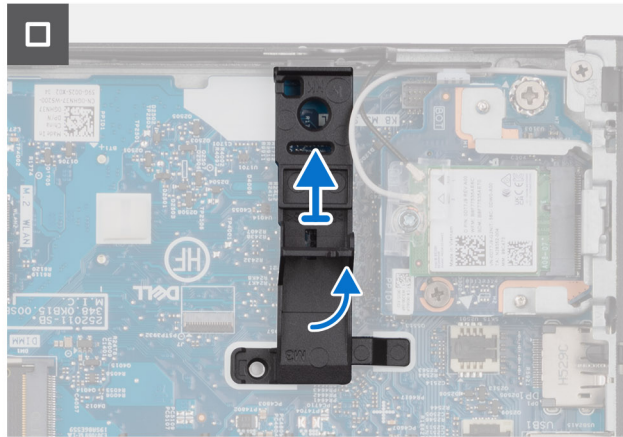
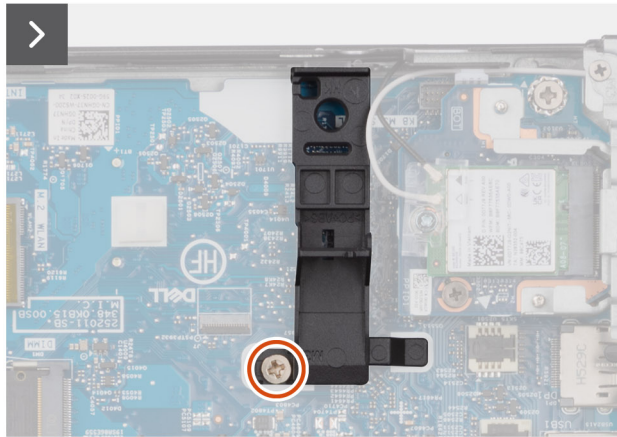
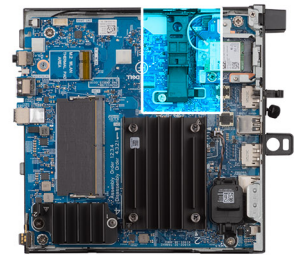


Figure 17. Removing the speaker holder

Steps

1. Remove the screw (M3x5) that secures the speaker holder to the system board.
2. Lift the speaker holder away from the system board.

Installing the speaker holder

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the speaker holder and provides a visual representation of the installation procedure.



1x
M3x5

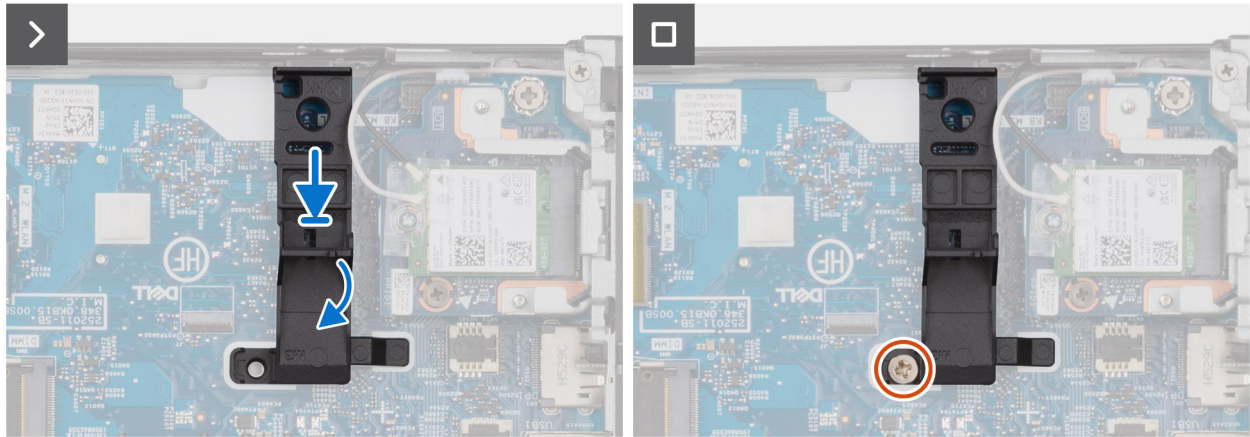
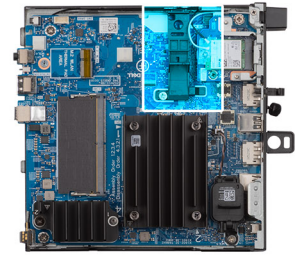


Figure 18. Installing the speaker holder

Steps

1. Align and insert the speaker holder into the slot on the system board.
2. Replace the screw (M3x5) to secure the speaker holder to the system board.

Next steps

1. Install the [speaker](#).
2. Install the [side cover](#).
3. Follow the procedure in [after working inside your computer](#).

Wireless card

Removing the wireless card

Prerequisites

 **NOTE:** This procedure applies only to computers equipped with the Intel AX211 Wi-Fi 6 wireless card.

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following image indicates the location of the wireless card and provides a visual representation of the removal procedure.

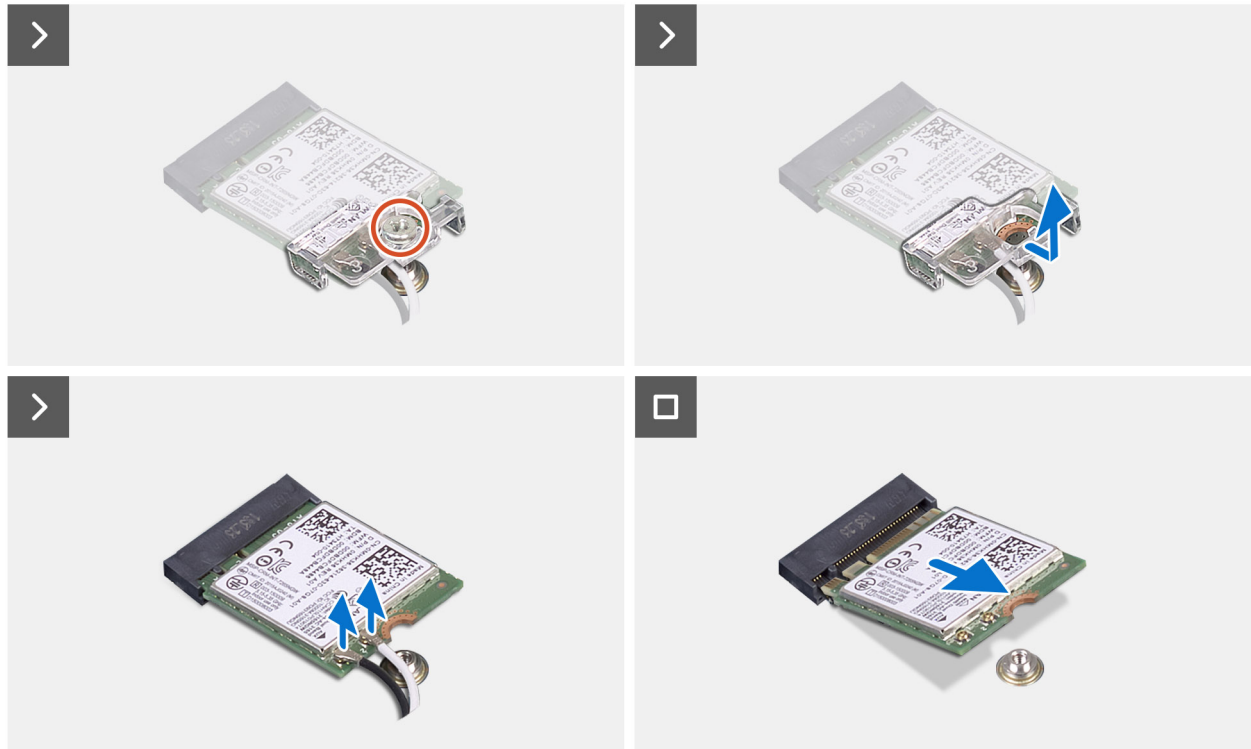
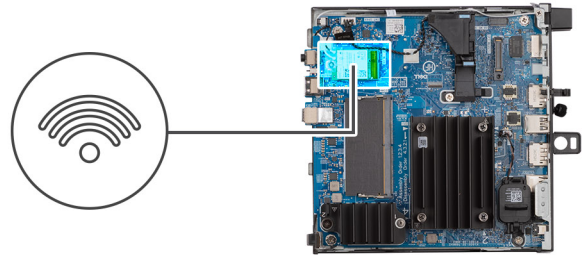


Figure 19. Removing the wireless card

Steps

1. Remove the screw (M2x3.5) that secures the wireless-card bracket to the wireless card.
2. Slide and remove the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Slide and remove the wireless card from the wireless-card slot (M.2 WLAN).

Installing the wireless card

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel AX211 Wi-Fi 6 wireless card.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the wireless card and provides a visual representation of the installation procedure.

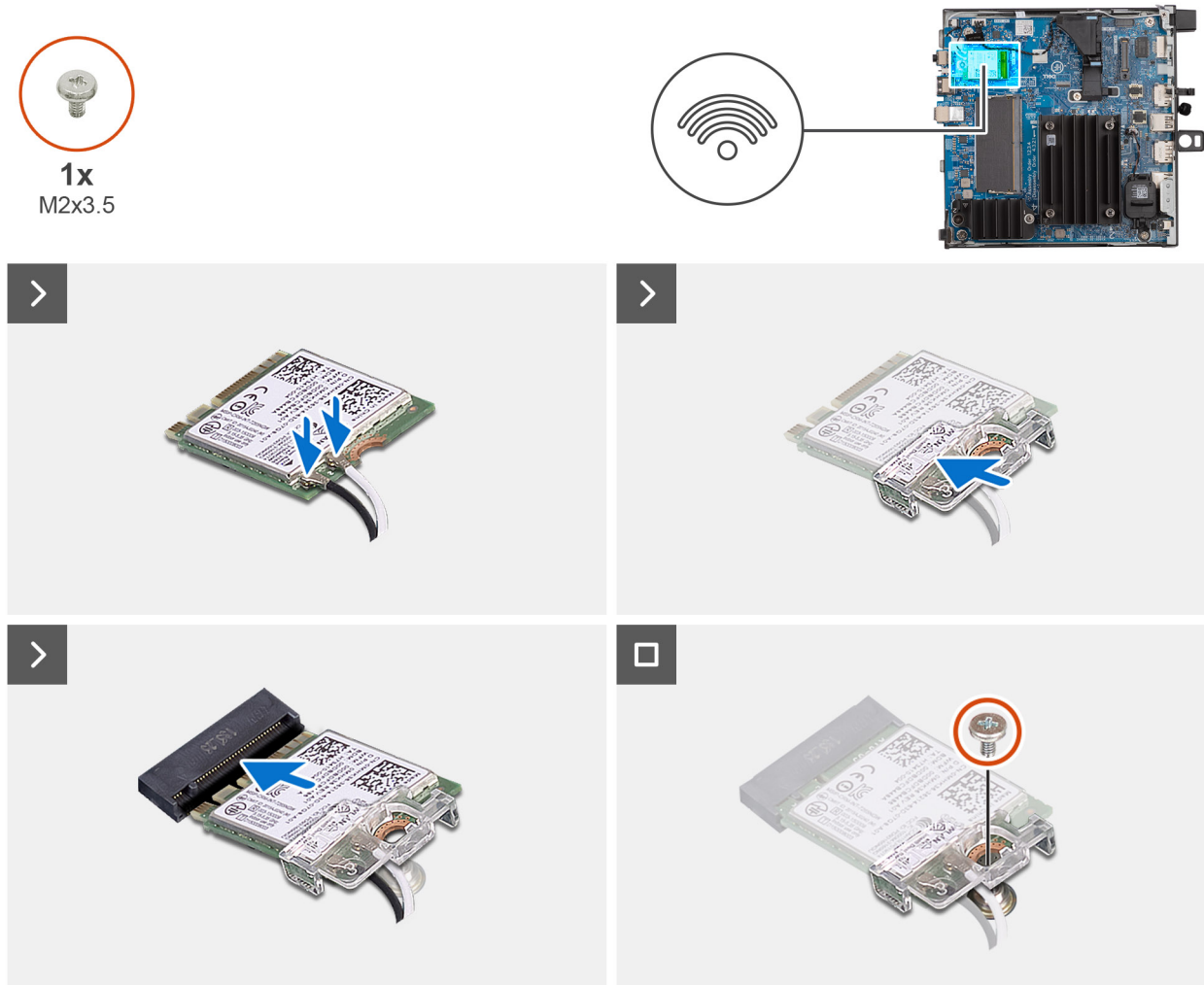


Figure 20. Installing the wireless card

Steps

1. Connect the antenna cables to the wireless card.

The following table provides the antenna-cable color scheme for the WLAN card of your computer.

Table 3. Antenna-cable color scheme

Connectors on the wireless card	Antenna-cable color	Silkscreen marking	
Main	White	MAIN	△ (white triangle)
Auxiliary	Black	AUX	▲ (black triangle)

2. Place the wireless-card bracket on the wireless card.
3. Align the notch on the wireless card with the tab on the wireless-card slot.
4. Slide the wireless card at an angle into the wireless-card slot (M.2 WLAN).
5. Replace the screw (M2x3.5) to secure the wireless card and wireless-card bracket to the system board.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the wireless card

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following image indicates the location of the wireless card and provides a visual representation of the removal procedure.

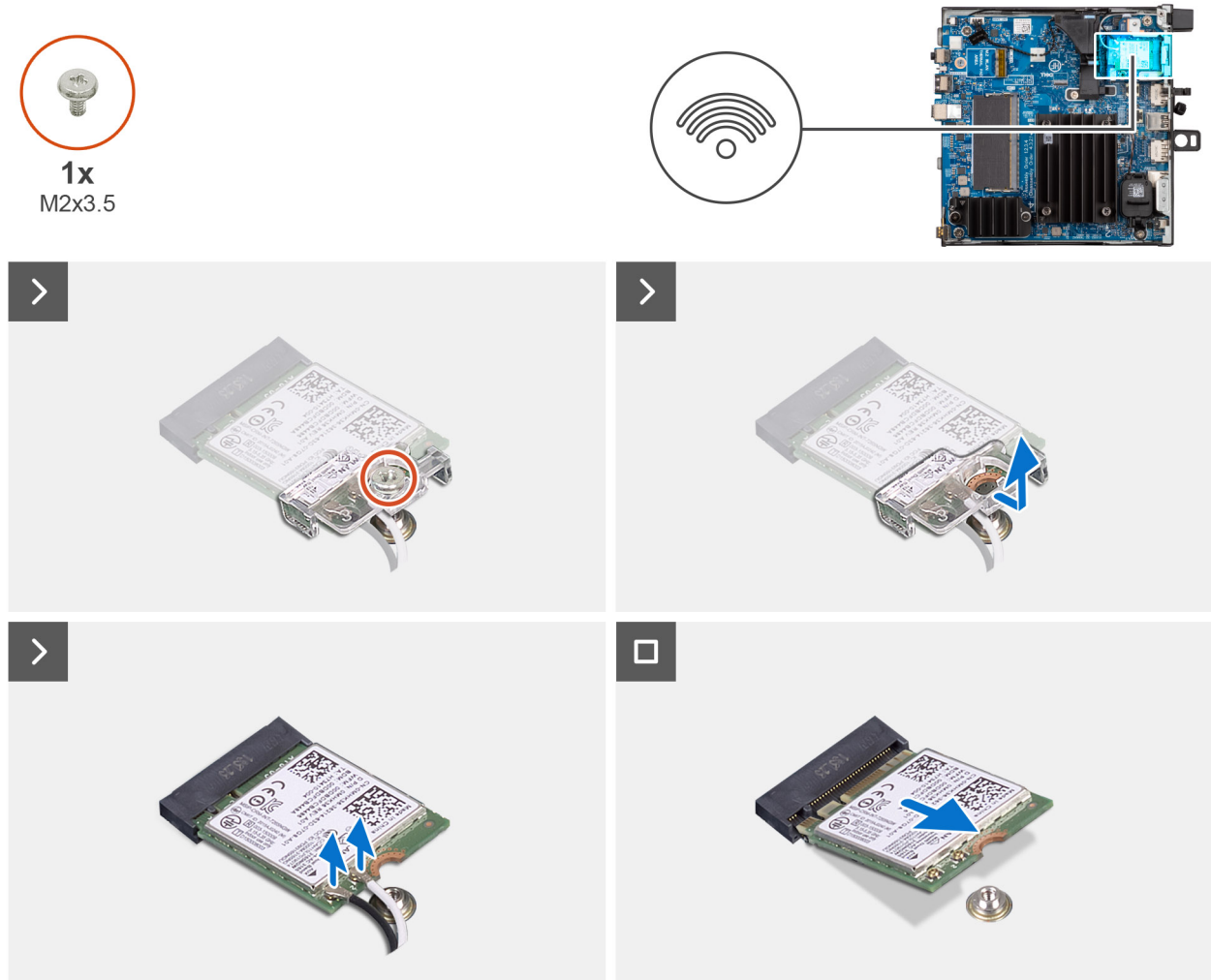


Figure 21. Removing the wireless card

Steps

1. Remove the screw (M2x3.5) that secures the wireless-card bracket to the wireless card.
2. Slide and remove the wireless-card bracket off the wireless card.
3. Disconnect the antenna cables from the wireless card.
4. Slide and remove the wireless card from the wireless-card slot.

Installing the wireless card

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the wireless card and provides a visual representation of the installation procedure.

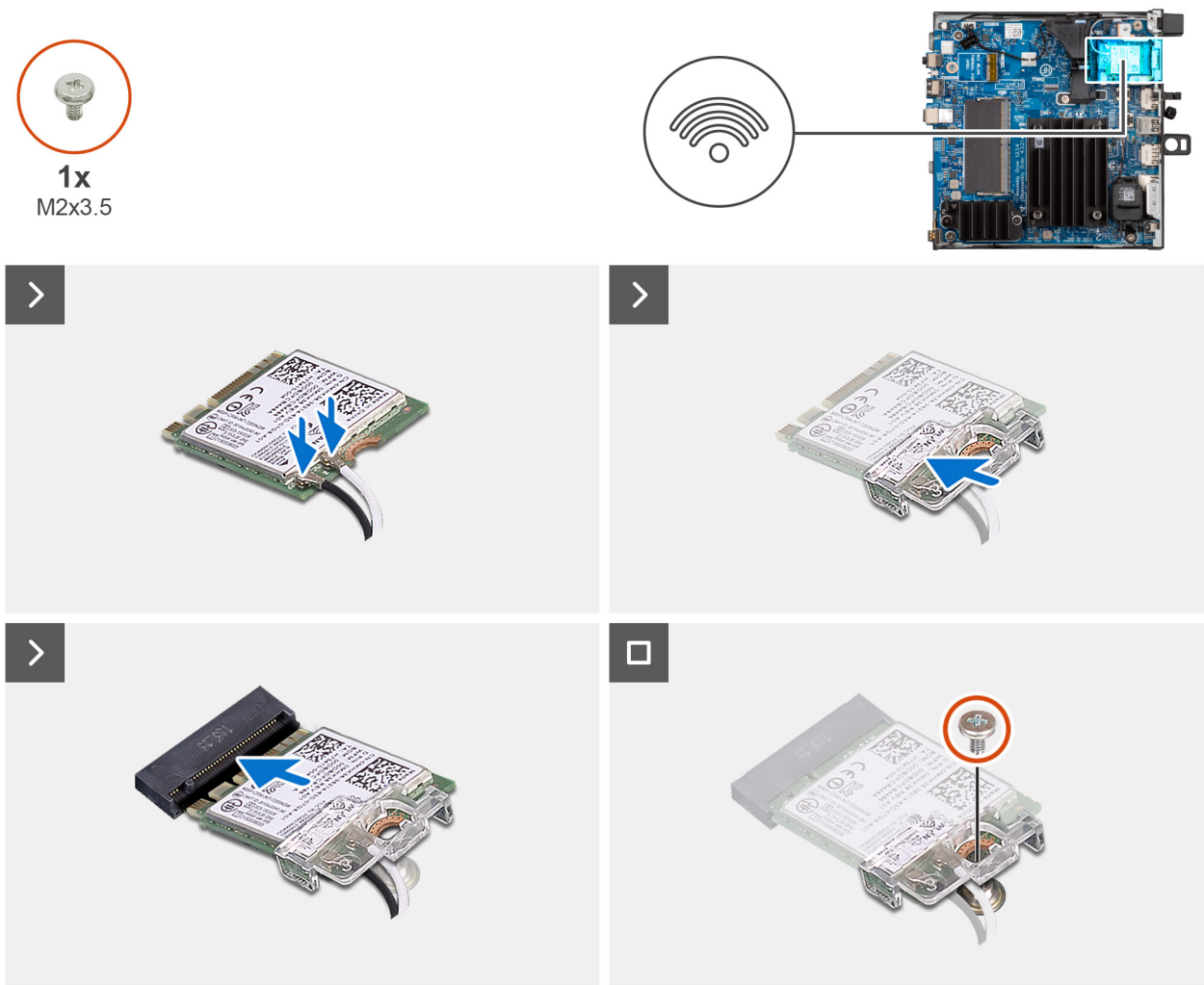


Figure 22. Installing the wireless card

Steps

1. Connect the antenna cables to the wireless card.
The following table provides the antenna-cable color scheme for the WLAN card of your computer.

Table 4. Antenna-cable color scheme

Connectors on the wireless card	Antenna-cable color	Silkscreen marking	
Main	White	MAIN	△ (white triangle)
Auxiliary	Black	AUX	▲ (black triangle)

2. Place the wireless-card bracket on the wireless card.

3. Align the notch on the wireless card with the tab on the wireless-card slot.
4. Slide the wireless card at an angle into the wireless-card slot.
5. Replace the screw (M2x3.5) to secure the wireless card and wireless-card bracket to the system board.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Wireless module

About this task

 **NOTE:** This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

Removing the wireless card module

Prerequisites

 **NOTE:** This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).
3. Remove the [wireless card](#).

About this task

The following image indicates the location of the wireless card module and provides a visual representation of the removal procedure.

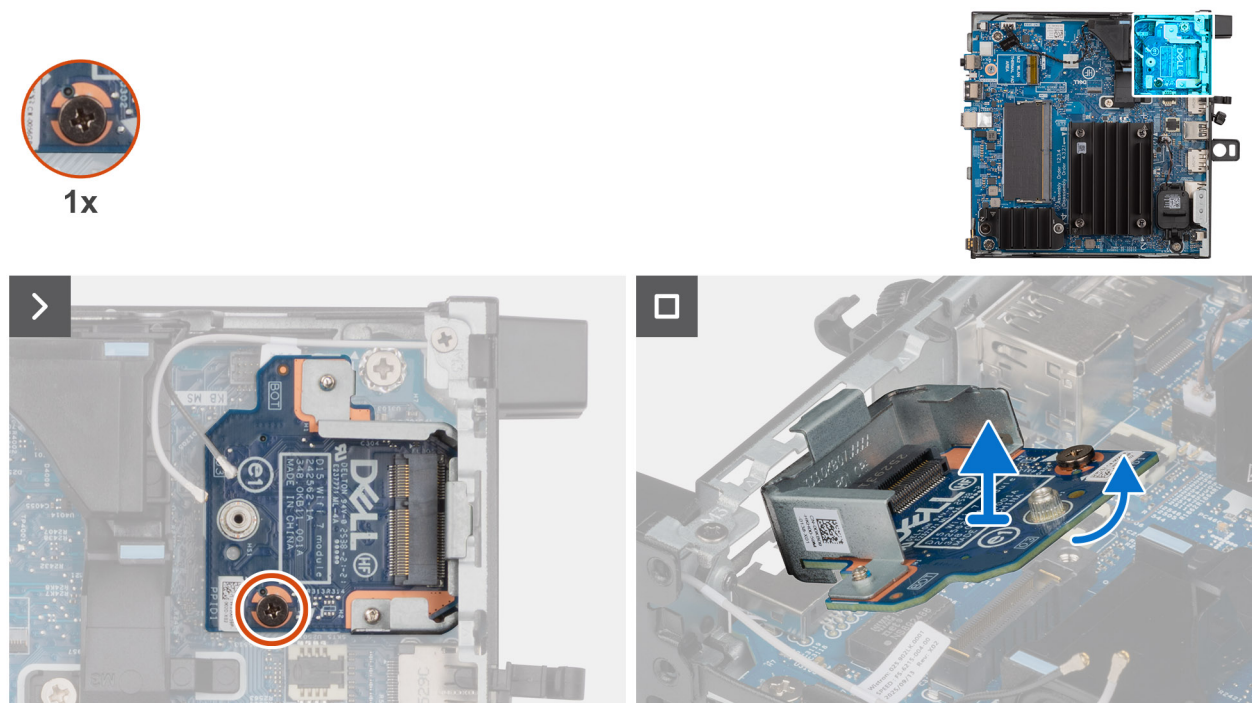


Figure 23. Removing the wireless card module

Steps

1. Loosen the captive screw that secures the wireless card module to the system board.

2. Detach from the chassis and lift the wireless card module out of the computer.

Installing the wireless card module

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the wireless card module and provides a visual representation of the installation procedure.

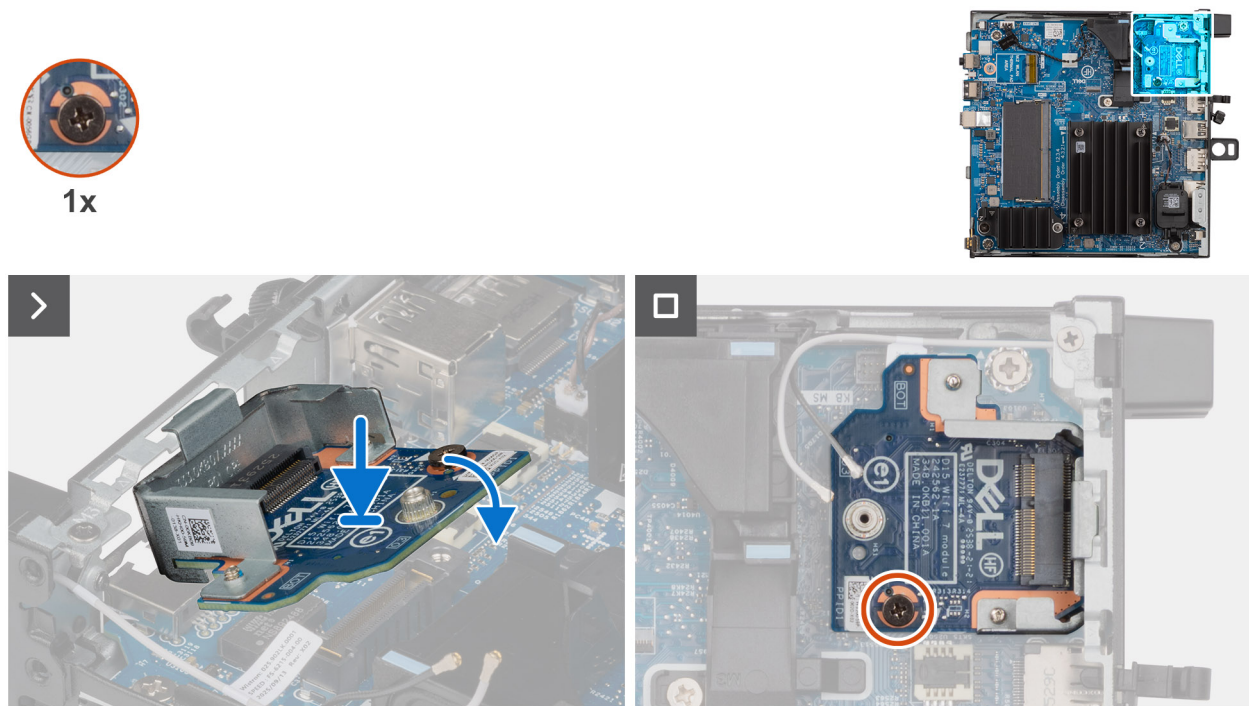


Figure 24. Installing the wireless card module

Steps

1. Mount the wireless card module on the chassis.
2. Align the wireless card module on the wireless-card slot on the system board.
3. Tighten the captive screw to secure the wireless card module to the system board.

Next steps

1. Install the [wireless card](#).
2. Install the [side cover](#).
3. Follow the procedure in [after working inside your computer](#).

Optional Input/Output modules

Dual USB 3.2 Gen 2 ports module

Installing dual USB 3.2 Gen 2 ports module

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the optional dual USB 3.2 Gen 2 ports module and provide a visual representation of the installation procedure.

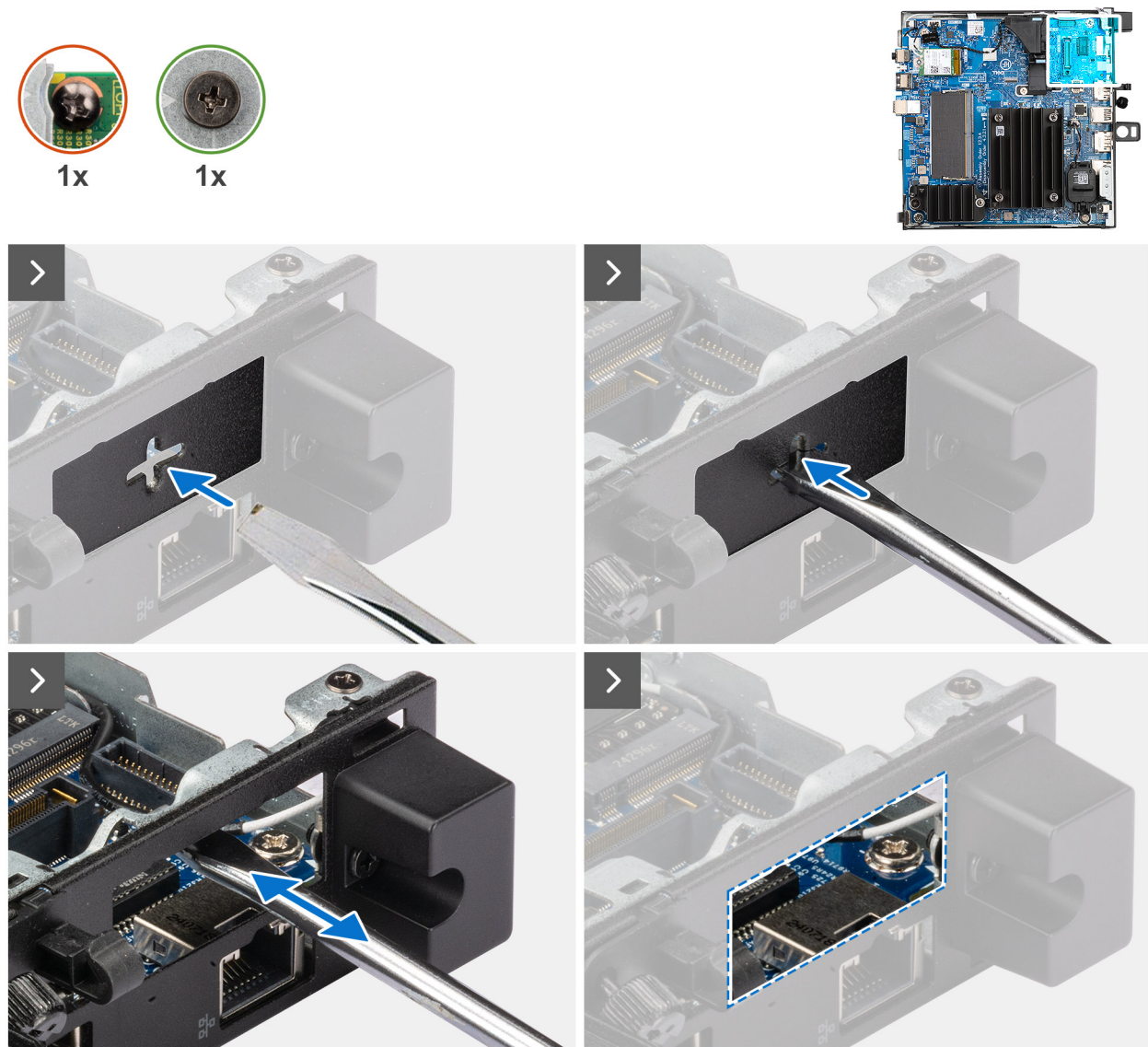


Figure 25. Installing dual USB 3.2 Gen 2 ports module

Steps

1. To remove the knock-out port cover, insert a flat-head screwdriver in the hole of the port cover from the outside of the computer.

2. Push the knock-out port cover to release it, and then remove it out from the computer.
3. Insert the dual USB 3.2 Gen 2 ports module into its slot at the back panel of the computer.

NOTE: Ensure that the tabs on the dual USB 3.2 Gen 2 ports module align with the triangles that are engraved on the mounting point on the chassis.

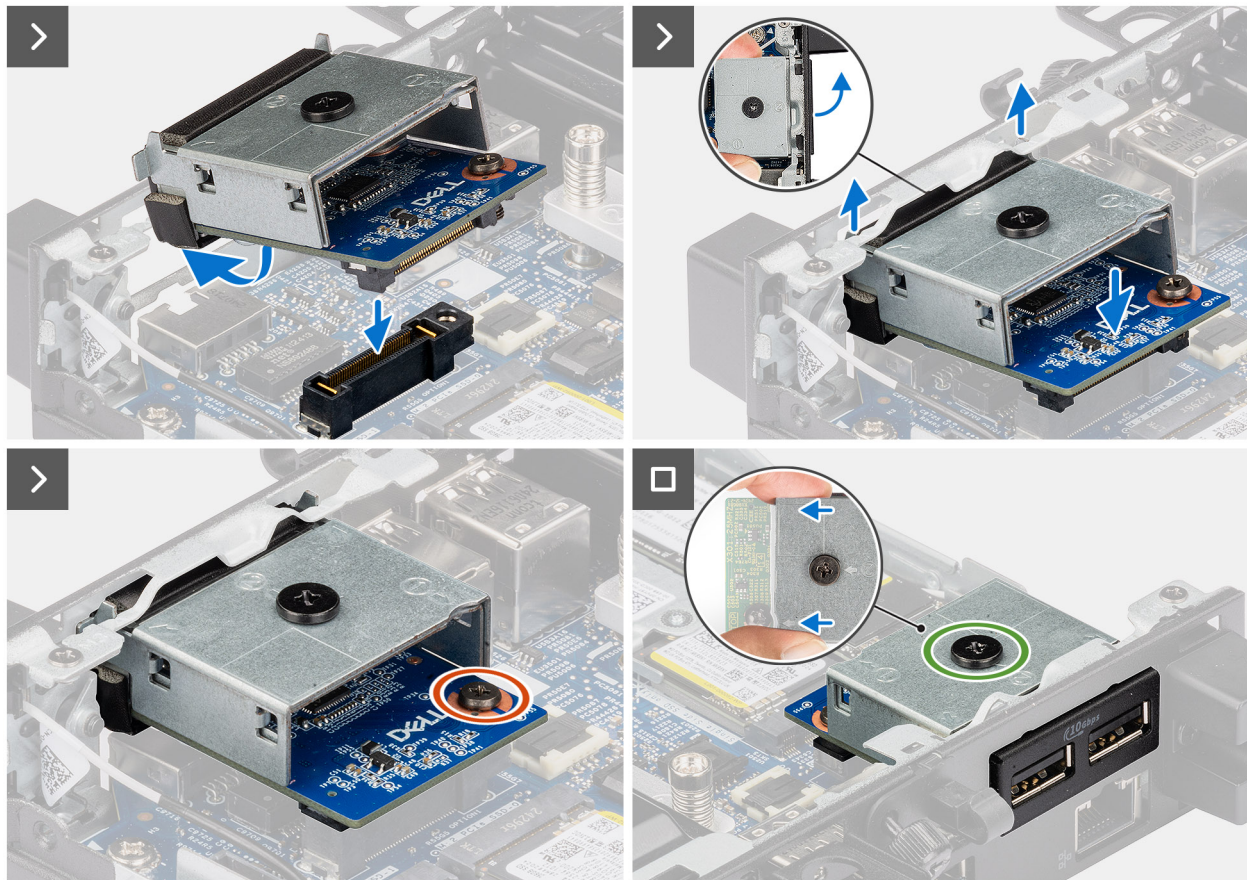


Figure 26. Installing the dual USB 3.2 Gen 2 ports module

4. Gently press the dual USB 3.2 Gen 2 ports module onto the connector (OPT module) on the system board until it clicks in place.
5. Tighten the two captive screws to secure the dual USB 3.2 Gen 2 ports module to the chassis.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the dual USB 3.2 Gen 2 ports module

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the optional I/O module and provide a visual representation of the removal procedure.

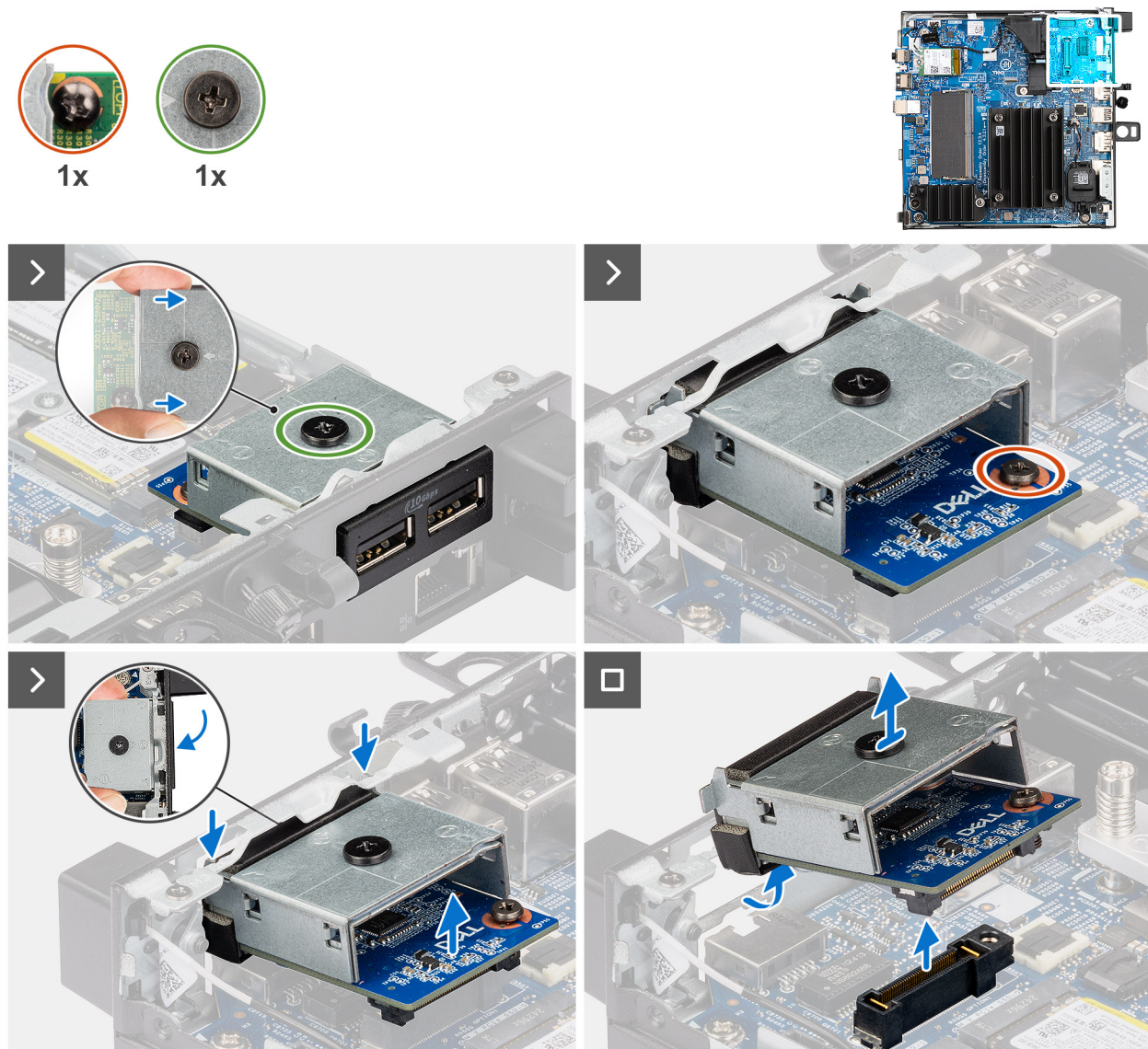


Figure 27. Removing the dual USB 3.2 Gen 2 ports module

Steps

1. Loosen the two captive screws that secure the dual USB 3.2 Gen 2 ports module to the chassis.
2. Disconnect the dual USB 3.2 Gen 2 ports module from the connector (OPT module) on the system board.
3. Lift the dual USB 3.2 Gen 2 ports module from its connector end at an angle, then move it downwards to detach it from the mounting points on the chassis.
4. Slide the dual USB 3.2 Gen 2 ports module and lift it away from the chassis.

USB Type-C port module with DisplayPort Alt mode and Power Delivery

Installing the USB 3.2 Gen 2 Type-C port

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the optional USB 3.2 Gen 2 Type-C port module and provide a visual representation of the installation procedure.

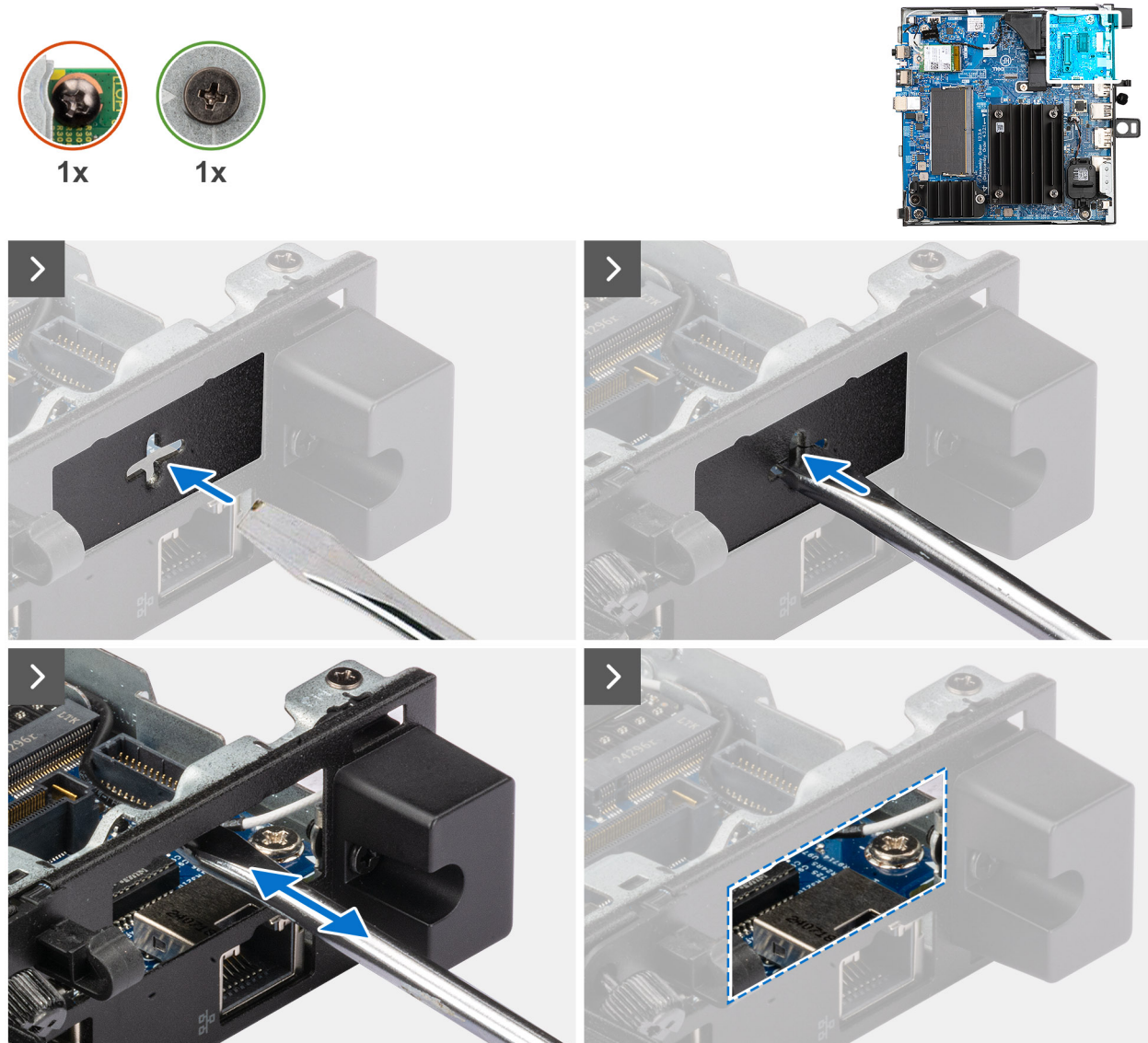


Figure 28. Installing the USB 3.2 Gen 2 Type-C port

Steps

1. To remove the knock-out port cover, insert a flat-head screwdriver in the hole of the port cover from the outside of the computer.
2. Push the knock-out port cover to release it, and then remove it out from the computer.
3. Insert the USB 3.2 Gen 2 Type-C port module into its slot at the back panel of the computer.

NOTE: Ensure that the tabs on the USB 3.2 Gen 2 Type-C port module align with the triangles that are engraved on the mounting point on the chassis.

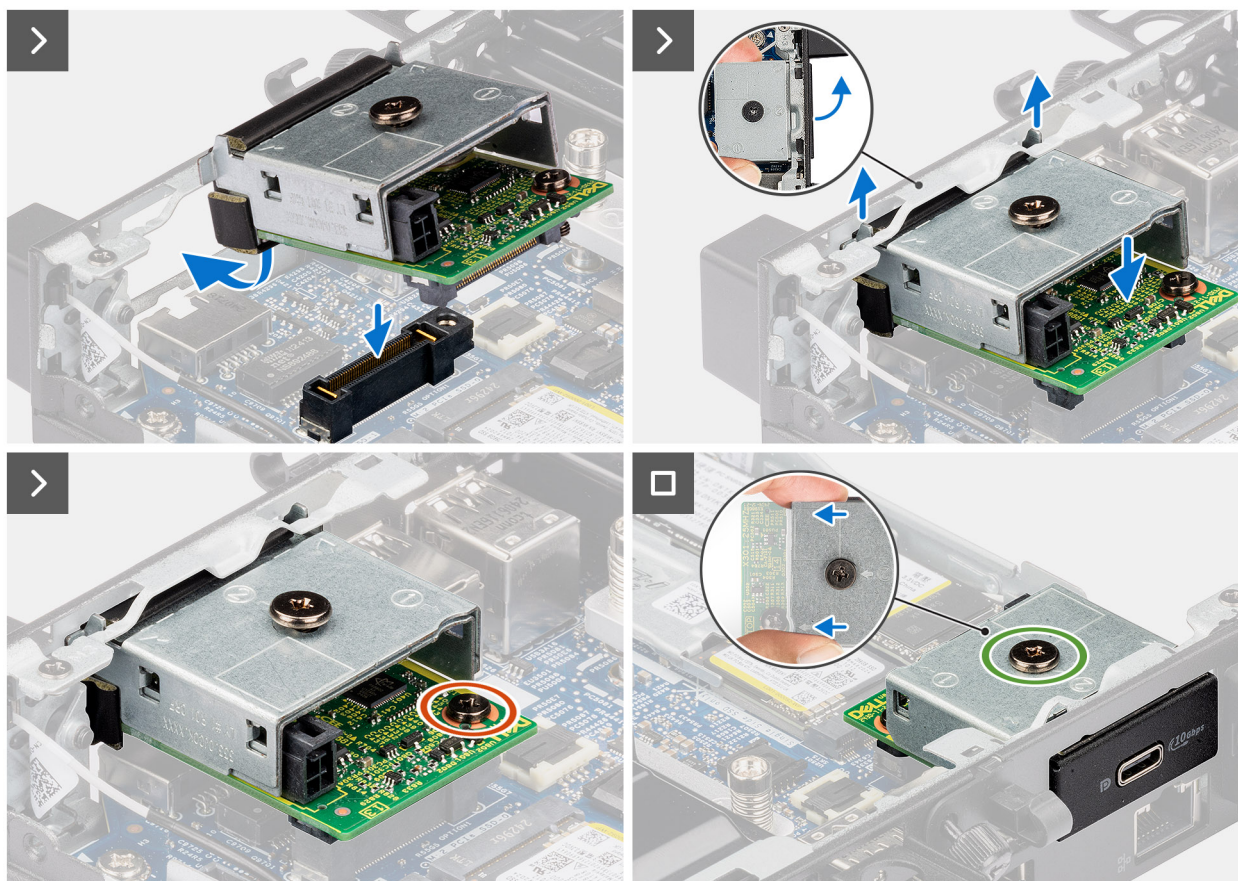


Figure 29. Installing the USB 3.2 Gen 2 Type-C port

4. Gently press the dual USB 3.2 Gen 2 ports module onto the connector (OPT module) on the system board until it clicks in place.
5. Tighten the two captive screws to secure the dual USB 3.2 Gen 2 ports module to the chassis.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the USB 3.2 Gen 2 Type-C port

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the optional USB 3.2 Gen 2 Type-C port module and provide a visual representation of the removal procedure.

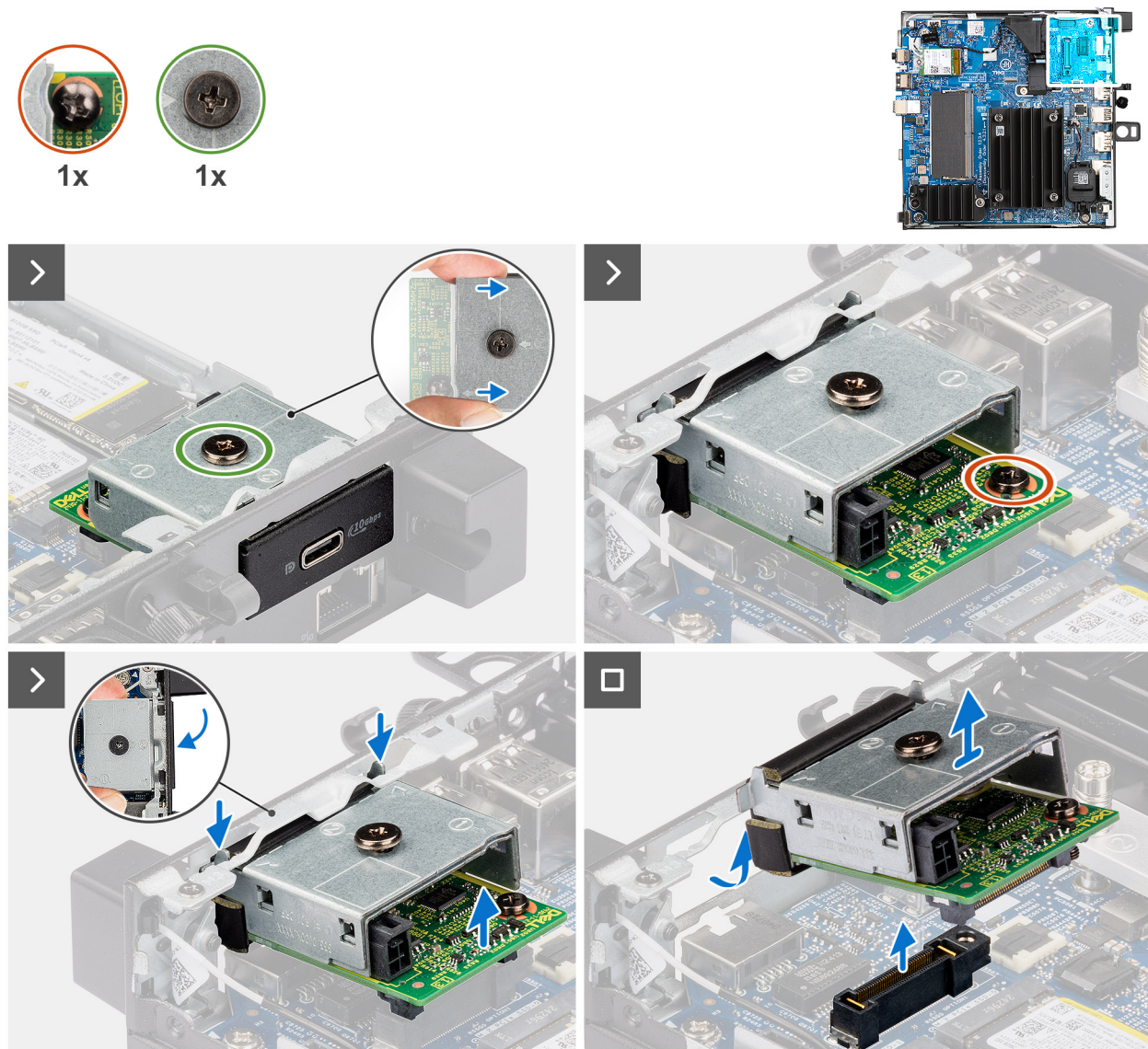


Figure 30. Removing the USB 3.2 Gen 2 Type-C port

Steps

1. Loosen the two captive screws that secure the USB 3.2 Gen 2 Type-C port module to the chassis.
2. Disconnect the USB 3.2 Gen 2 Type-C port module from the connector (OPT module) on the system board.
3. Lift the USB 3.2 Gen 2 Type-C port module from its connector end at an angle, then move it downwards to detach it from the mounting points on the chassis.
4. Slide the USB 3.2 Gen 2 Type-C port module and lift it away from the chassis.

DisplayPort module

Installing the DisplayPort

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the optional DisplayPort module and provide a visual representation of the installation procedure.

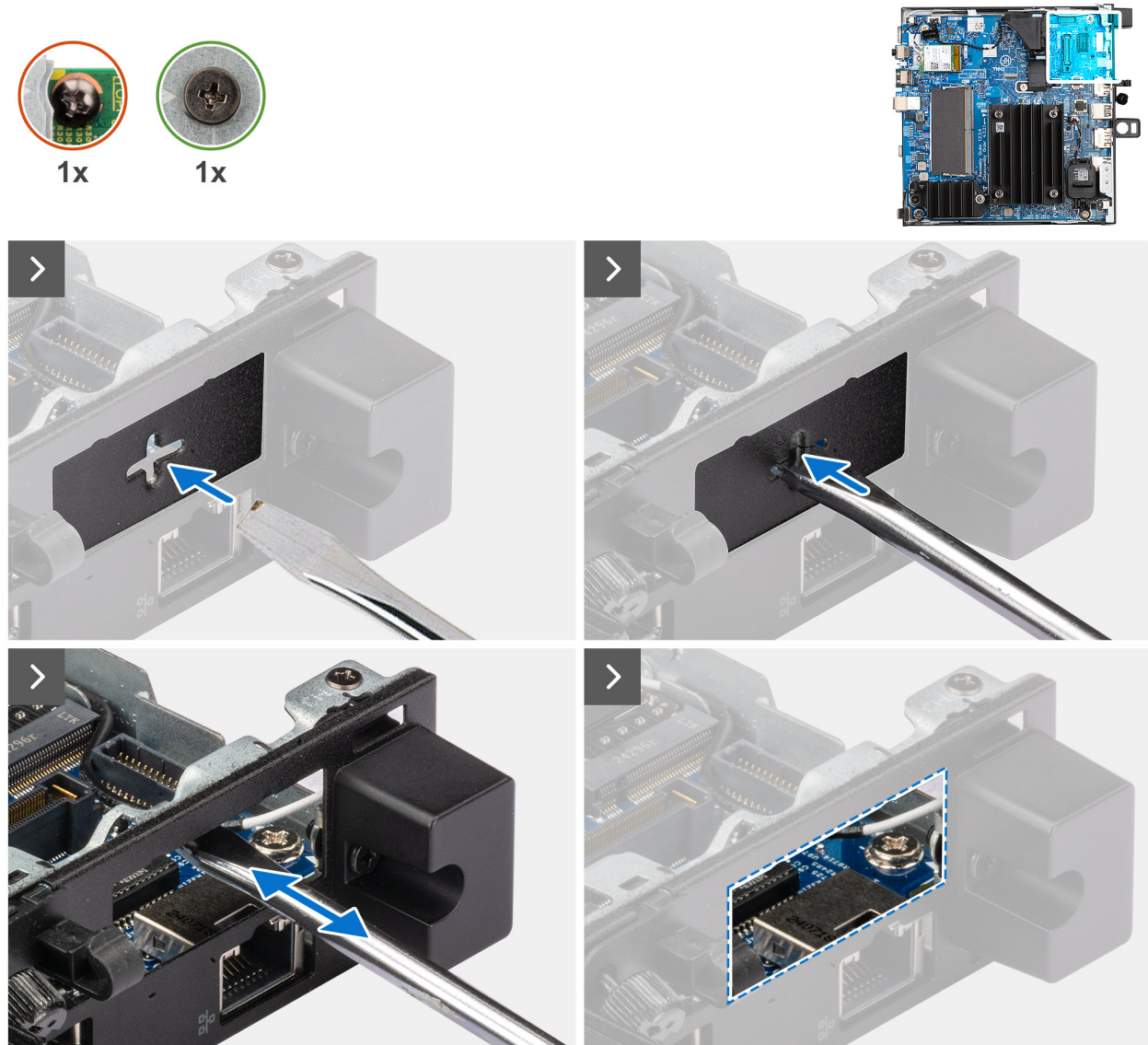


Figure 31. Installing the DisplayPort

Steps

1. To remove the knock-out port cover, insert a flat-head screwdriver in the hole of the port cover from the outside of the computer.
2. Push the knock-out port cover to release it, and then remove it out from the computer.
3. Insert the DisplayPort module into its slot at the back panel of the computer.

NOTE: Ensure that the tabs on the DisplayPort module align with the triangles that are engraved on the mounting point on the chassis.

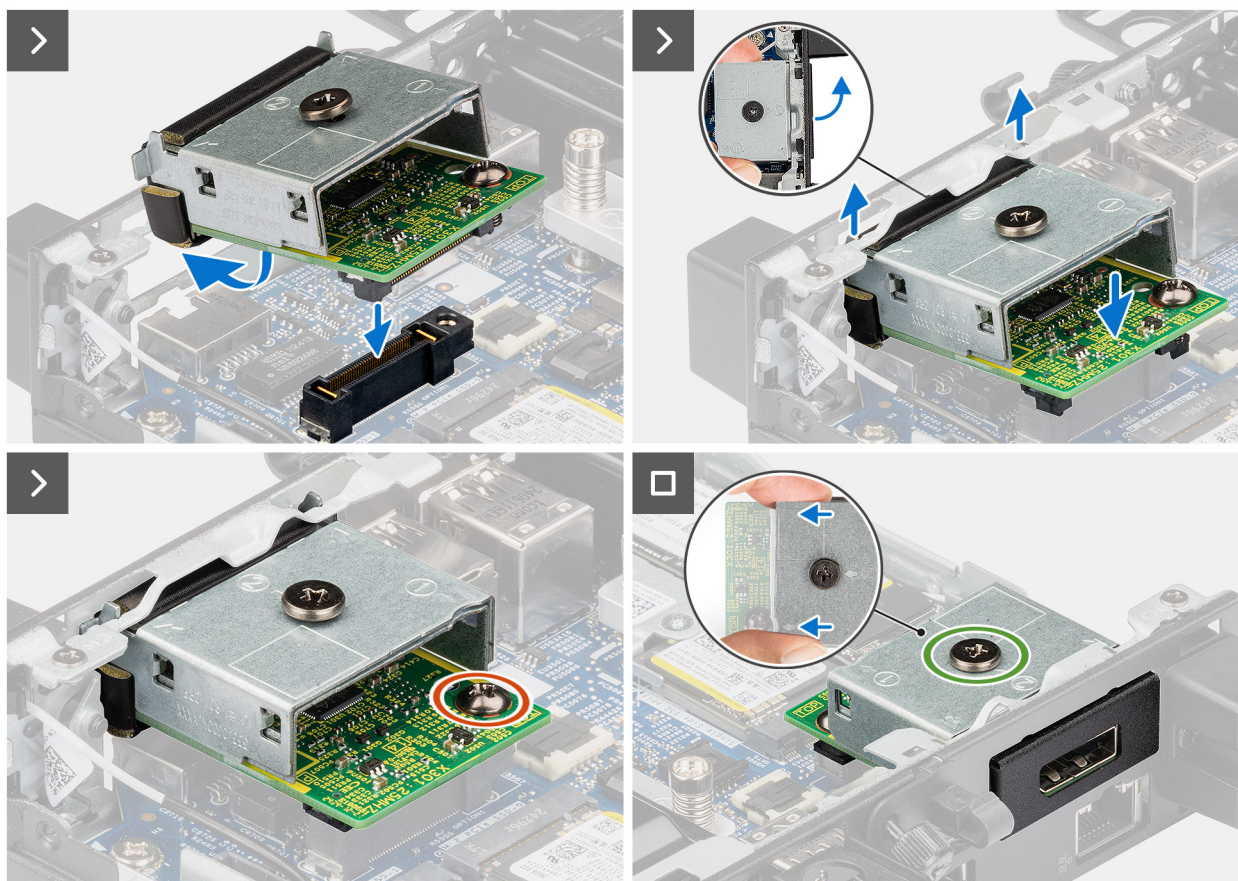


Figure 32. Installing the DisplayPort

4. Gently press the DisplayPort module onto the connector (OPT module) on the system board until it clicks in place.
5. Tighten the two captive screws to secure the DisplayPort module to the chassis.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the DisplayPort

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the optional DisplayPort module and provide a visual representation of the removal procedure.

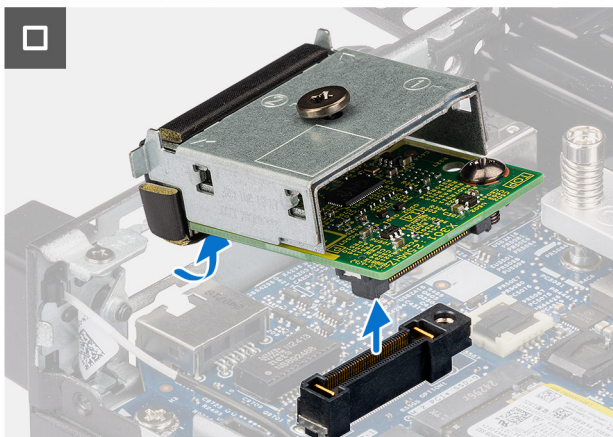
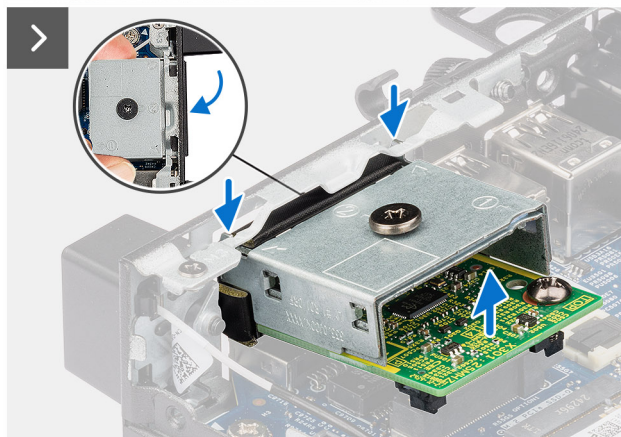
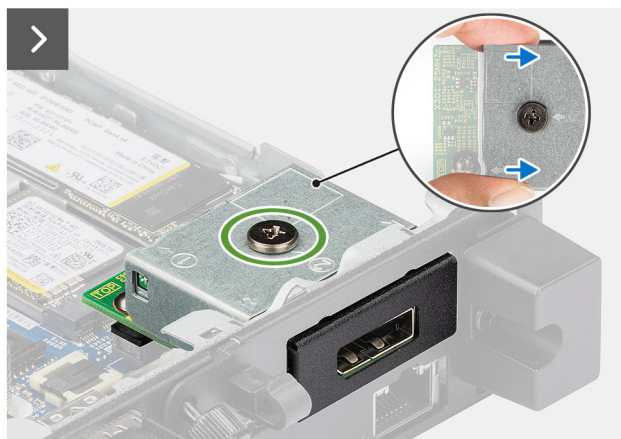
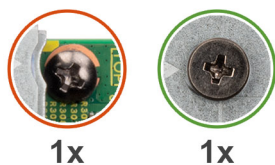


Figure 33. Removing the DisplayPort

Steps

1. Loosen the two captive screws that secure the DisplayPort module to the chassis.
2. Disconnect the DisplayPort module from the connector (OPT module) on the system board.
3. Lift the DisplayPort module from its connector end at an angle, then move it downwards to detach it from the mounting points on the chassis.
4. Slide the DisplayPort module and lift it away from the chassis.

HDMI port module

Installing the HDMI port

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the optional HDMI port module and provide a visual representation of the installation procedure.

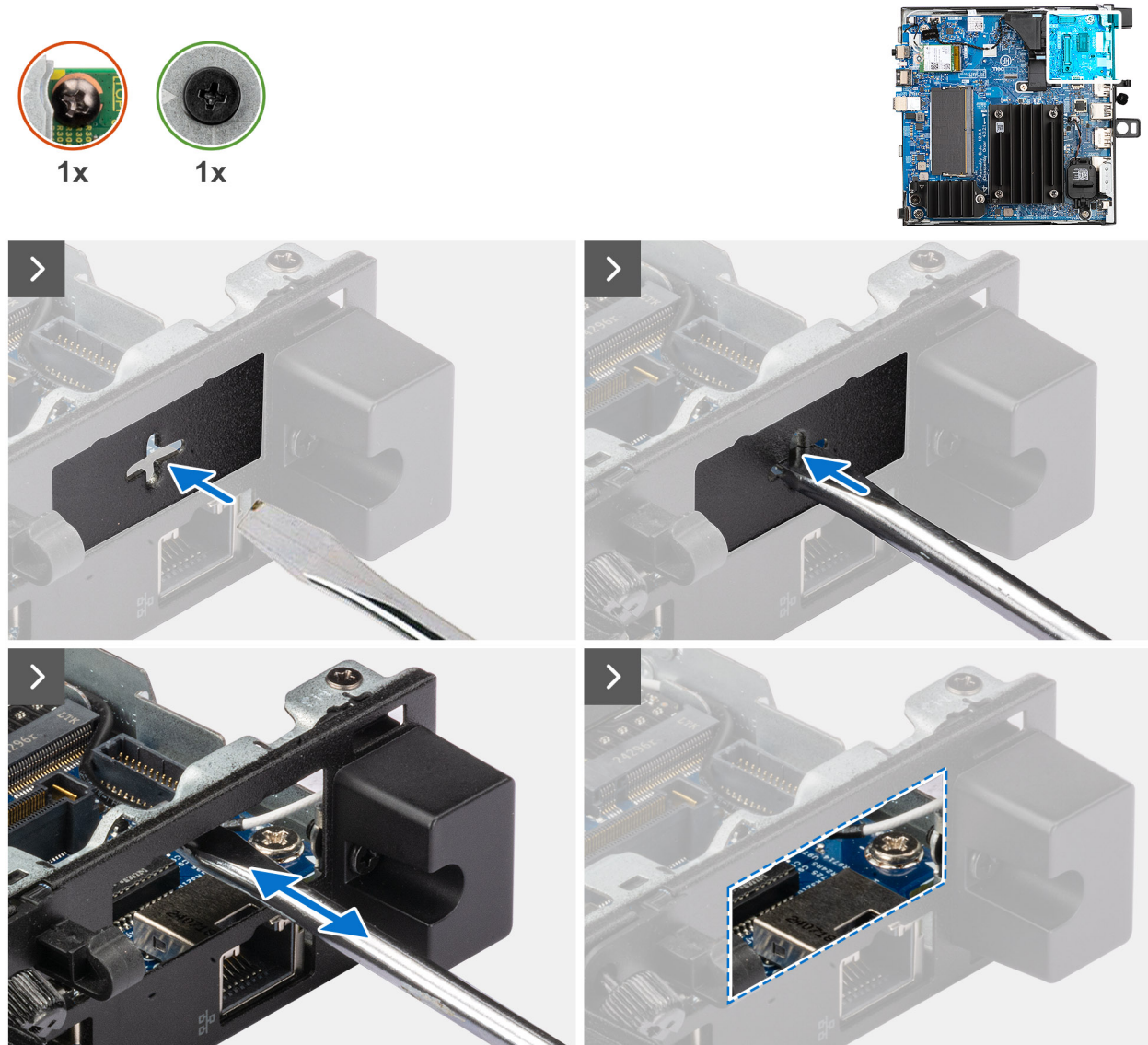


Figure 34. Installing the HDMI port

Steps

1. To remove the knock-out port cover, insert a flat-head screwdriver in the hole of the port cover from the outside of the computer.
2. Push the knock-out port cover to release it, and then remove it out from the computer.
3. Insert the HDMI port module into its slot at the back panel of the computer.

NOTE: Ensure that the tabs on the HDMI port module align with the triangles that are engraved on the mounting point on the chassis.

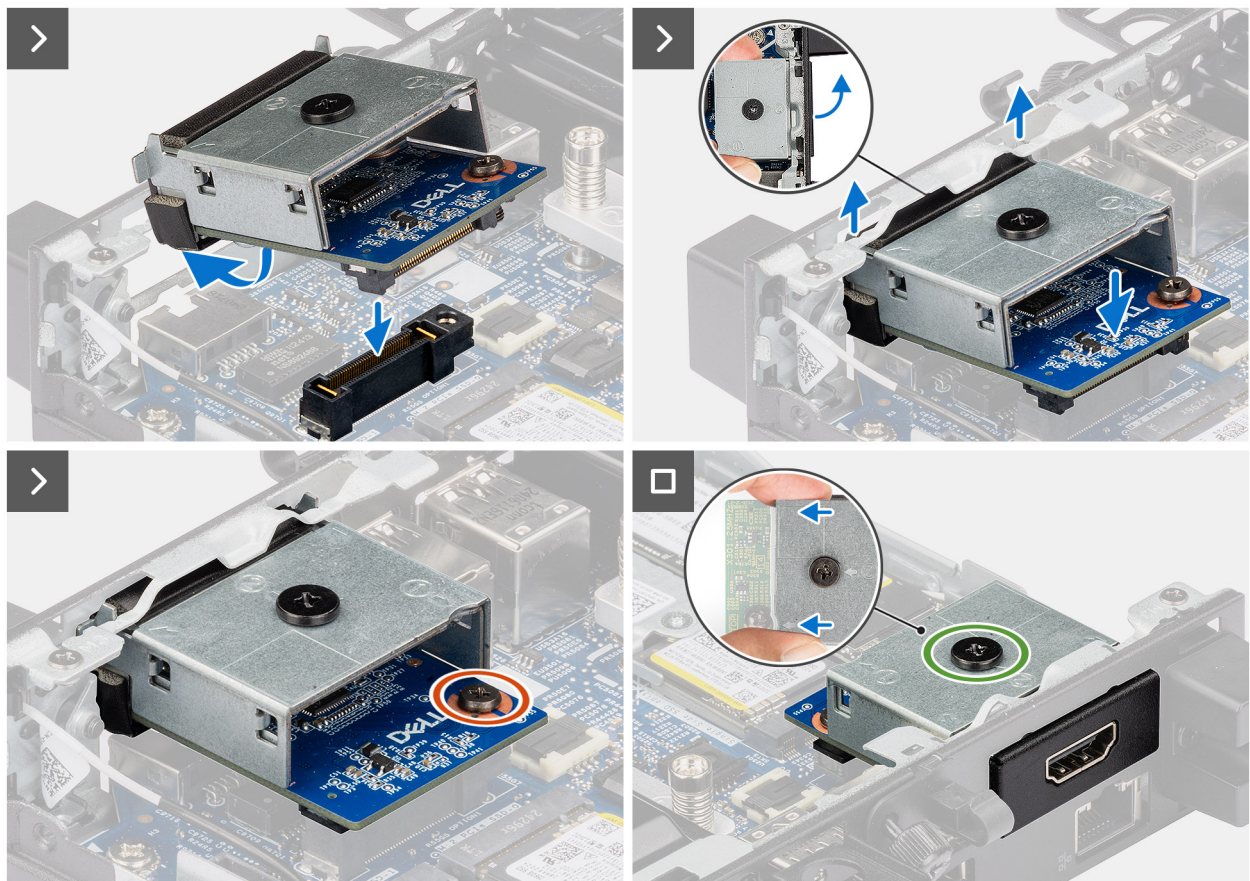


Figure 35. Installing the HDMI port

4. Align and insert the hooks of the optional module port into the slots on the chassis.
5. Gently press the HDMI port optional module onto the connector (OPT module) on the system board until it clicks in place.
6. Tighten the two captive screws to secure the optional module in place.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the HDMI port

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the optional HDMI port module and provide a visual representation of the removal procedure.

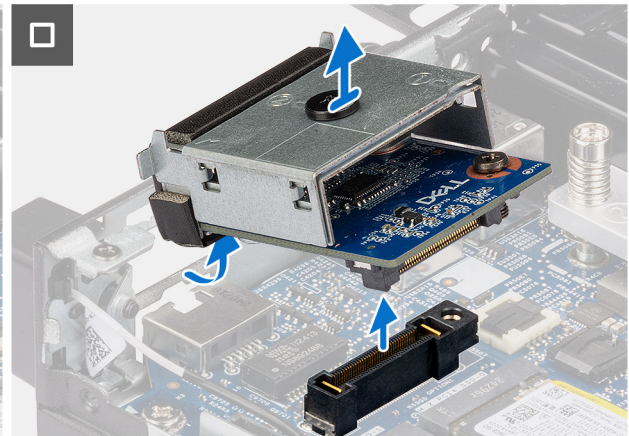
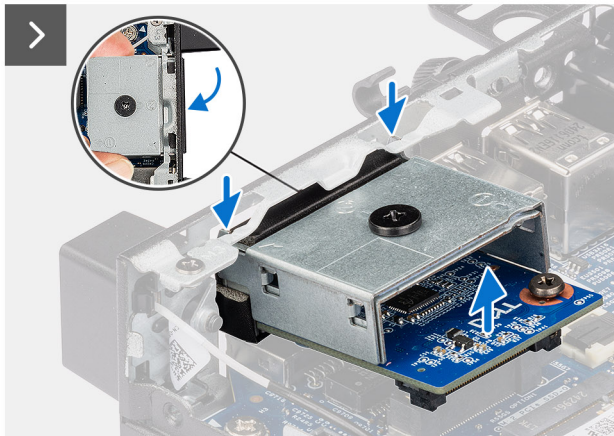
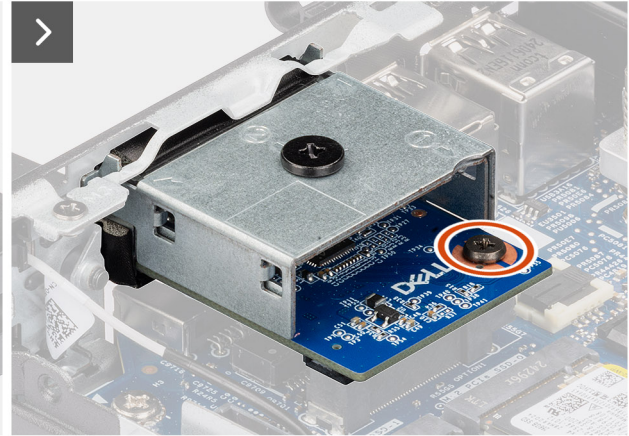
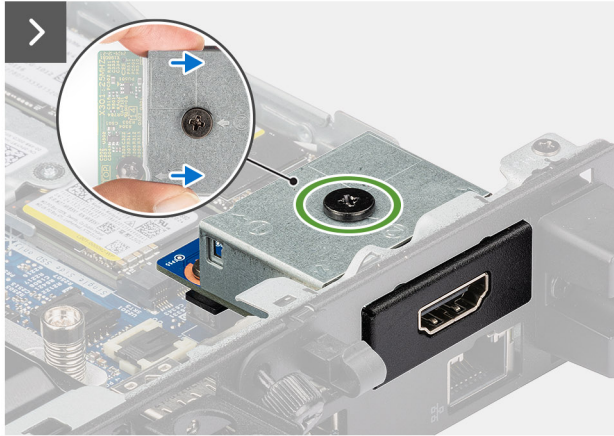
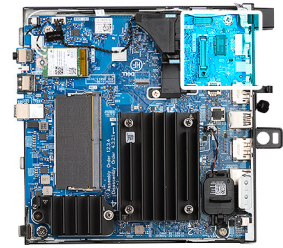
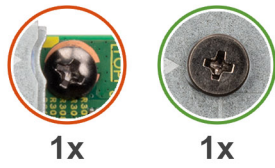


Figure 36. Removing the HDMI port

Steps

1. Loosen the two captive screws that secure the HDMI module to the chassis.
2. Disconnect the HDMI module from the connector (OPT module) on the system board.
3. Lift the HDMI module from its connector end at an angle, then move it downwards to detach it from the mounting points on the chassis.
4. Slide the HDMI module and lift it away from the chassis.

VGA port module

Installing the VGA port

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the optional VGA port module and provide a visual representation of the installation procedure.

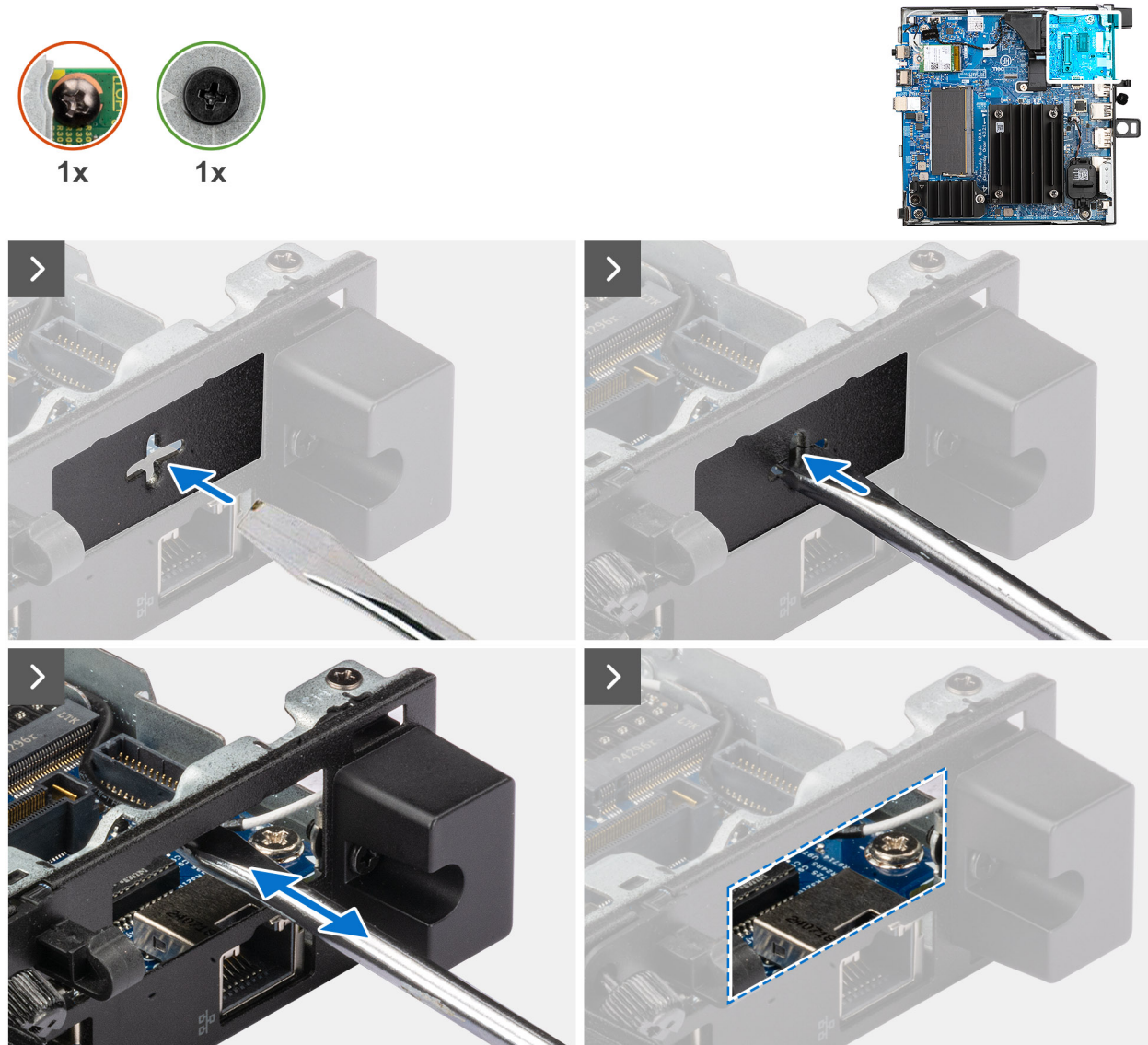


Figure 37. Installing the VGA port

Steps

1. To remove the knock-out port cover, insert a flat-head screwdriver in the hole of the port cover from the outside of the computer.
2. Push the knock-out port cover to release it, and then remove it out from the computer.
3. Insert the VGA port module into its slot at the back panel of the computer.

NOTE: Ensure that the tabs on the VGA port module align with the triangles that are engraved on the mounting point on the chassis.

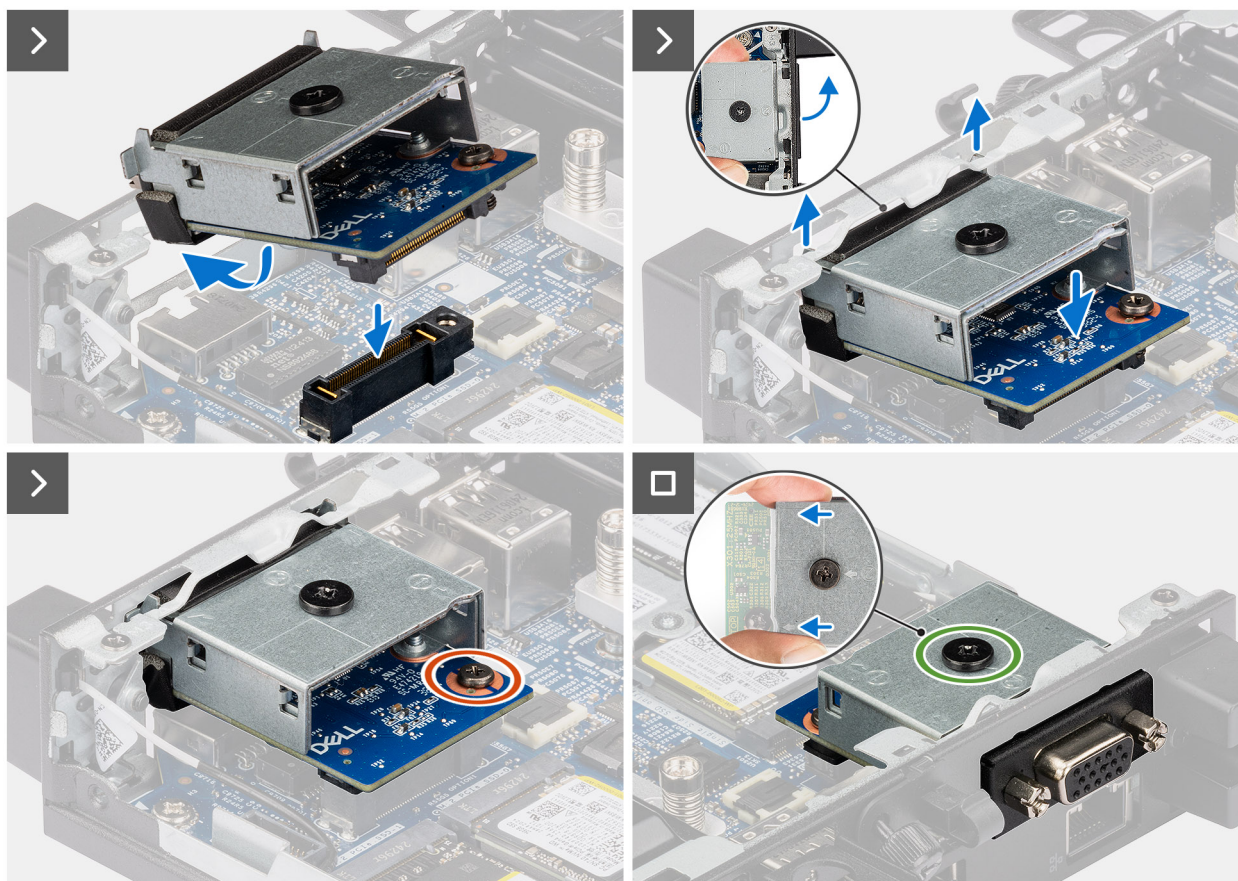


Figure 38. Installing the VGA port

4. Align and insert the hooks of the optional module port into the slots on the chassis.
5. Gently press the VGA port optional module onto the connector (OPT module) on the system board until it clicks in place.
6. Tighten the two captive screws to secure the optional module in place.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the VGA port

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the optional VGA port module and provide a visual representation of the removal procedure.

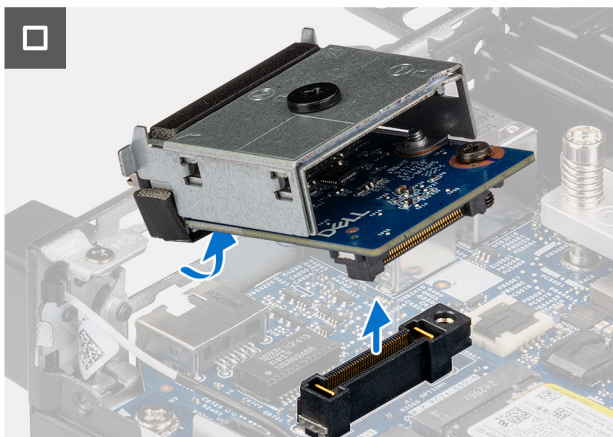
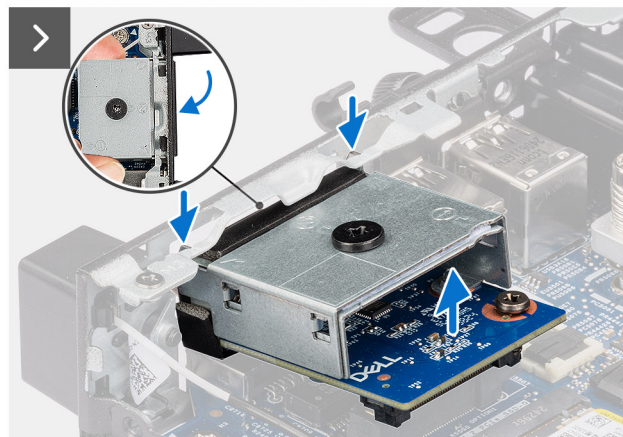
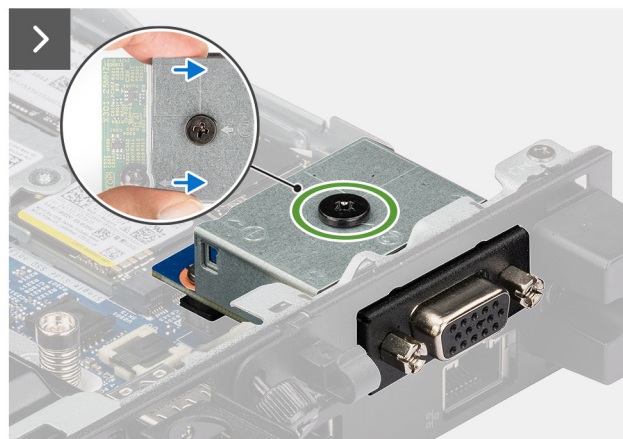
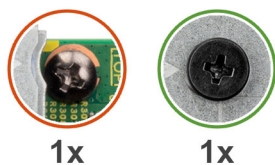


Figure 39. Removing the VGA port

Steps

1. Loosen the two captive screws that secure the VGA module to the chassis.
2. Disconnect the VGA module from the connector (OPT module) on the system board.
3. Lift the VGA module from its connector end at an angle, then move it downwards to detach it from the mounting points on the chassis.
4. Slide the VGA module and lift it away from the chassis.

PS2 port module

Installing the PS2 port

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the optional PS2 port module and provide a visual representation of the installation procedure.

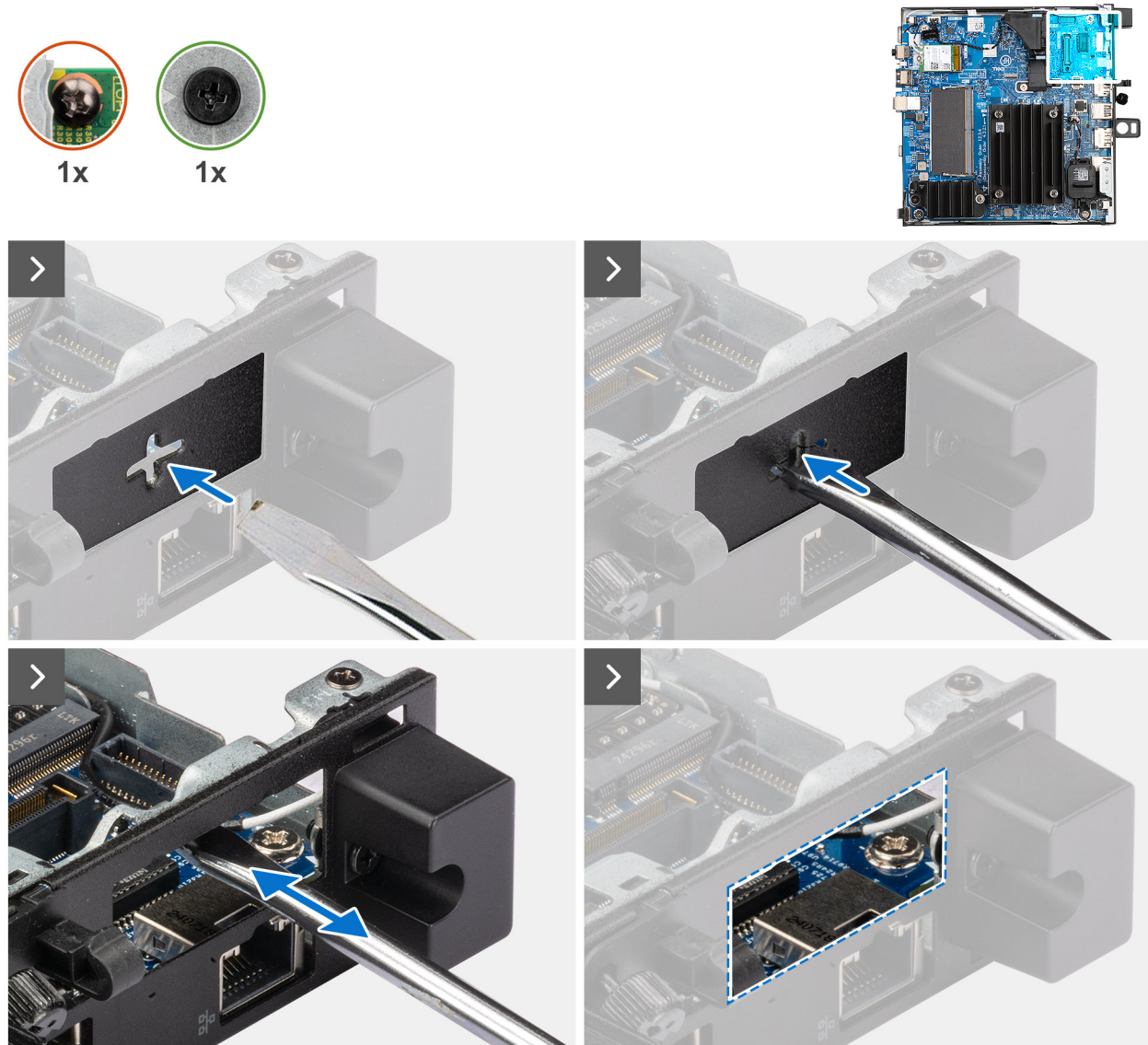


Figure 40. Installing the PS2 port

Steps

1. To remove the knock-out port cover, insert a flat-head screwdriver in the hole of the port cover from the outside of the computer.
2. Push the knock-out port cover to release it, and then remove it out from the computer.
3. Insert the PS2 port module into its slot at the back panel of the computer.

NOTE: Ensure that the tabs on the PS2 port module align with the triangles that are engraved on the mounting point on the chassis.

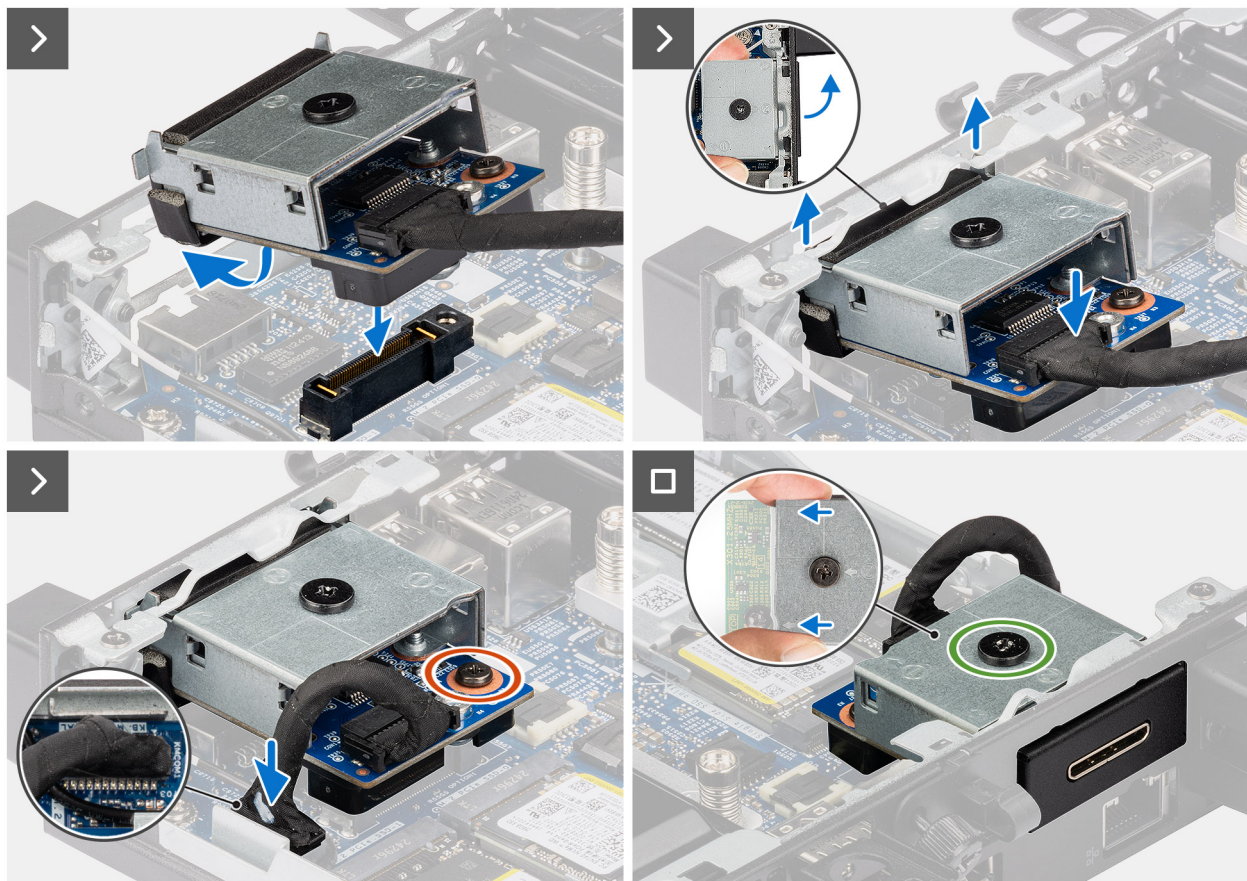


Figure 41. Installing the PS2 port

4. Gently press the optional module to the connector (OPT module) on the system board until it clicks in place.
5. Connect the PS2 cable to its connector (KB MS SERIAL) on the system board.
6. Tighten the two captive screws to secure the optional module in place.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the PS2 port

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the optional PS2 port module and provide a visual representation of the removal procedure.

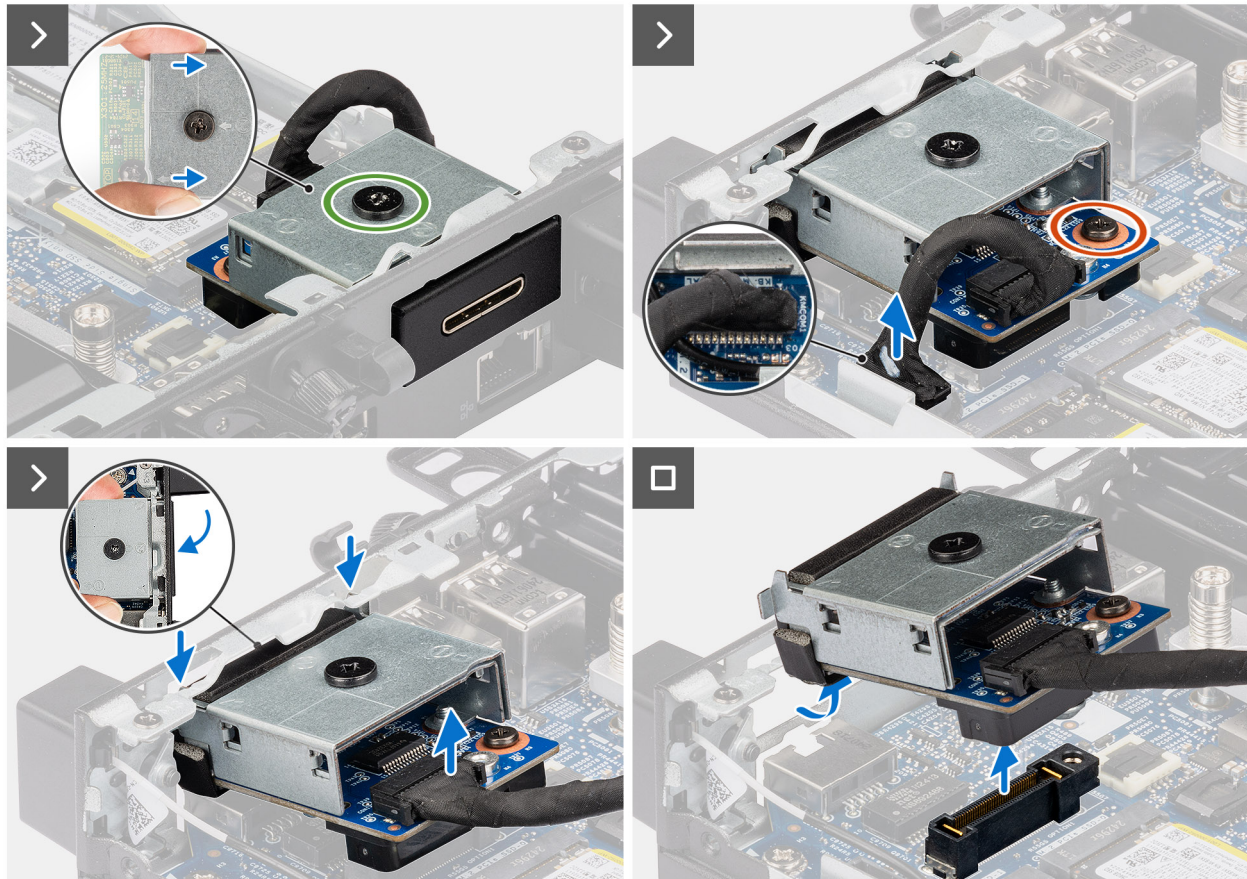
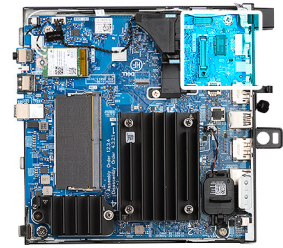
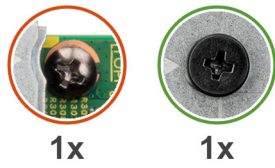


Figure 42. Removing the PS2 port

Steps

1. Loosen the two screws that secure the optional module in place.
2. Disconnect the PS2 cable from its connector (KB MS SERIAL) on the system board.
3. Disconnect the PS2 port module from the connector (OPT module) on the system board.
4. Lift the optional module at an angle and unhook from the chassis.

Serial port module

Installing the serial port

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the optional serial port module and provide a visual representation of the installation procedure.

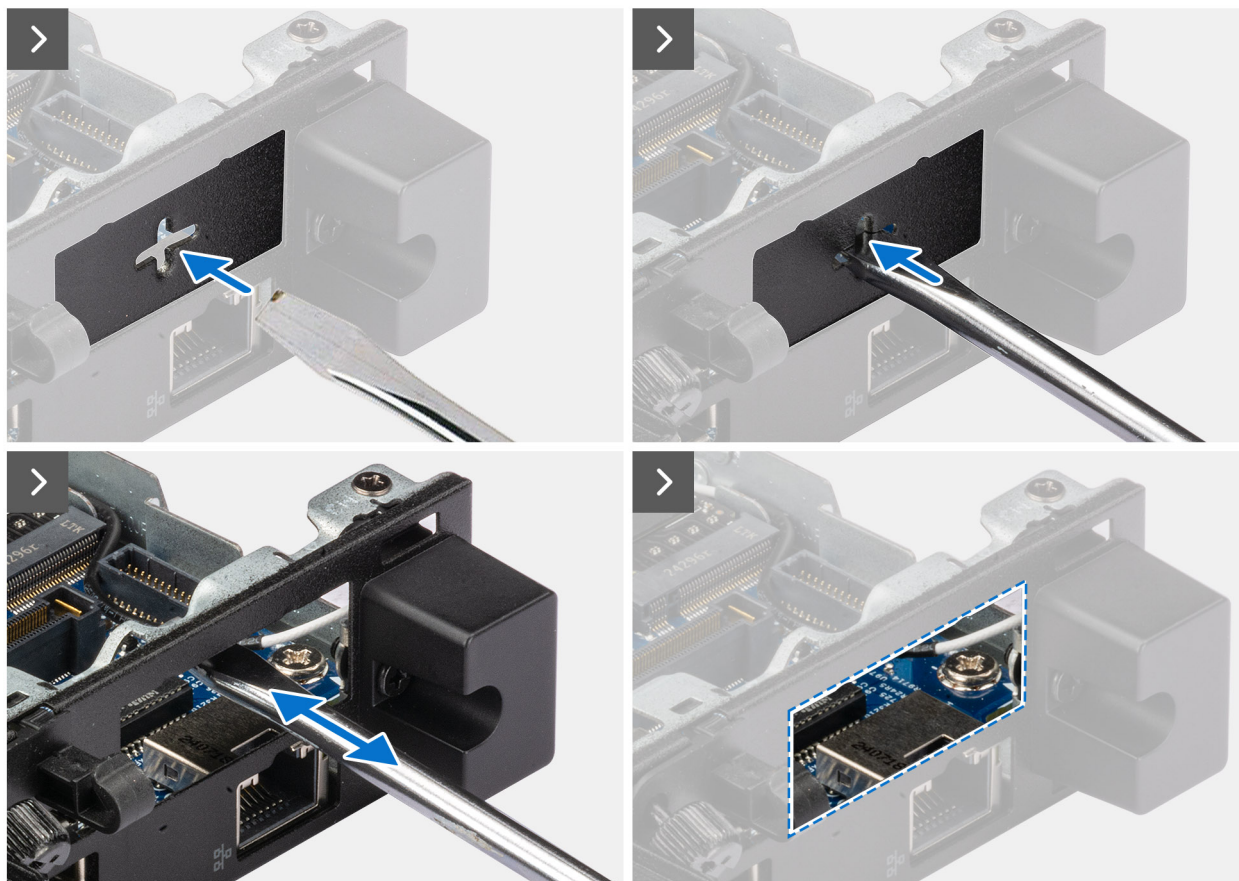
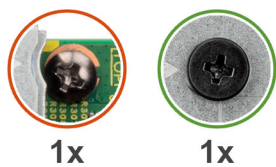


Figure 43. Installing the serial port

Steps

1. To remove the knock-out port cover, insert a flat-head screwdriver in the hole of the port cover from the outside of the computer.
2. Push the knock-out port cover to release it, and then remove it out from the computer.
3. Insert the serial port module into its slot at the back panel of the computer.

NOTE: Ensure that the tabs on the serial port module align with the triangles that are engraved on the mounting point on the chassis.

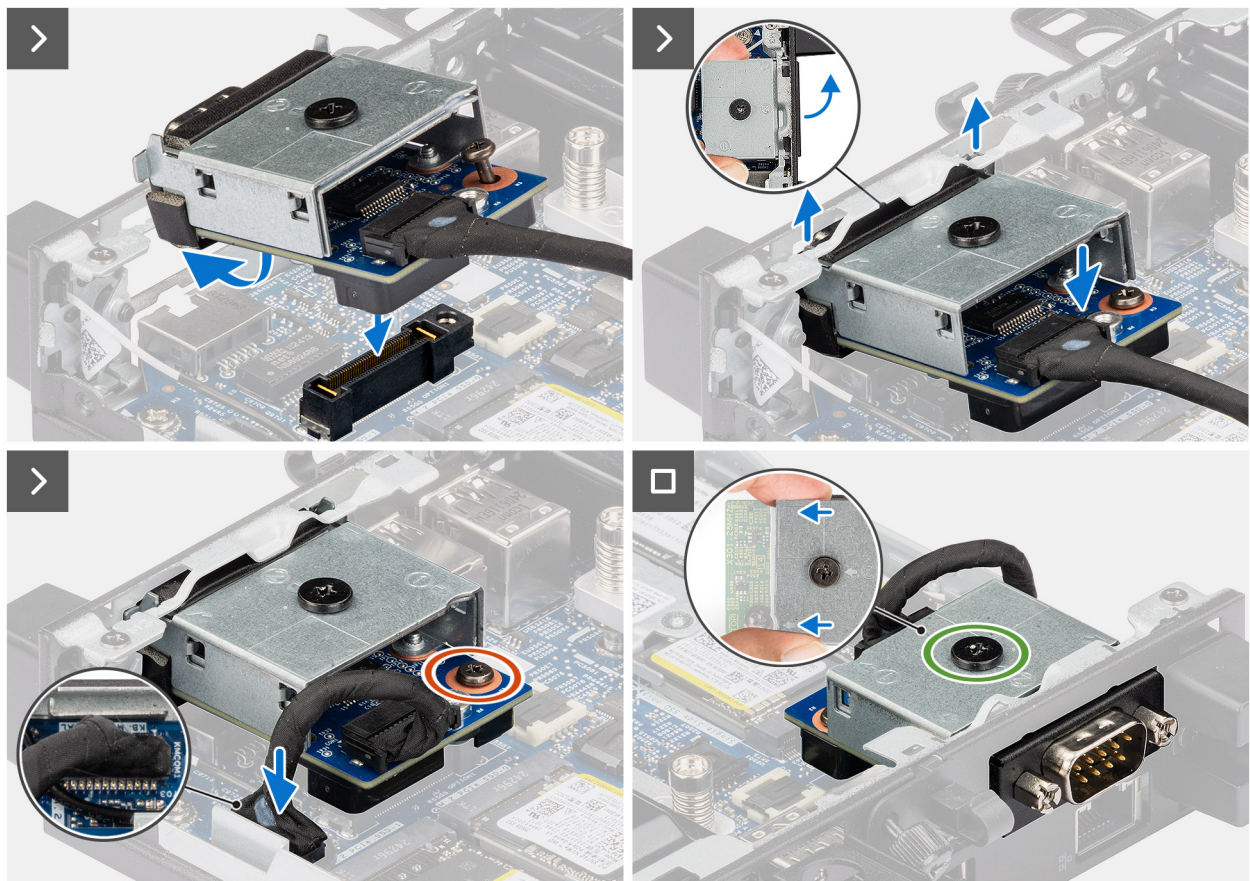


Figure 44. Installing the serial port

4. Gently press the optional module to the connector (OPT module) on the system board until it clicks in place.
5. Connect the serial cable to its connector (KB MS SERIAL) on the system board.
6. Tighten the two captive screws to secure the optional module in place.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the serial port

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the optional serial port module and provide a visual representation of the removal procedure.

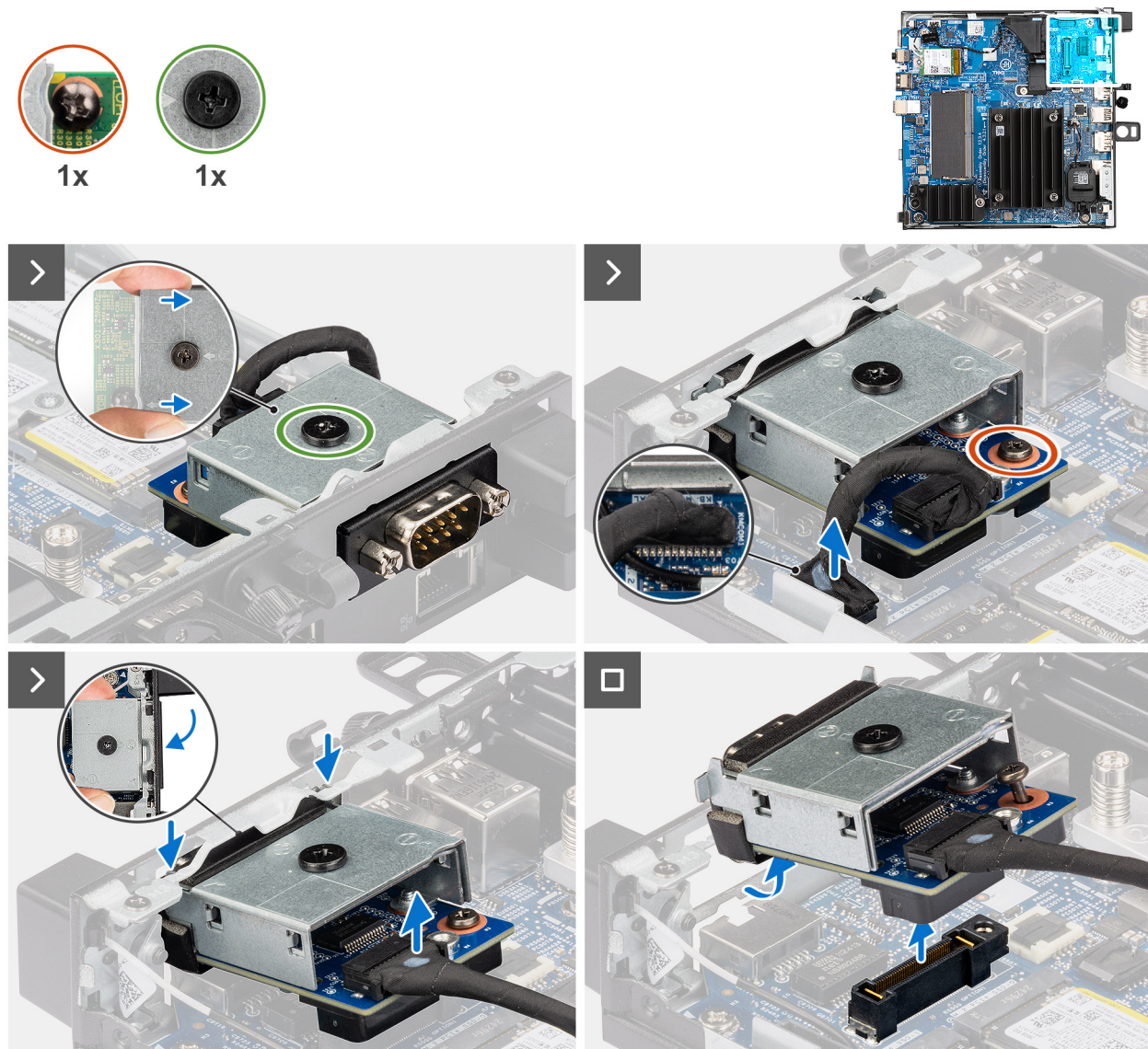


Figure 45. Removing the serial port

Steps

1. Loosen the two screws that secure the optional module in place.
2. Disconnect the serial cable from its connector (KB MS SERIAL) on the system board.
3. Disconnect the serial port module from the connector (OPT module) on the system board.
4. Lift the optional module at an angle and unhook from the chassis.

Video expansion module

Installing the video expansion module

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the video expansion module and provide a visual representation of the installation procedure.

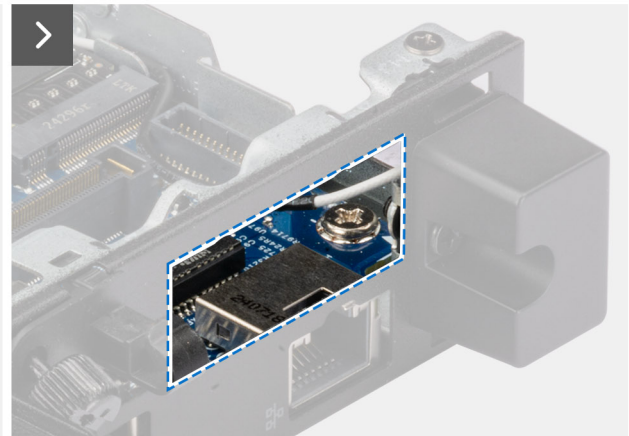
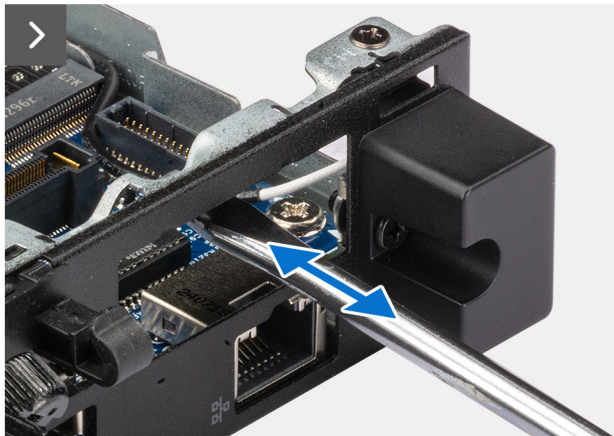
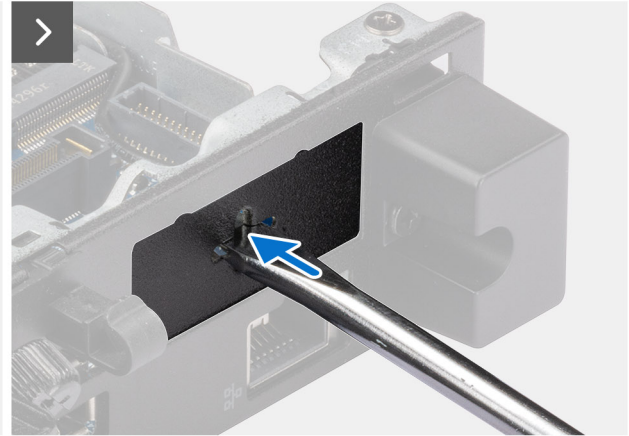
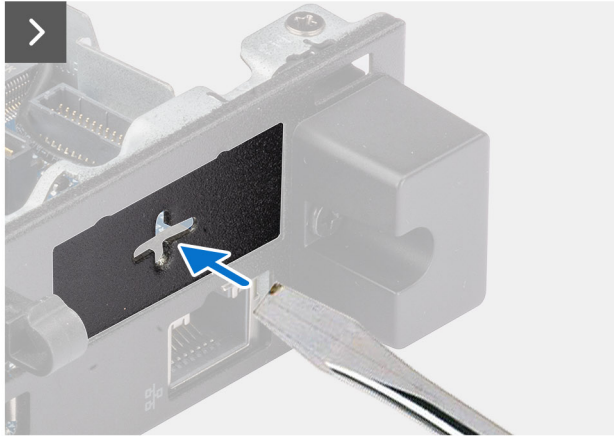
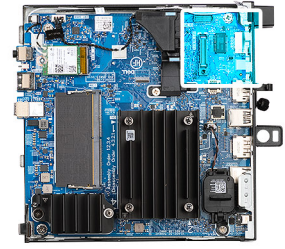
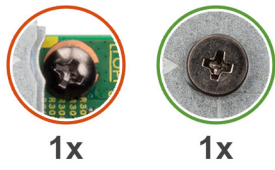


Figure 46. Installing the video expansion module

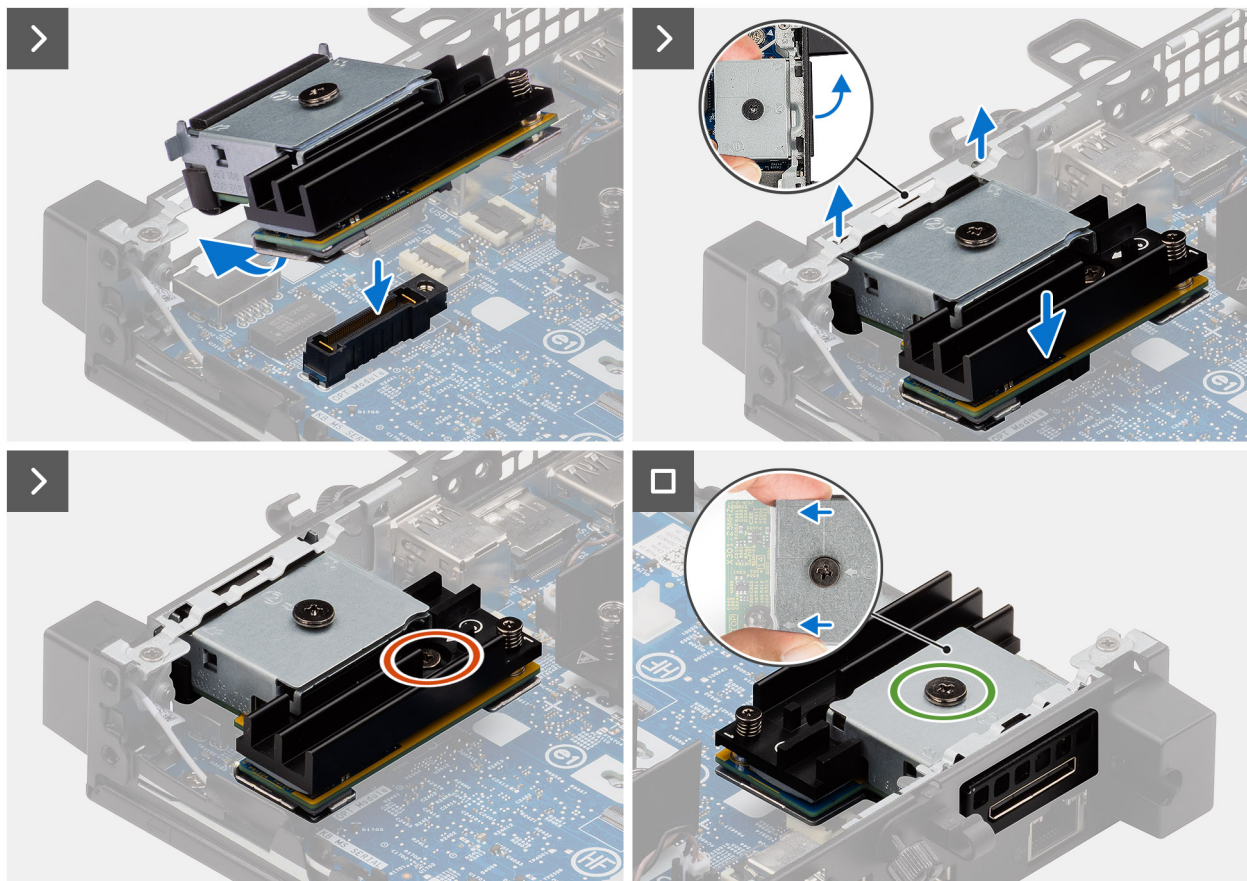


Figure 47. Installing the video expansion module

Steps

1. Insert a flat-head screwdriver in the hole of the bracket, push the bracket to release the bracket, and lift the bracket out from the computer.
2. Align and insert the hooks of the optional module port into the slots on the chassis.
3. Gently press the optional module onto the system board until it clicks into place.
4. Tighten the two captive screws to secure the optional module in place.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the video expansion module

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the video expansion module and provide a visual representation of the removal procedure.

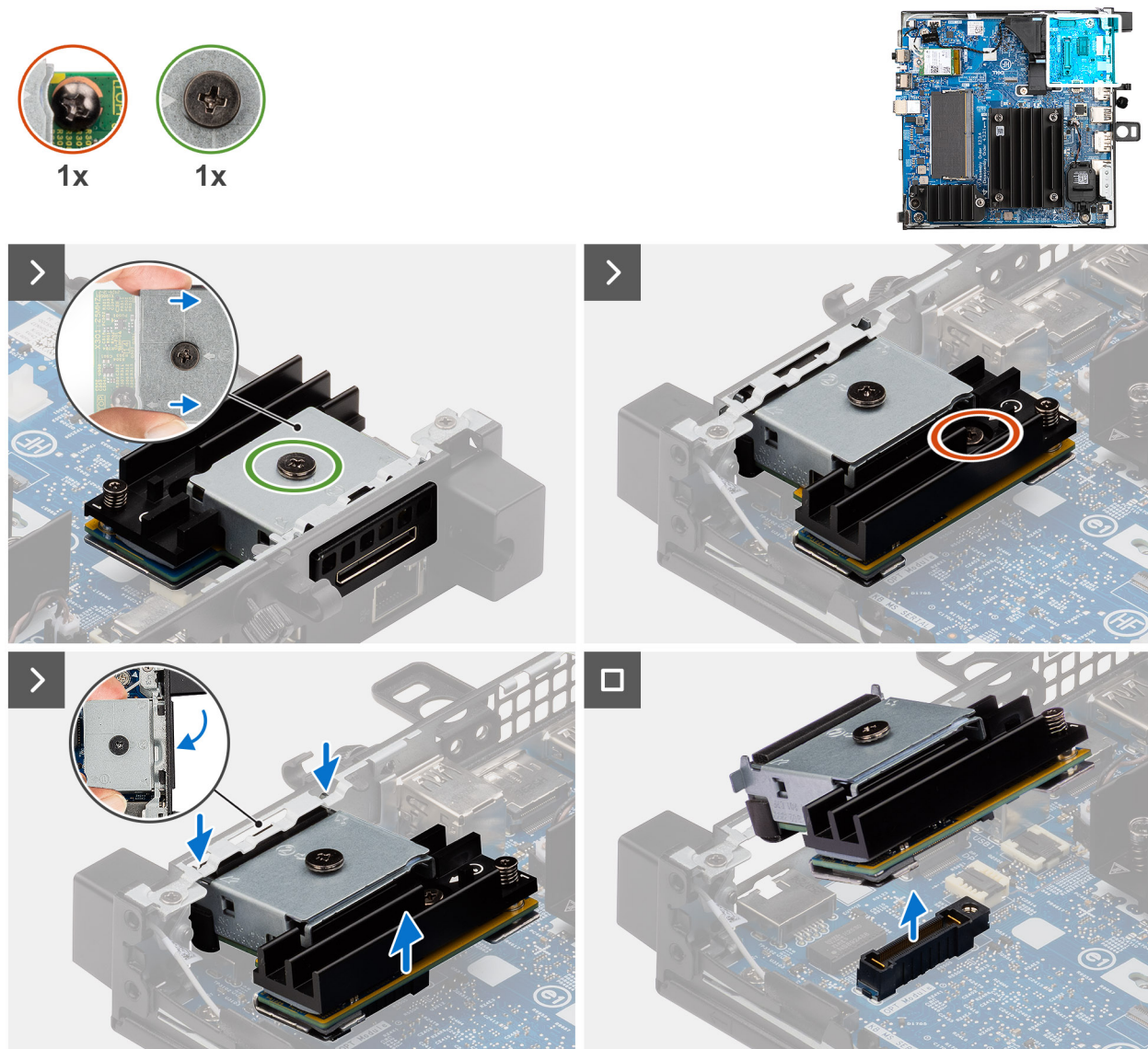


Figure 48. Removing the video expansion module

Steps

1. Loosen the two captive screws that secure the optional module in place.
2. Lift the optional module at an angle and unhook from the chassis.

Fiber optic port module

Installing the 5G optical fiber port

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the optional 5G optical fiber port module and provide a visual representation of the installation procedure.

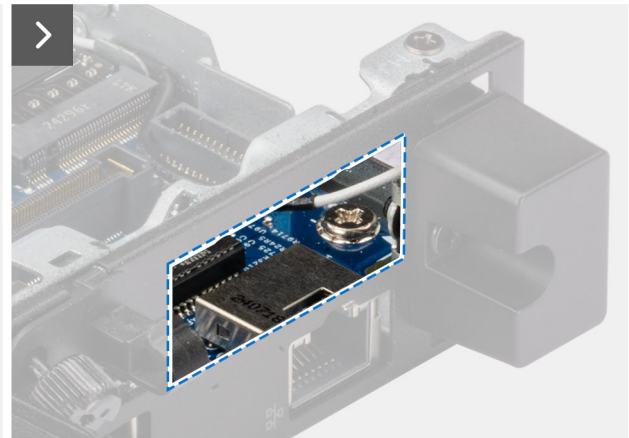
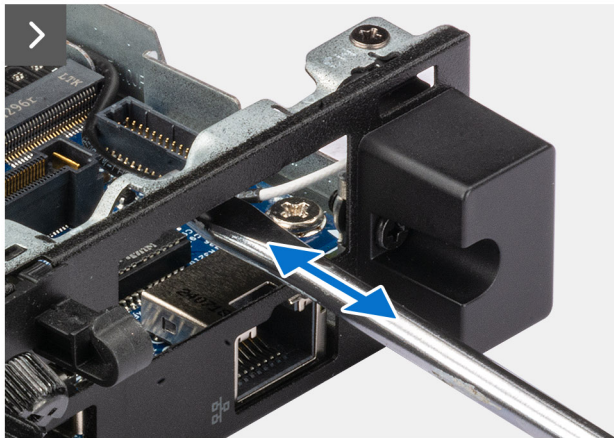
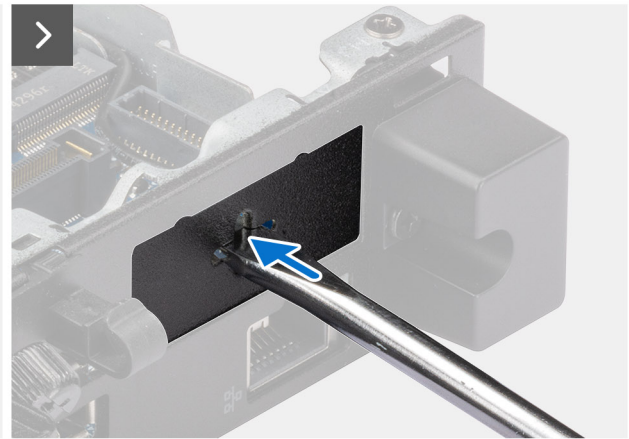
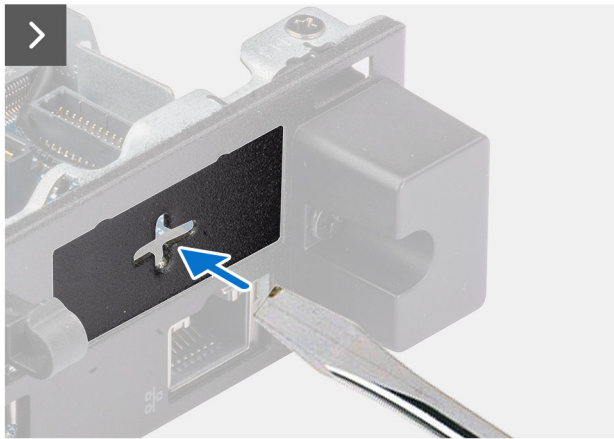
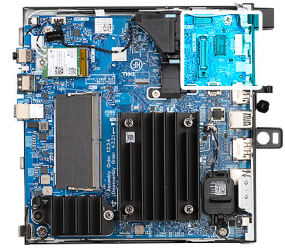
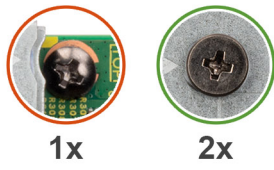


Figure 49. Installing the 5G optical fiber port

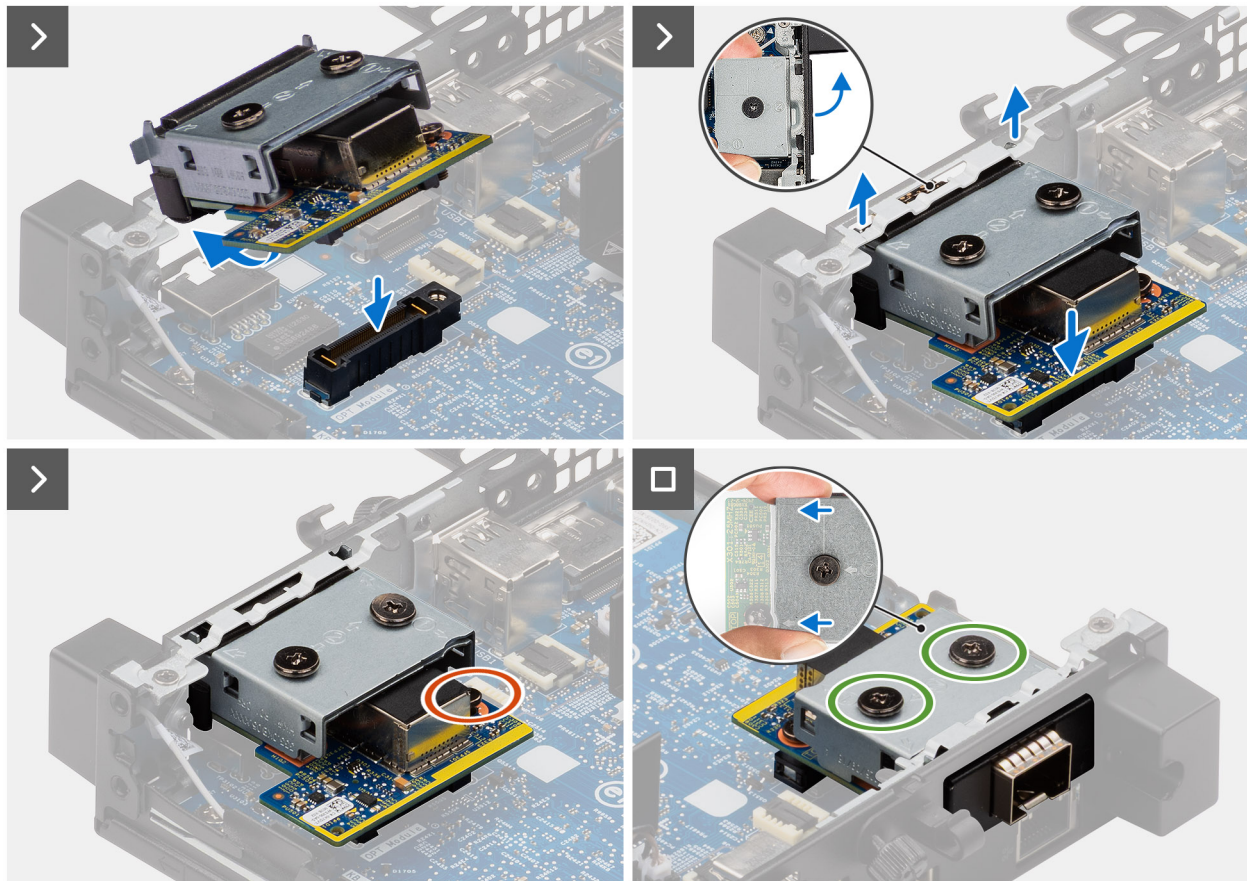


Figure 50. Installing the 5G optical fiber port

Steps

1. Insert a flat-head screwdriver in the hole of the bracket, push the bracket to release the bracket, and lift the bracket out from the computer.
2. Align and insert the hooks of the optional module port into the slots on the chassis.
3. Gently press the optional module onto the system board until it clicks into place.
4. Tighten the three captive screws to secure the optional module in place.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

Removing the 5G optical fiber port

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

The following images indicate the location of the optional 5G optical fiber port module and provide a visual representation of the removal procedure.

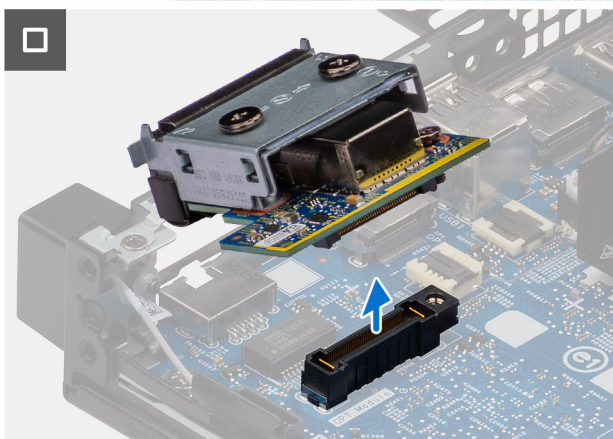
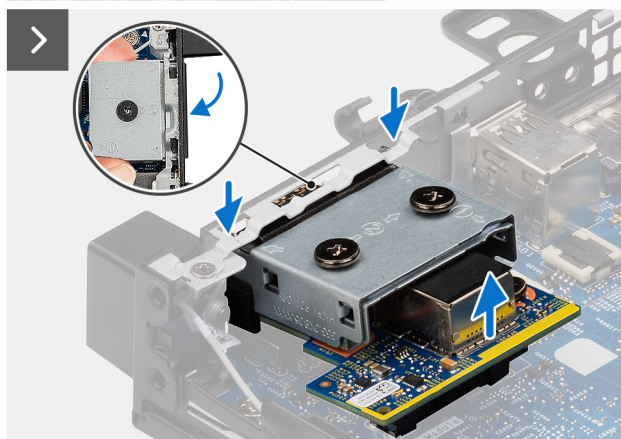
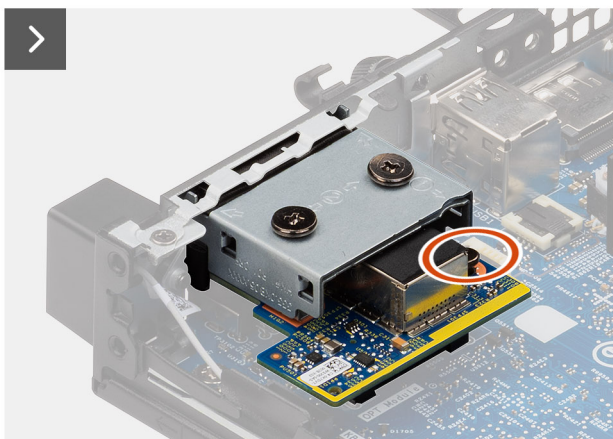
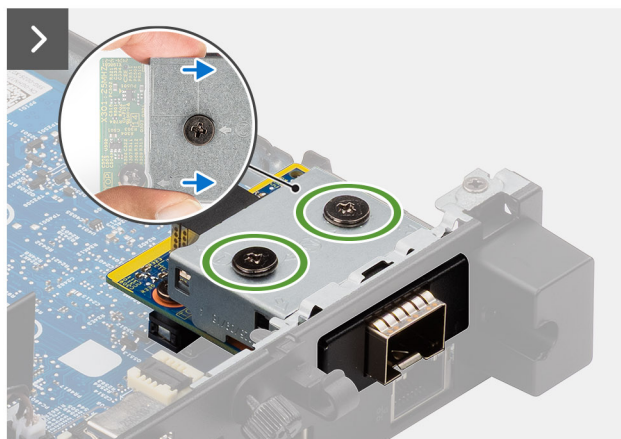
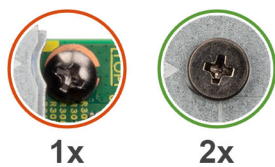


Figure 51. Removing the 5G optical fiber port

Steps

1. Loosen the three captive screws that secure the optional module in place.
2. Lift the optional module at an angle and unhook from the chassis.

Removing and installing Field Replaceable Units (FRUs)

The replaceable components in this chapter are Field Replaceable Units (FRUs).

 **CAUTION:** FRUs should be replaced by an authorized service technician, who is a trained technical repair specialist.

 **NOTE:** Damages resulting from improper replacement or from failure to follow instructions are not covered by your warranty. Consider having a trained technical repair specialist perform replacements of FRU components.

 **NOTE:** The images in this document may differ from your computer depending on the configuration you ordered.

Heat sink

Removing the processor - heat sink

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

About this task

 **NOTE:** The heat sink may become hot during normal operation. Allow sufficient time for the heat sink to cool before you touch it.

 **NOTE:** For maximum cooling of the processor, do not touch the heat-transfer areas on the heat sink. The oils in your skin can reduce the heat-transfer capability of the thermal grease.

The following images indicate the location of the processor - heat sink and provide a visual representation of the removal procedure.

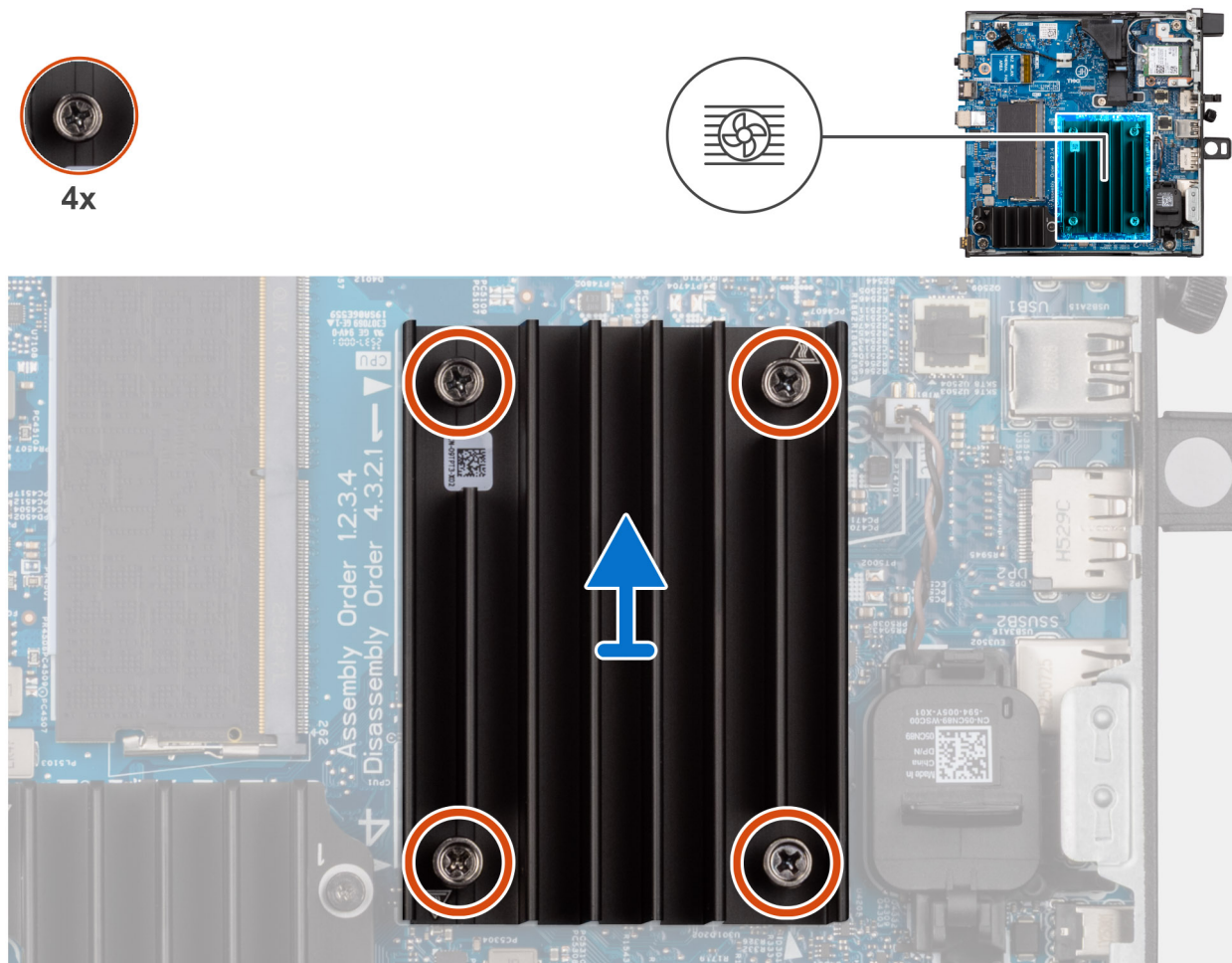


Figure 52. Removing the processor - heat sink

Steps

1. In sequential order (4 > 3 > 2 > 1), loosen the four captive screws that secure the heat sink to the computer.
2. Lift the heat sink from the system board.

Installing the processor - heat sink

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the processor - heat sink and provides a visual representation of the installation procedure.

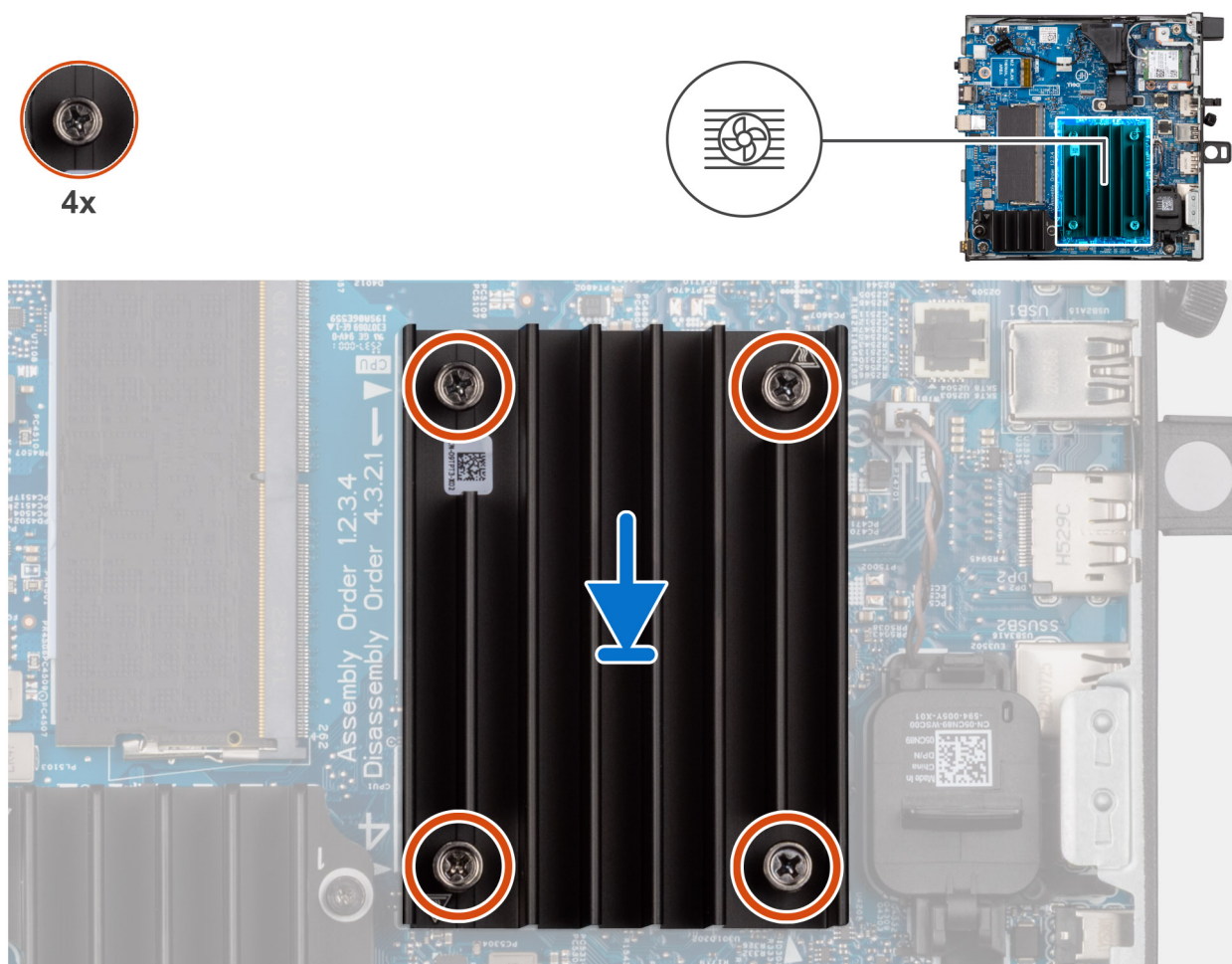


Figure 53. Installing the processor - heat sink

Steps

1. Align the screw holes on the heat sink with the screw holes on the system board.
2. Tighten the four captive screws in a sequential order (1 > 2 > 3 > 4), to secure the heat sink to the system board.

Next steps

1. Install the [side cover](#).
2. Follow the procedure in [after working inside your computer](#).

System board

Removing the system board

Prerequisites

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).
3. Remove the [memory module](#).
4. Remove the [M.2 2230 solid-state drive](#).
5. Remove the [SSD-heat sink](#)
6. Remove the wireless card ([Wi-Fi 6](#)) or ([Wi-Fi 7](#)), whichever applicable.
7. Remove the [wireless card module](#) (if applicable).
8. Remove the [coin-cell battery](#).

9. Remove the [speaker](#).
10. Remove the [speaker holder](#).
11. Remove the [heat sink](#).

About this task

The following images indicate the connectors on your system board.

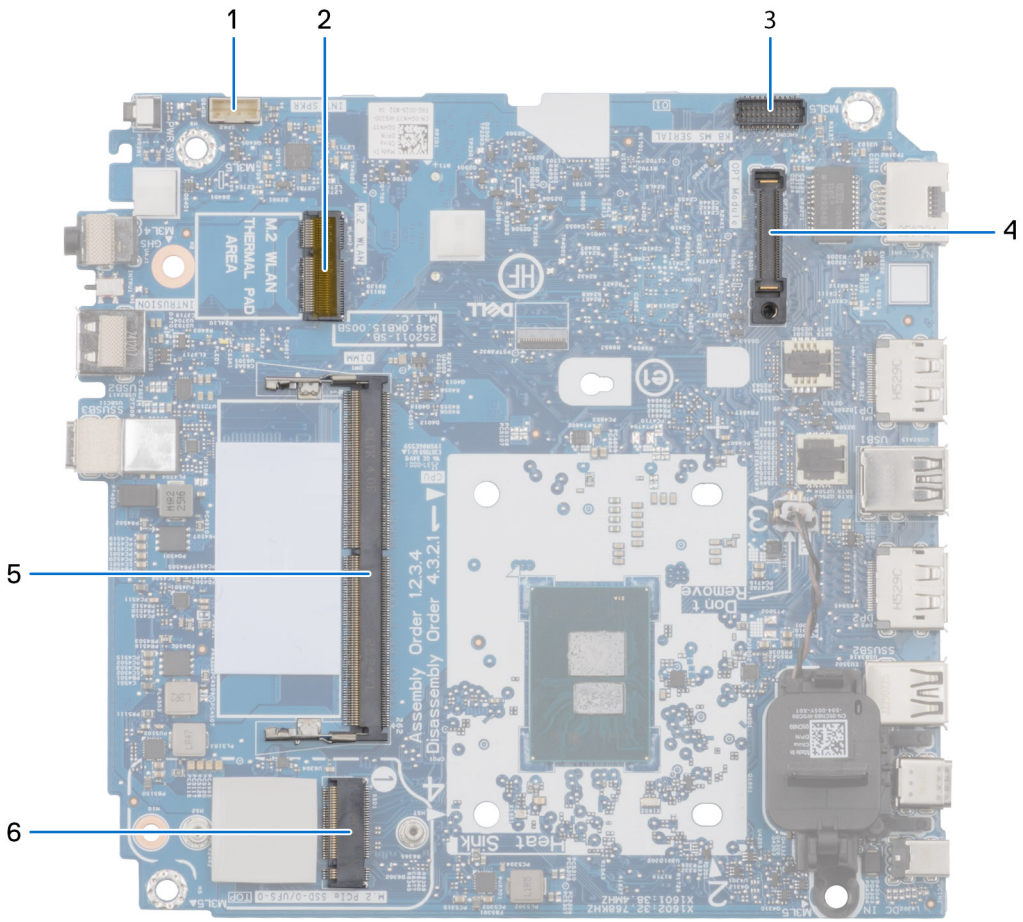


Figure 54. System board connectors

Table 5. Dell Pro Micro Thin Client QPM1260 system board connectors

No	Connector	Description
1	INT SPKR	Internal speaker
2	M.2 WLAN	Wireless card (Wi-Fi 6)
3	KB MS SERIAL	Optional PS/2, serial port connector
4	OPT module	Optional module connector
5	DIMM	Memory module connector
6	M.2 PCIe SSD-0/UFS-0	SSD/UFS connector

The following images indicate the location of the system board and provide a visual representation of the removal procedure.

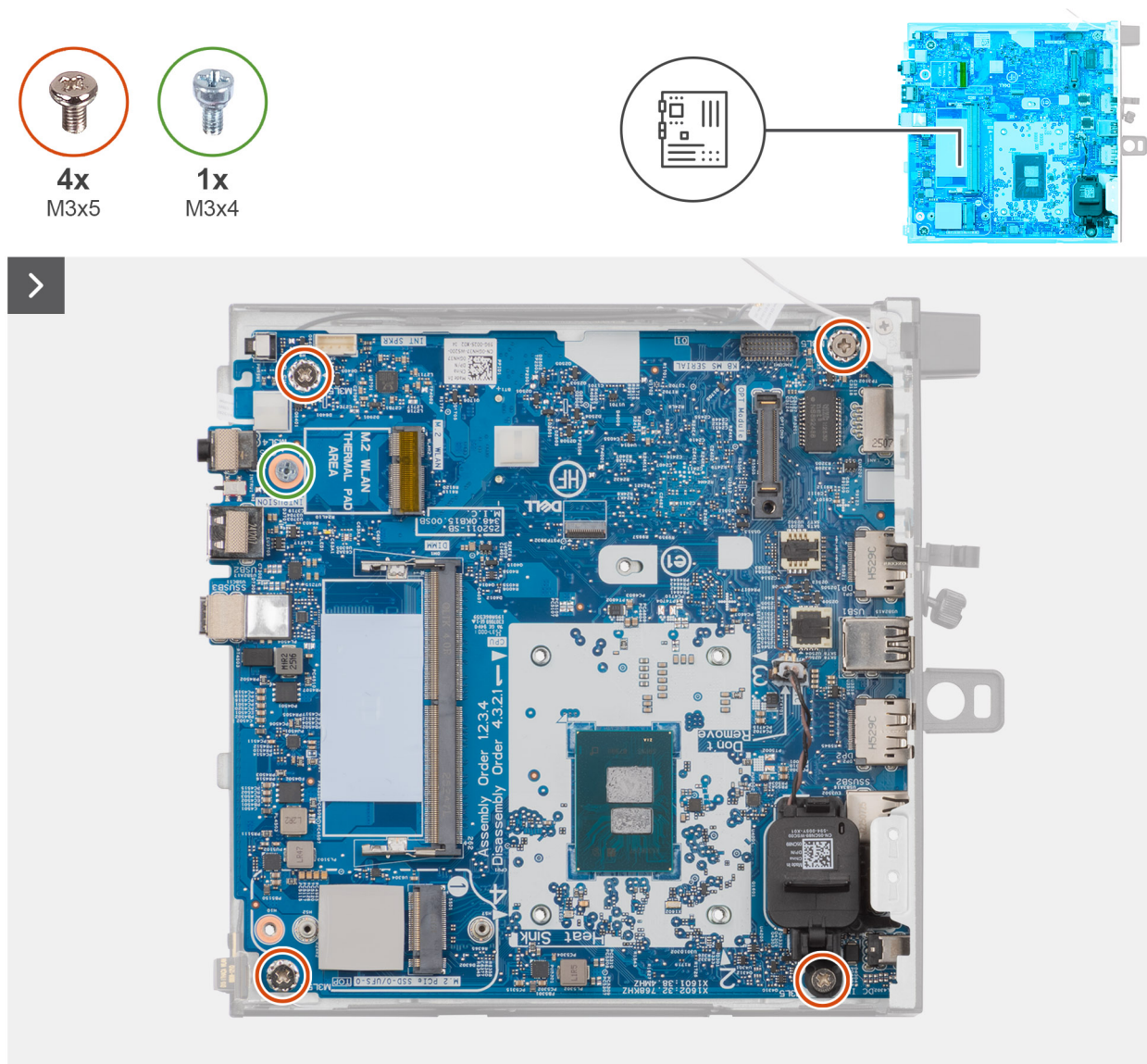


Figure 55. Removing the system board

Steps

1. Remove the screw (M3x4) and four screws (M3x5) that secure the system board to the chassis.

NOTE: The coin-cell battery cable need not be disconnected.

NOTE: The power button is soldered to the system board.

2. Slide and lift the system board away from the chassis.

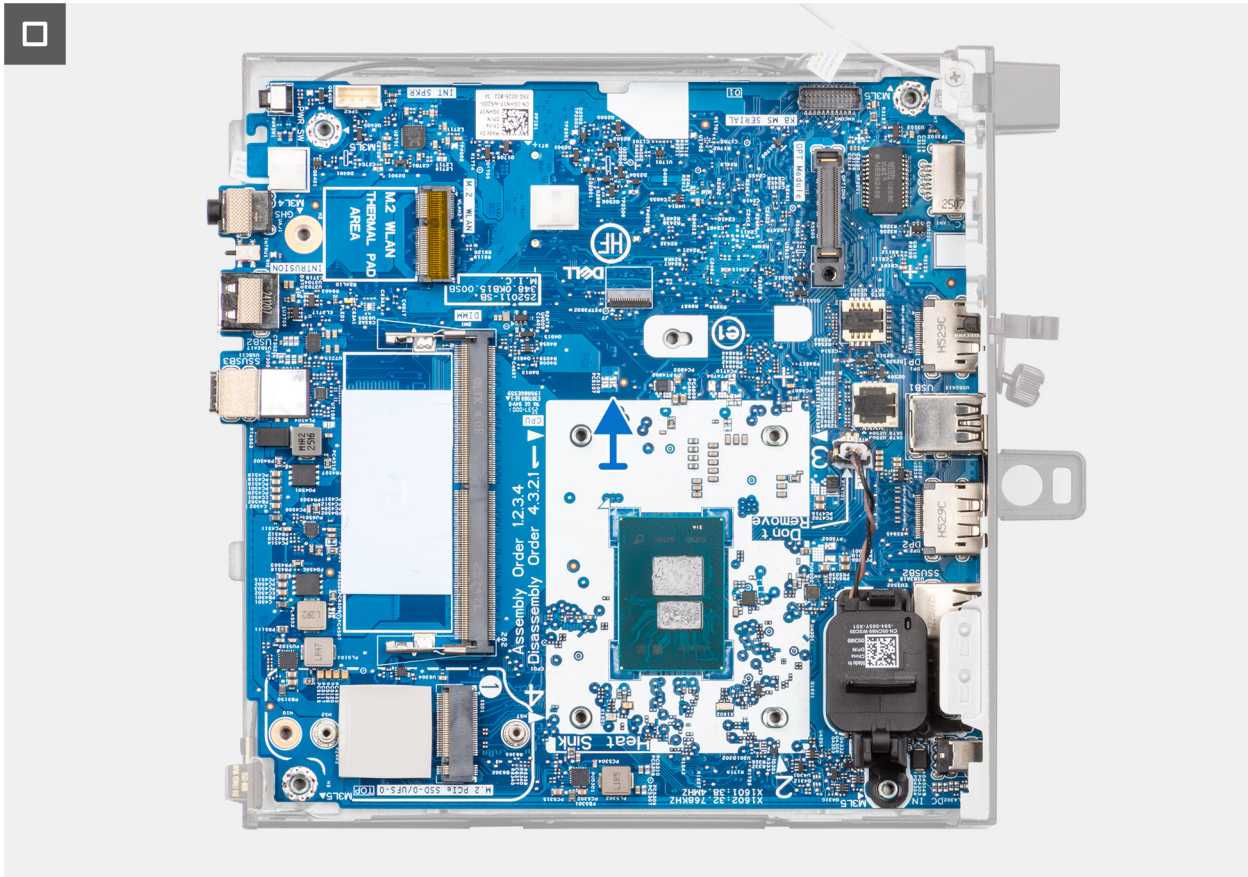


Figure 56. Removing the system board

NOTE: If the system board is being replaced, the processor and VR thermal pads must be replaced. Thermal pads are shipped with service system boards.

Installing the system board

NOTE: If the system board is being replaced, the processor and VR thermal pads must be replaced. Thermal pads are shipped with service system boards.

Prerequisites

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the connectors on your system board.

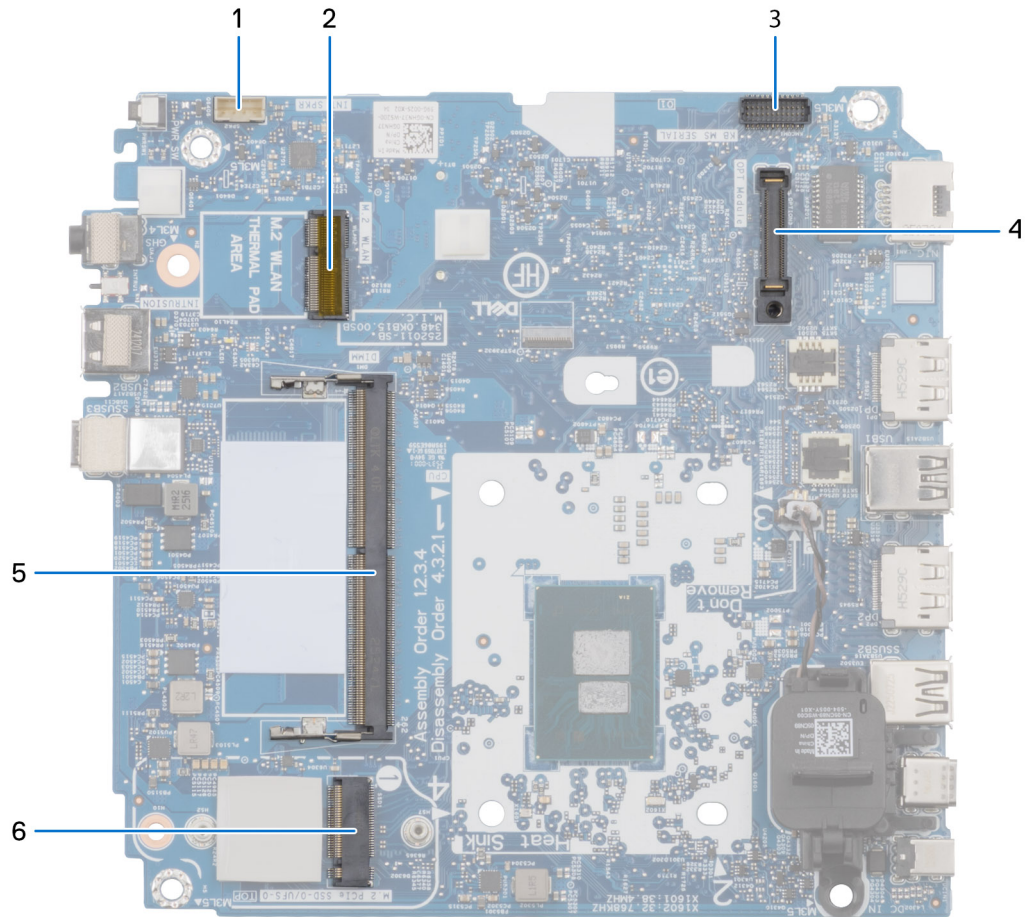


Figure 57. System board connectors

Table 6. Dell Pro Micro Thin Client QPM1260 system board connectors

No	Connector	Description
1	INT SPKR	Internal speaker
2	M.2 WLAN	Wireless card (Wi-Fi 6)
3	KB MS SERIAL	Optional PS/2, serial port connector
4	OPT module	Optional module connector
5	DIMM	Memory module connector
6	M.2 PCIe SSD-0/UFS-0	SSD/UFS connector

The following images indicate the location of the system board and provide a visual representation of the installation procedure.

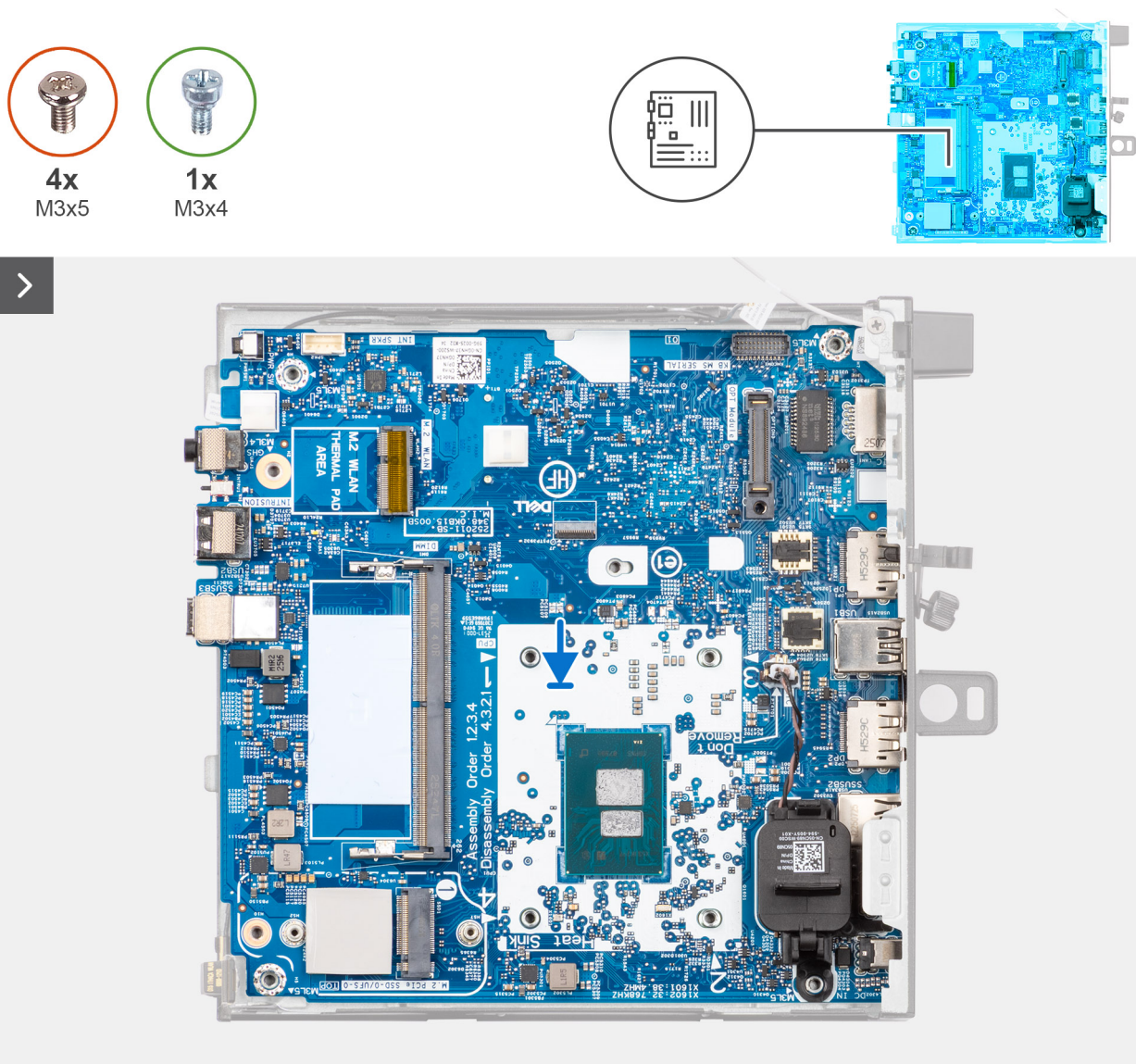


Figure 58. Installing the system board

Steps

1. At an angle, carefully slide to align the ports on the system board to the port slots on the chassis.
2. Align the screw holes on the system board with the screw holes on the chassis.
3. Replace the four screws (M3x5) and screw (M3x4) to secure the system board to the chassis.

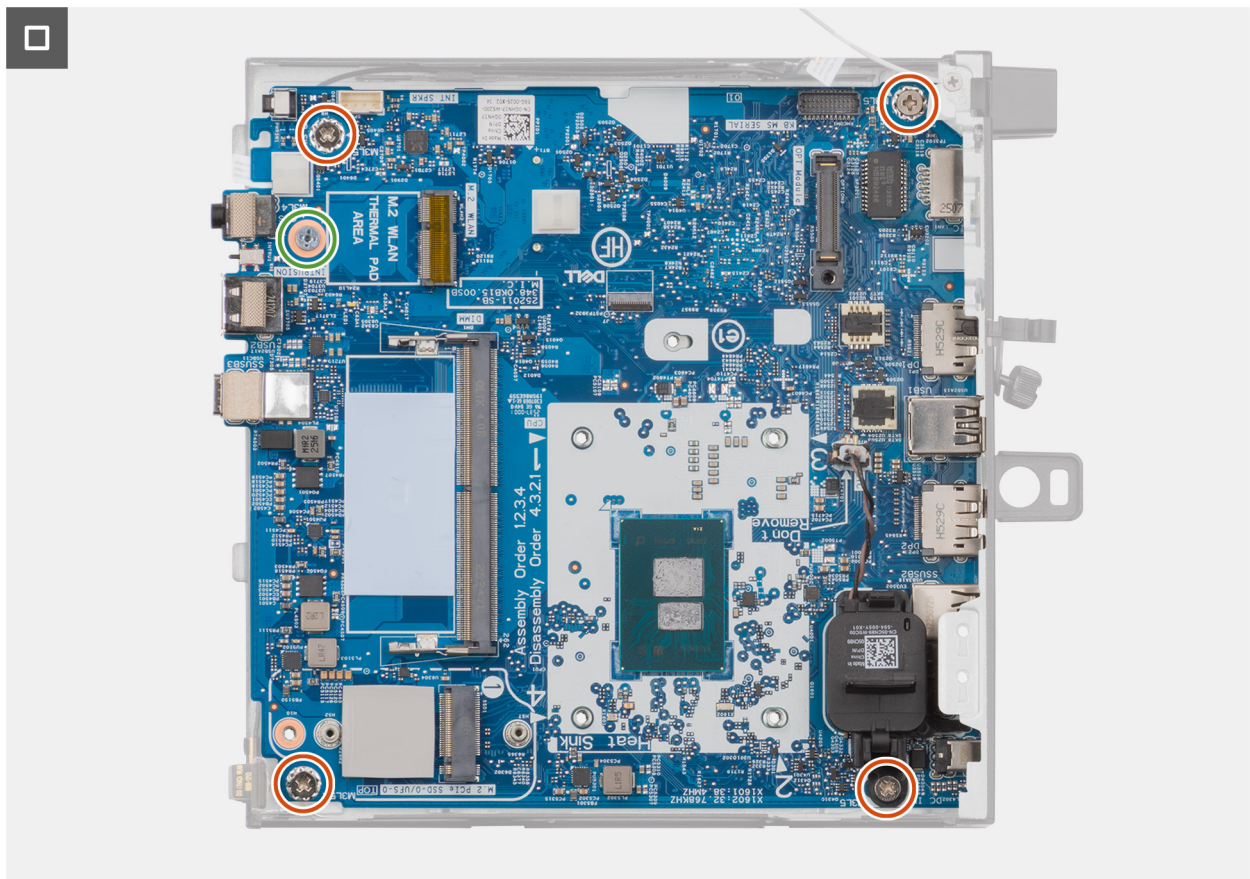


Figure 59. Installing the system board

NOTE: The power button is soldered to the system board.

Next steps

1. Install the [heat sink](#).
2. Install the [speaker holder](#).
3. Install the [speaker](#).
4. Install the [coin-cell battery](#).
5. Install the [wireless card module](#) (if applicable)
6. Install the wireless card ([Wi-Fi 6](#)) or ([Wi-Fi 7](#)), whichever applicable.
7. Install the [SSD-heat sink](#).
8. Install the [M.2 2230 solid-state drive](#).
9. Install the [memory module](#).
10. Install the [side cover](#).
11. Follow the procedure in [after working inside your computer](#).

Internal antenna

Removing the internal antenna—location one

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel AX211 Wi-Fi 6 wireless card.

1. Follow the procedure in [before working inside your computer](#).

2. Remove the [side cover](#).
3. Remove the [wireless card](#).

About this task

The following images indicate the location of the internal antenna and provide a visual representation of the removal procedure.

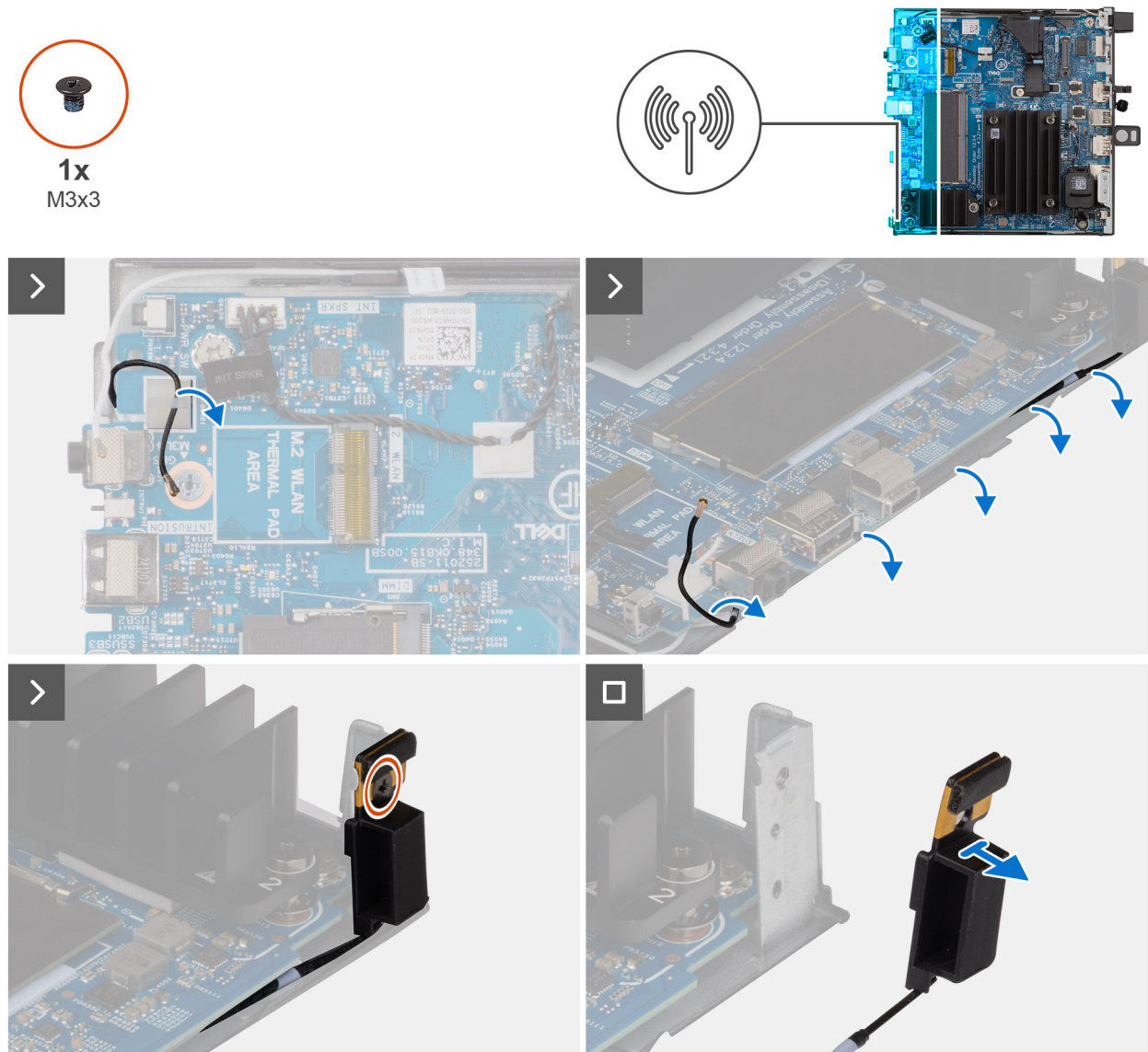


Figure 60. Removing the internal antenna—location one

Steps

1. Unroute the antenna cable from the routing guides.
2. Remove the screw (M3x3) that secures the internal antenna module to the chassis.
3. Pull to remove the internal antenna module away from the chassis.

Installing the internal antenna—location one

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel AX211 Wi-Fi 6 wireless card.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the internal antenna and provide a visual representation of the installation procedure.

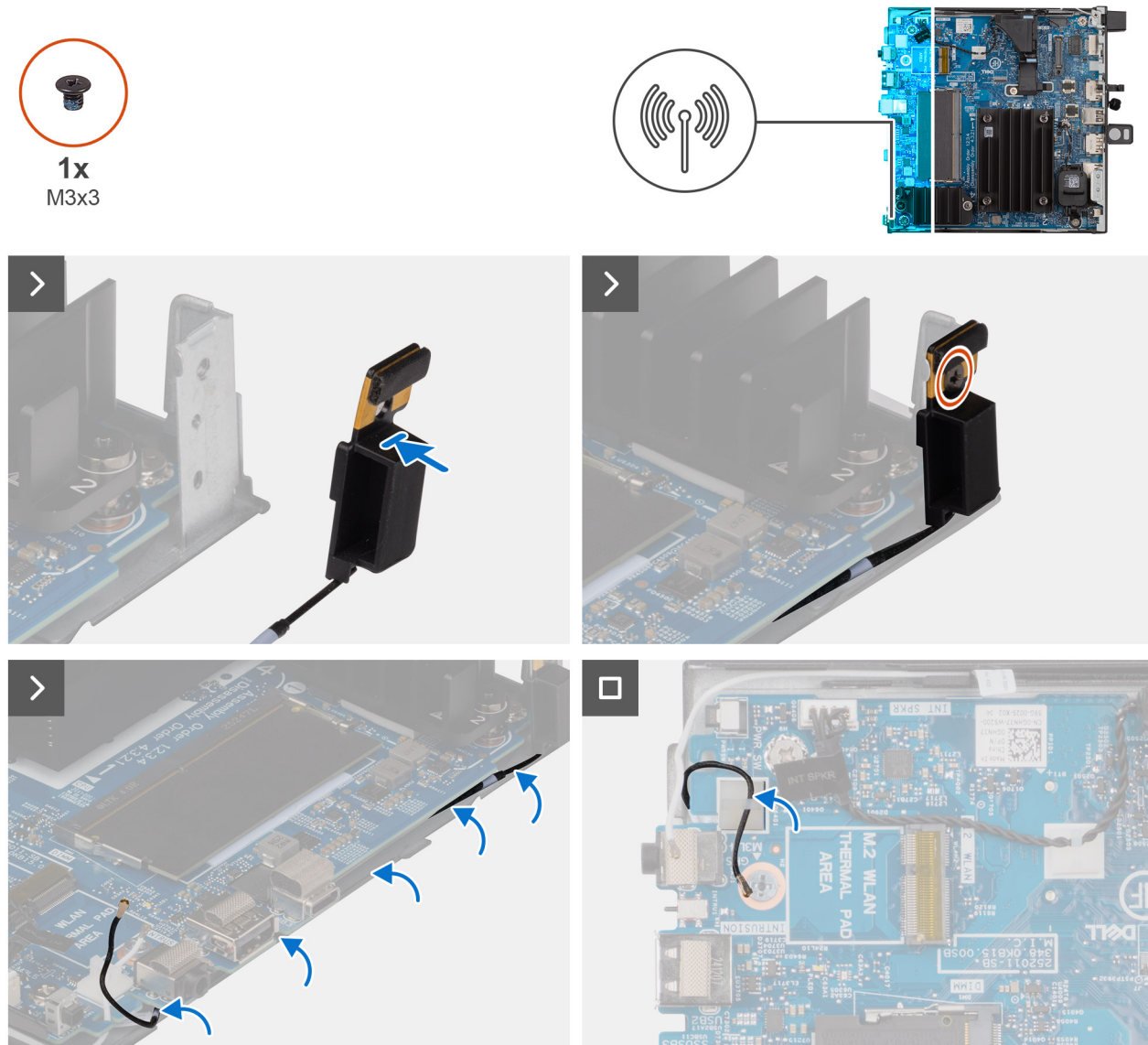


Figure 61. Installing the internal antenna—location one

Steps

1. Align and insert the internal antenna module into its slot on the chassis.
2. Replace the screw (M3x3) to secure the internal antenna module to the chassis.
3. Route the antenna cable through the routing guides.

Next steps

1. Install the [wireless card](#).
2. Install the [side cover](#).
3. Follow the procedure in [after working inside your computer](#).

Removing the internal antenna—location two

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel AX211 Wi-Fi 6 wireless card.

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).
3. Remove the [wireless card](#).

About this task

The following images indicate the location of the internal antenna and provide a visual representation of the removal procedure.

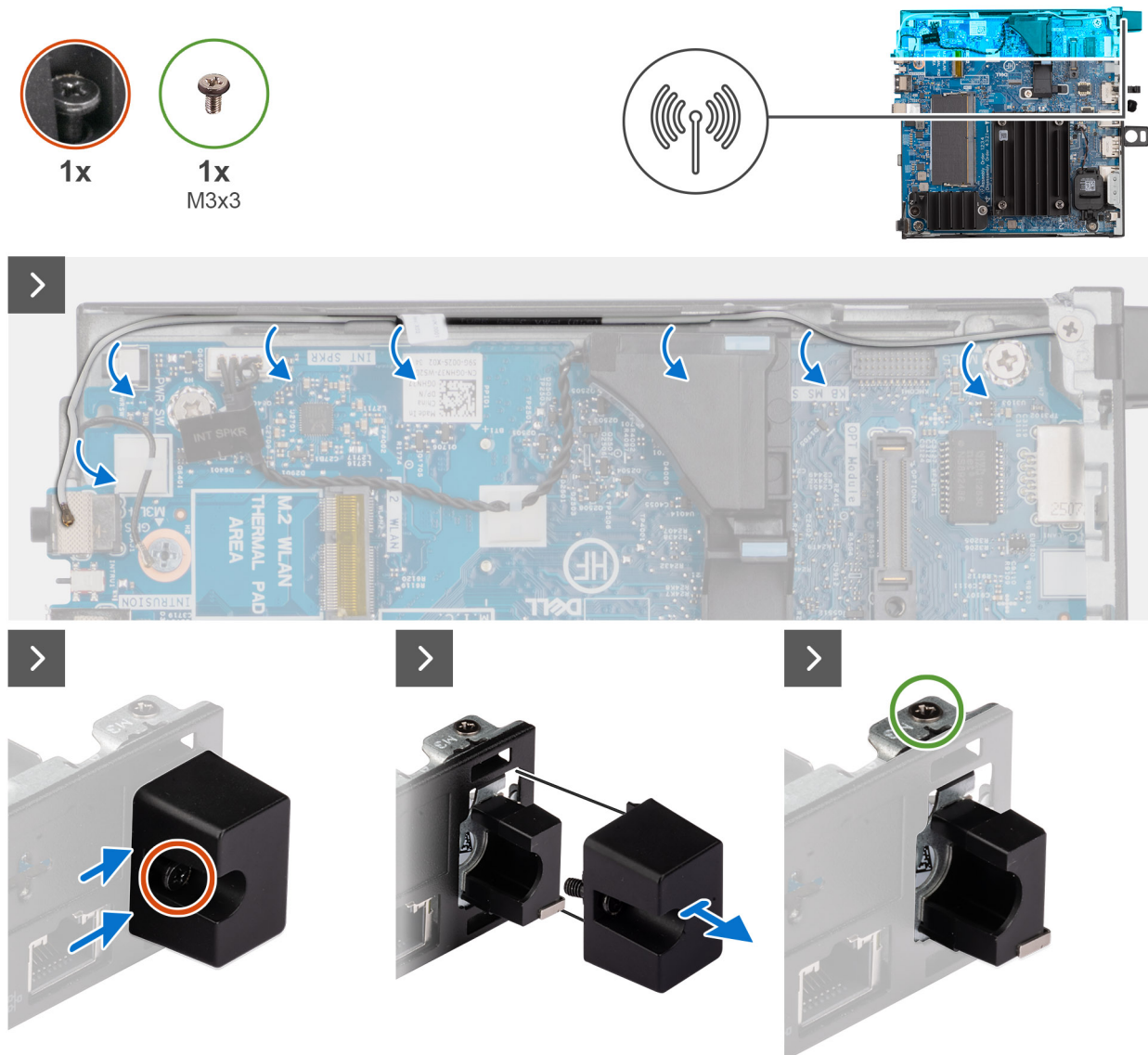


Figure 62. Removing the internal antenna—location two

Steps

1. Unroute the antenna cable from the routing guide in the chassis.
2. Loosen the captive screw that secures the antenna cover to the chassis.
3. Slide and remove the antenna cover from the computer.
4. Remove the screw (M3x3) that secures the internal antenna module to the chassis.

5. Pull to remove the internal antenna module from its slot away from the chassis.

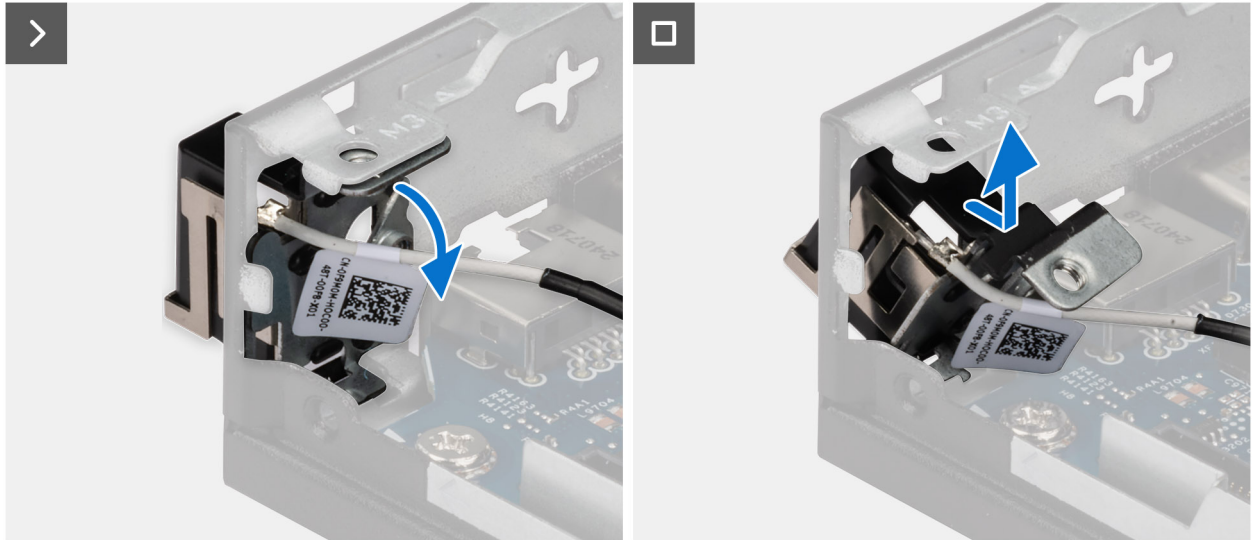


Figure 63. Removing the internal antenna—location two

Installing the internal antenna—location two

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel AX211 Wi-Fi 6 wireless card.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the internal antenna and provides a visual representation of the installation procedure.



1x



1x
M3x3

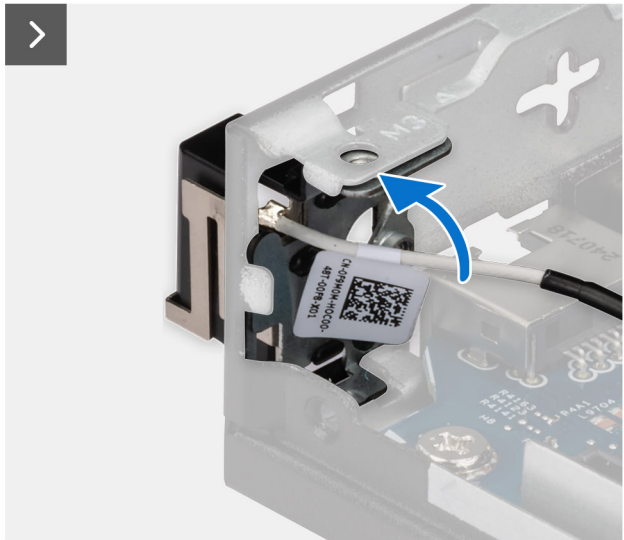
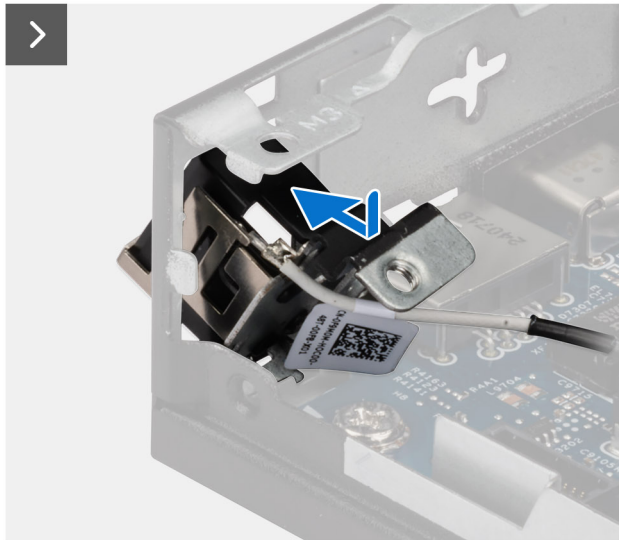
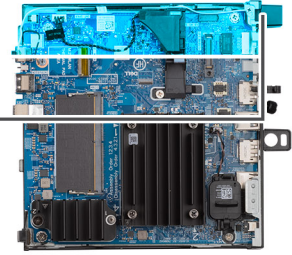


Figure 64. Installing the internal antenna—location two

Steps

1. Align and insert the internal antenna module into its slot on the chassis.
2. Replace the screw (M3x3) to secure the internal antenna module to the chassis.
3. Align the tabs and place the antenna cover on the chassis.

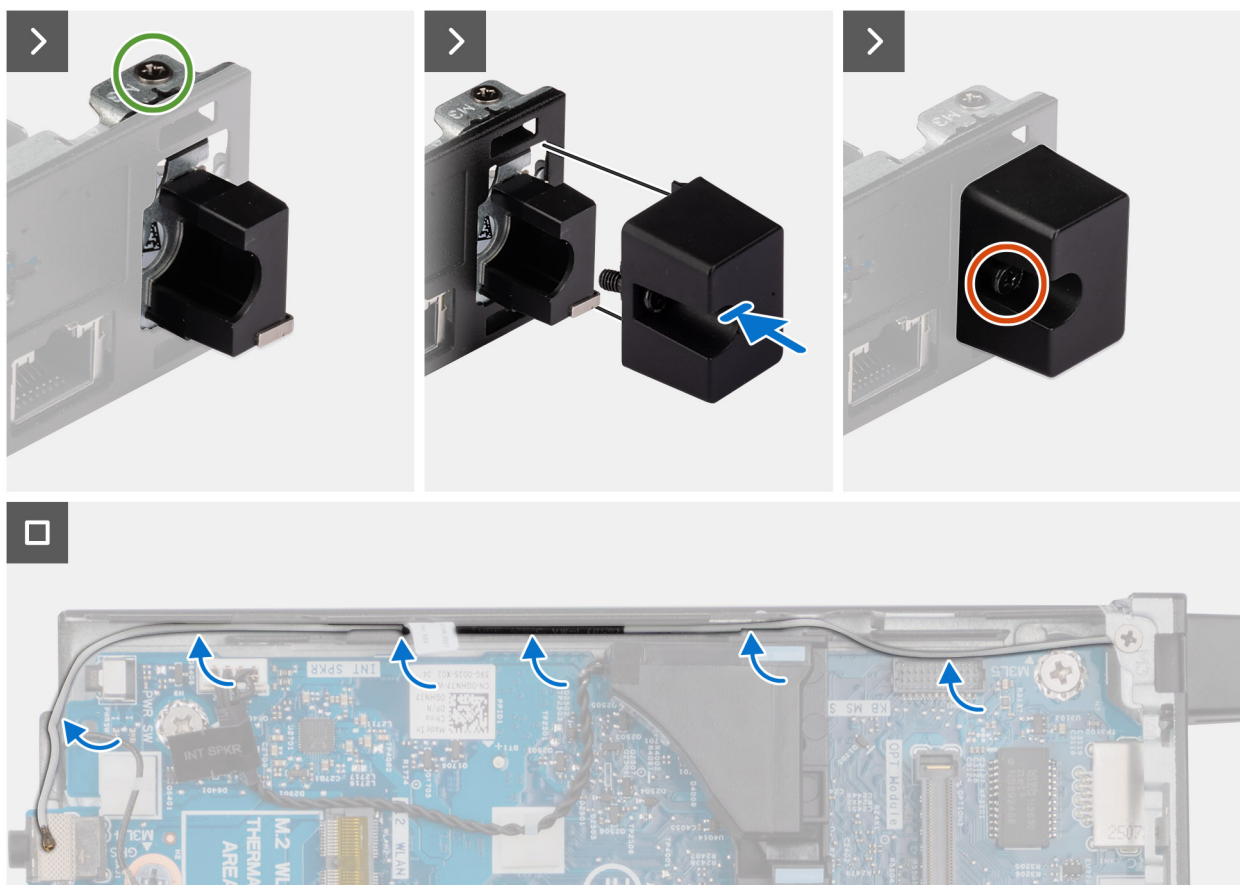


Figure 65. Installing the internal antenna—location two

4. Route the antenna cable through the routing guide on the chassis.
5. Route the antenna cable through the plastic routing guides on the chassis.

Next steps

1. Install the [wireless card](#).
2. Install the [side cover](#).
3. Follow the procedure in [after working inside your computer](#).

Removing the internal antenna—location one

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).
3. Remove the [wireless card](#).

About this task

The following images indicate the location of the internal antenna and provide a visual representation of the removal procedure.



1x
M3x3

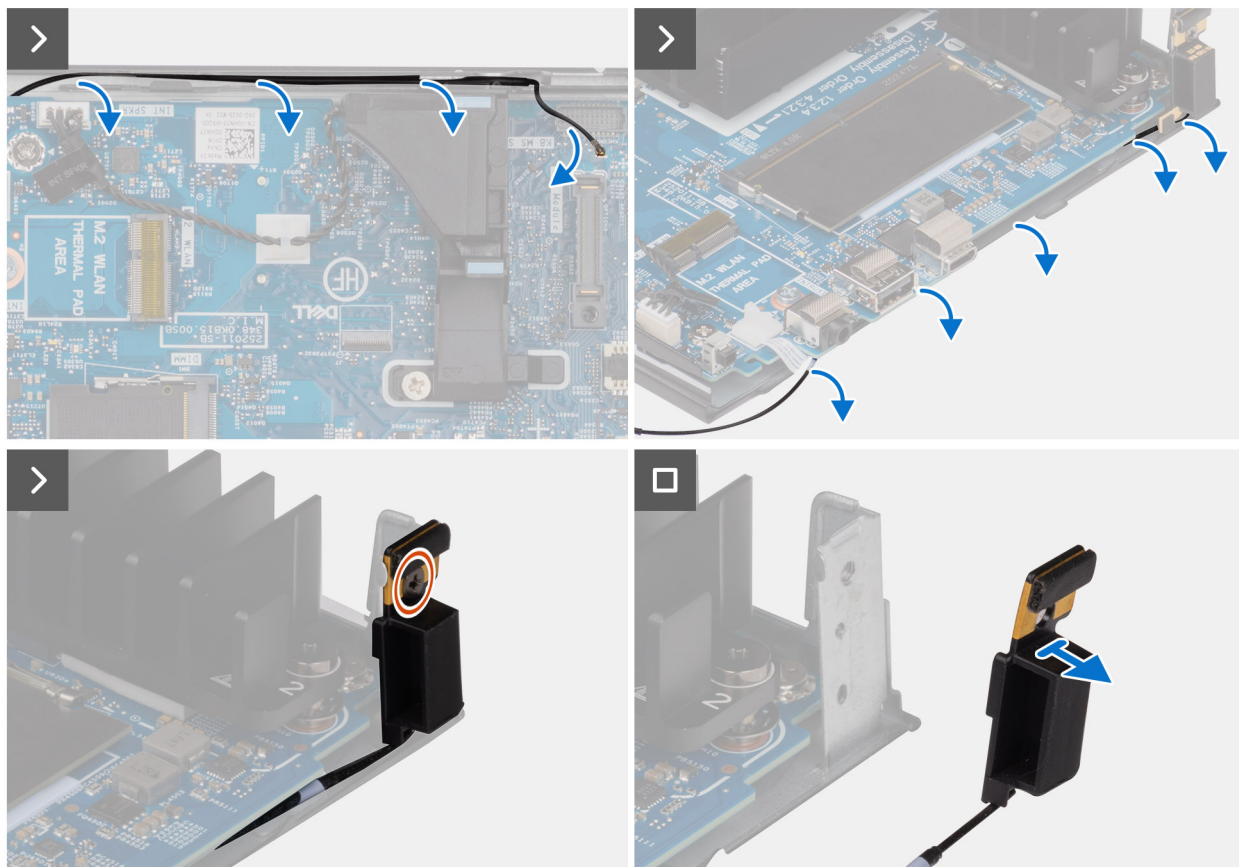
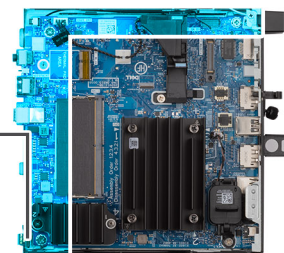


Figure 66. Removing the internal antenna—location one

Steps

1. Unroute the antenna cable from the routing guides.
2. Remove the screw (M3x3) that secures the internal antenna module to the chassis.
3. Pull to remove the internal antenna module away from the chassis.

Installing the internal antenna—location one

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following images indicate the location of the internal antenna and provide a visual representation of the installation procedure.

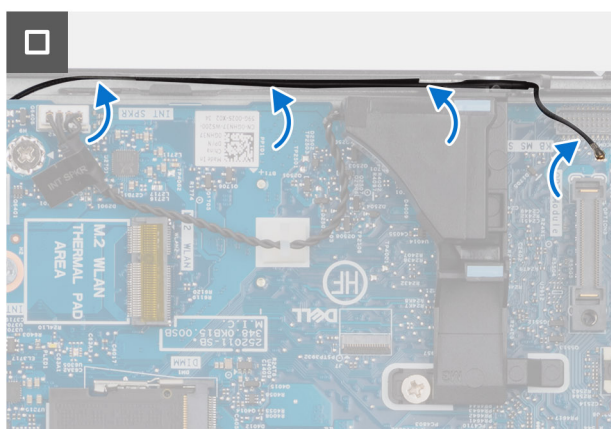
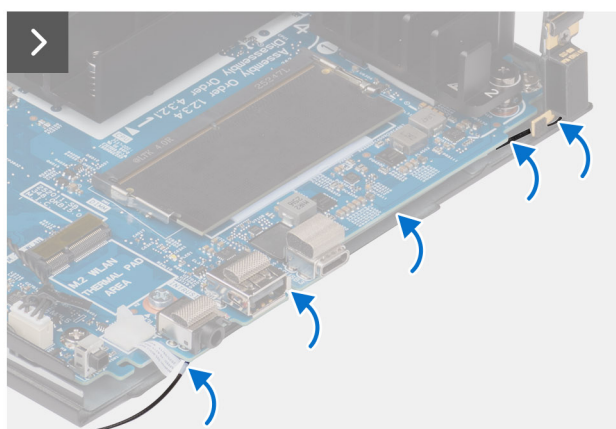
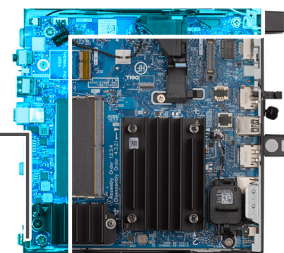


Figure 67. Installing the internal antenna—location one

Steps

1. Align and insert the internal antenna module into its slot on the chassis.
2. Replace the screw (M3x3) to secure the internal antenna module to the chassis.
3. Route the antenna cable through the routing guides.

Next steps

1. Install the [wireless card](#).
2. Install the [side cover](#).
3. Follow the procedure in [after working inside your computer](#).

Removing the internal antenna—location two

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

1. Follow the procedure in [before working inside your computer](#).
2. Remove the [side cover](#).

3. Remove the [wireless card](#).

About this task

The following images indicate the location of the internal antenna and provide a visual representation of the removal procedure.

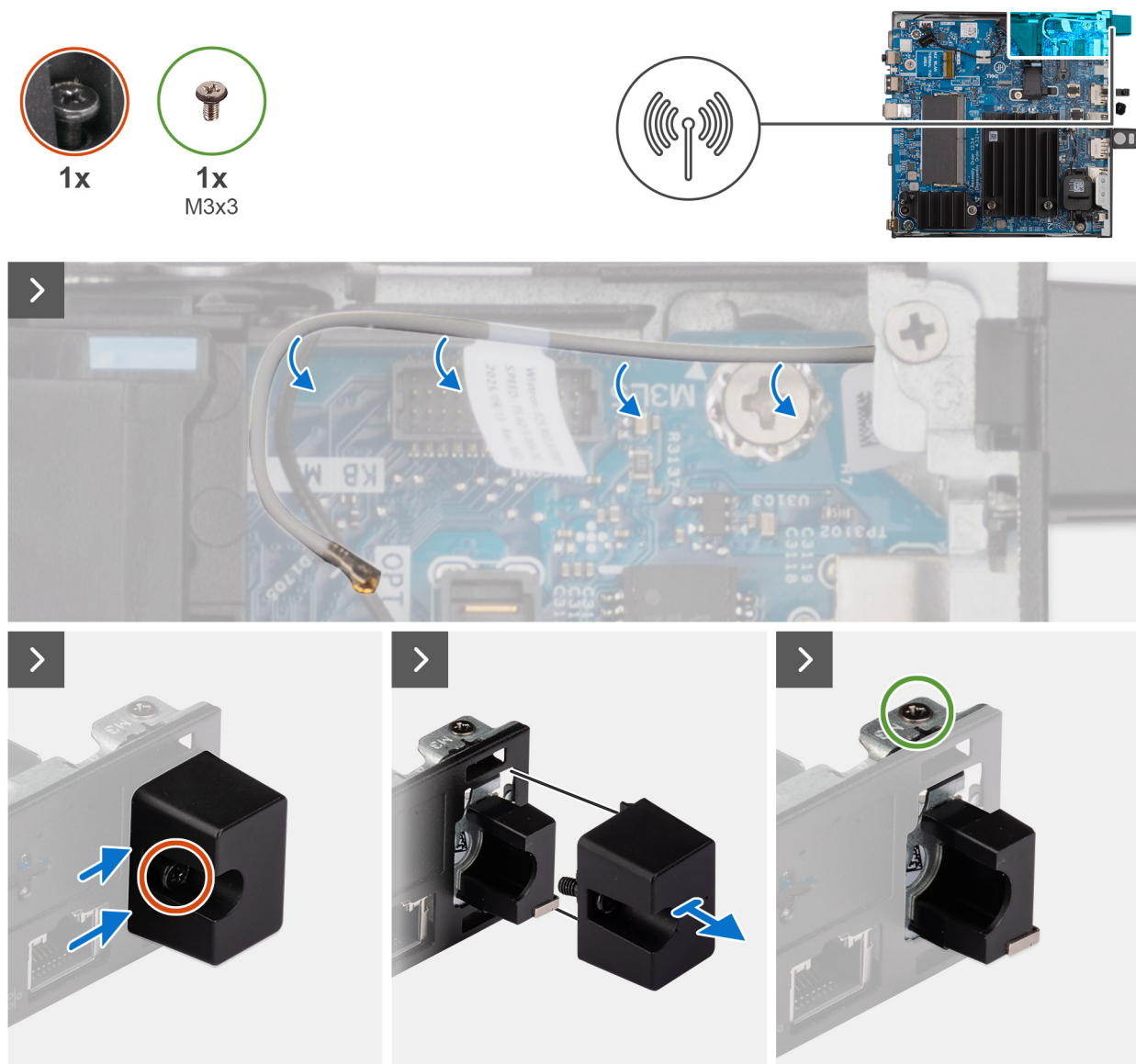


Figure 68. Removing the internal antenna—location two

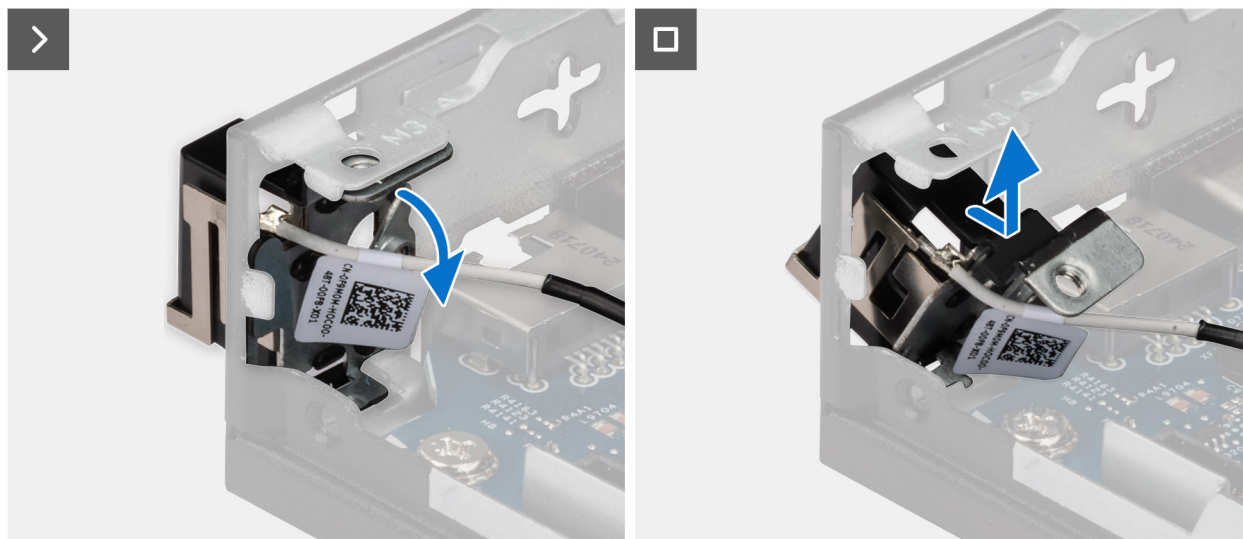


Figure 69. Removing the internal antenna—location two

Steps

1. Unroute the antenna cable from the routing guide in the chassis.
2. Loosen the captive screw that secures the antenna cover to the chassis.
3. Slide and remove the antenna cover from the computer.
4. Remove the screw (M3x3) that secures the internal antenna module to the chassis.
5. Pull to remove the internal antenna module from its slot away from the chassis.

Installing the internal antenna—location two

Prerequisites

NOTE: This procedure applies only to computers equipped with the Intel BE200 Wi-Fi 7 wireless card.

If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The following image indicates the location of the internal antenna and provides a visual representation of the installation procedure.

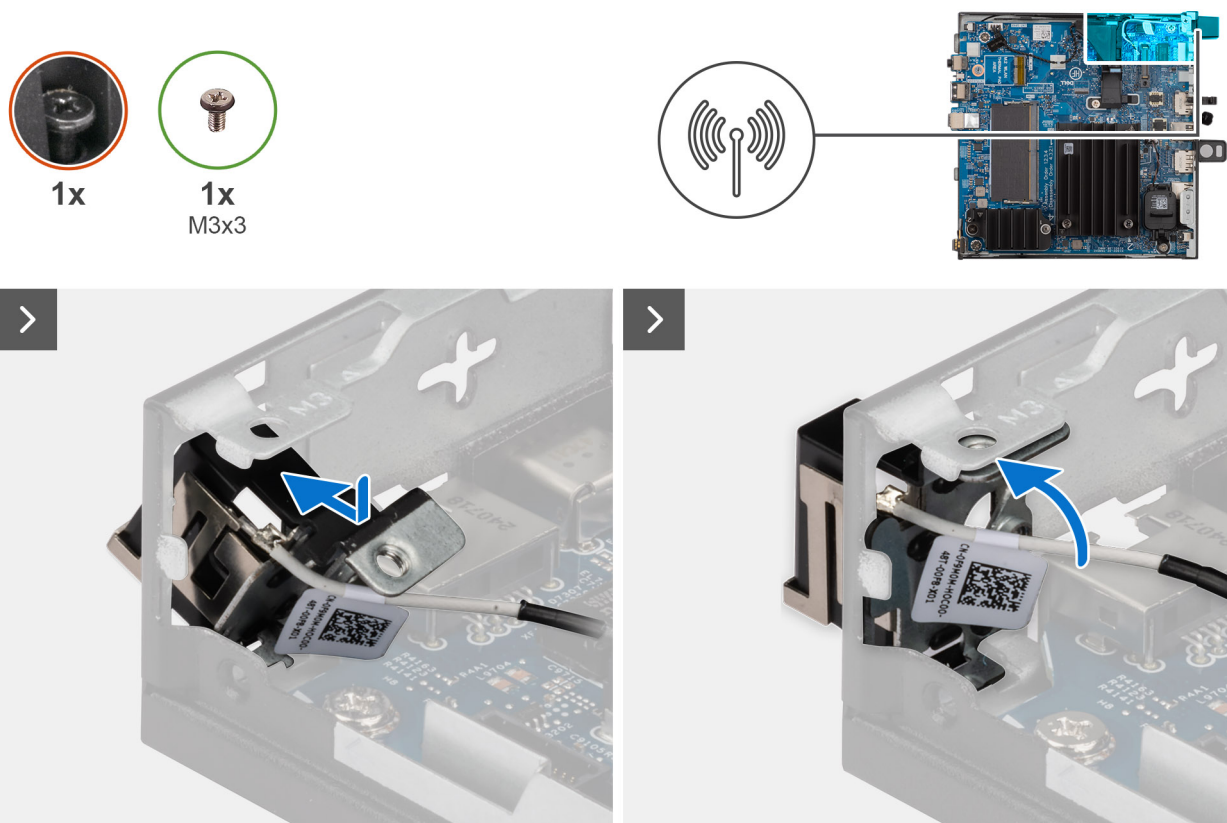


Figure 70. Installing the internal antenna—location two

Steps

1. Align and insert the internal antenna module into its slot on the chassis.
2. Replace the screw (M3x3) to secure the internal antenna module to the chassis.
3. Align the tabs and place the antenna cover on the chassis.

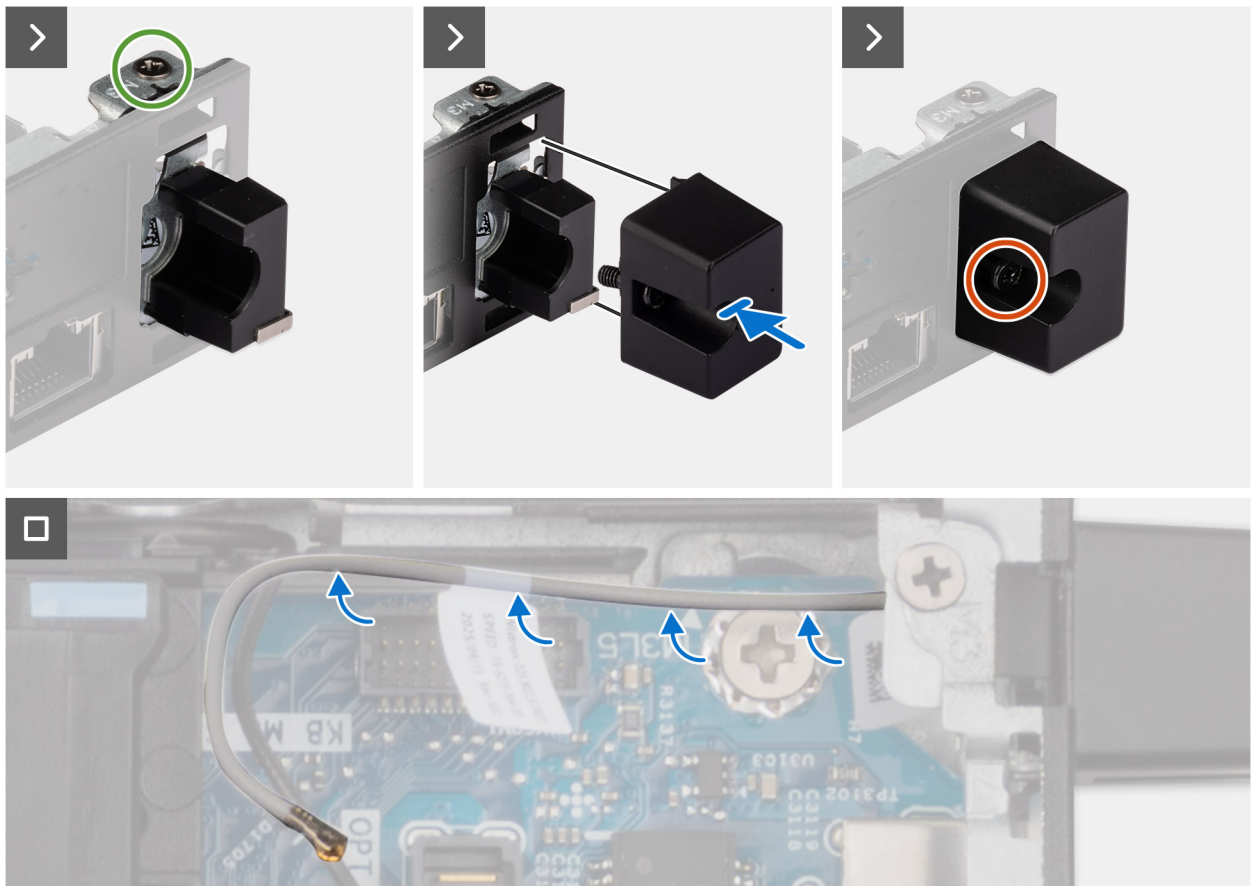


Figure 71. Installing the internal antenna—location two

4. Tighten the captive screw to secure the antenna cover to the chassis.
5. Route the antenna cable through the routing guides on the chassis.

Next steps

1. Install the [wireless card](#).
2. Install the [side cover](#).
3. Follow the procedure in [after working inside your computer](#).

Software

This chapter details the supported operating systems along with instructions on how to install the drivers.

Operating system

Your Dell Pro Micro Thin Client Q9M1260 supports the following operating systems:

- Windows 11 IoT Enterprise LTSC 2024
- Dell ThinOS 10.x
- No Operating System (BIOS only)

Drivers and downloads

When troubleshooting, downloading, or installing drivers, it is recommended that you read the Dell Knowledge Base article [Drivers and Downloads FAQs](#).

BIOS Setup

CAUTION: Certain changes can make your computer work incorrectly. Before you change the settings in BIOS Setup, it is recommended that you note down the original settings for future reference.

NOTE: Depending on the computer and the installed devices, the options that are listed in below may differ.

Use BIOS Setup for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the capacity of the storage device.
- Change the system configuration information.
- Set or change user-selectable options such as the user password, enabling or disabling base devices, and configuring hard drive settings.

Entering BIOS Setup program

Turn on or restart your computer and press F2 immediately.

Navigation keys

NOTE: For most of the BIOS Setup options, changes that you make are recorded but do not take effect until you restart the computer.

Table 7. Navigation keys

Keys	Navigation
Up arrow	Moves to the previous field.
Down arrow	Moves to the next field.
Enter	Selects a value in the selected field (if applicable) or follows the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area.
Esc	Moves to the previous page until you view the main screen. Pressing Esc in the main screen displays a message that prompts you to save any unsaved changes and restart the computer.

F12 One Time Boot menu

To enter the One Time Boot menu, turn on or restart your computer, and then press F12 immediately.

NOTE: If you are unable to enter the One Time Boot menu, repeat the above action.

The One Time Boot menu displays the devices that you can boot from and also display the options to start diagnostics. The boot menu options are:

- Removable Drive (if available)
- STXXXX Drive (if available)

 **NOTE:** XXX denotes the SATA drive number.

- Optical Drive (if available)
- SATA Hard Drive (if available)
- Diagnostics

The One Time Boot menu screen also displays the option to access BIOS Setup.

View Advanced Setup options

About this task

Some BIOS Setup options are only visible by enabling **Advanced Setup** mode, which is disabled by default.

 **NOTE:** BIOS Setup options, including **Advanced Setup** options, are described in the **System setup options** option.

To enable Advanced Setup:

Steps

1. Enter BIOS Setup.
The Overview menu appears.
2. Click the **Advanced Setup** option to move it to the **ON** mode.
Advanced BIOS Setup options are displayed.

View Service options

About this task

Service options are hidden by default and only visible by entering a hotkey command.

 **NOTE:** Service options are described in [BIOS Setup options](#).

To view Service options:

Steps

1. Enter BIOS Setup.
The **Overview** menu appears.
2. Enter the hotkey combination **Ctrl + Alt + S** to view the **Service** options.
Service options are displayed.

BIOS Setup options

 **NOTE:** For most of the System Setup options, changes that you make are recorded but do not take effect until you restart the computer.

 **NOTE:** Depending on your computer and its installed devices, the items that are listed in this section may differ.

Table 8. System Setup options—Overview menu

Overview	
Dell Pro Micro Thin Client Q9M1260	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Displays the Asset Tag of the computer.

Table 8. System Setup options—Overview menu (continued)

Overview	
Manufacture Date	Displays the manufacture date of the computer.
Ownership Date	Displays the ownership date of the computer.
Express Service Code	Displays the Express Service Code of the computer.
Ownership Tag	Displays the Ownership Tag of the computer.
System UUID	Displays the system UUID number.
PROCESSOR Information	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Core Count	Displays the number of cores on the processor.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Processor ID	Displays the processor identification code.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Processor L2 Cache	Displays the processor L2 cache size.
Processor L3 Cache	Displays the processor L3 cache size.
Microcode Version	Displays the microcode version.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
MEMORY Information	
Memory Installed	Displays the total memory installed on the computer.
Memory Available	Displays the total memory available on the computer.
Memory Speed	Displays the memory speed.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Memory Technology	Displays the technology that is used for the memory.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
DIMM Size	Displays the size of DIMM.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
DEVICES Information	
Video Controller	Displays the type of video controller available on the computer.
Video Memory	Displays the video memory information of the computer.
Wi-Fi Device	Displays the wireless device information of the computer.
Native Resolution	Displays the native resolution of the computer.

Table 8. System Setup options—Overview menu (continued)

Overview	
Video BIOS Version	Displays the video BIOS version of the computer.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Audio Controller	Displays the audio controller information of the computer.
Bluetooth Device	Displays the Bluetooth device information of the computer.
LOM MAC Address	Displays the MAC address of the LAN-on-Motherboard (LOM).

Table 9. System Setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot Mode: UEFI only	Displays the boot mode of the computer.
Boot Sequence	Displays the boot sequence.
Enable PXE Boot Priority	Enables or disables PXE boot priority. By default, the Enable PXE Boot Priority option is disabled.
UEFI Network Boot Order	Allows to select IPv4 and IPV6 option boot order. By default, the IPv4 option is selected.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Extended IPV4 PXE Boot Timeout	Enter the Extended IPV4 PXE Boot Timeout value only if the IPV4 PXE boot fails with standard timeouts.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Secure Boot	
Enable Secure Boot	Secure Boot is a method of guaranteeing the integrity of the boot path by performing additional validation of the operating system and PCI add-in cards. The computer stops booting to the operating system when a component is not authenticated during the boot process. Secure Boot can be enabled in BIOS setup or using management interfaces like Dell Command Configure, but can only be disabled from BIOS setup. Enables the computer to boot using only validated boot software. By default, this Enable Secure Boot option is disabled. For additional security, Dell Technologies recommends keeping the Secure Boot option enabled to ensure that the UEFI firmware validates the operating system during the boot process.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .  NOTE: To enable Secure Boot, the computer must be in UEFI boot mode and the Enable Legacy Option ROMs option must be turned off.
Enable Microsoft UEFI CA	When disabled, the UEFI CA is removed from the BIOS UEFI Secure Boot database.  CAUTION: If you disable Microsoft UEFI CA, the computer may not boot, computer graphics may not function, some devices may not function properly, and the computer could become unrecoverable. By default, the Enable Microsoft UEFI CA option is enabled.

Table 9. System Setup options—Boot Configuration menu (continued)

Boot Configuration	
	For additional security, Dell Technologies recommends keeping the Enable Microsoft UEFI CA option enabled to ensure the broadest compatibility with devices and operating systems.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Secure Boot Mode	Enables or disables the Secure Boot operation mode. By default, the Deployed Mode is selected. Deployed Mode should be selected for normal operation of Secure Boot.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Expert Key Management	
Enable Custom Mode	Enables or disables the keys in the PK, KEK, db, and dbx security key databases to be modified. By default, the Enable Custom Mode option is disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Custom Mode Key Management	Selects the custom values for expert key management. By default, both options are disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 10. System Setup options—Integrated Devices menu

Integrated Devices	
Date/Time	
Date	Sets the computer date in MM/DD/YYYY format. Changes to the date format take effect immediately.
Time	Sets the computer time in HH/MM/SS 24-hour format. You can select between a 12-hour or 24-hour clock. Changes to the time format take effect immediately.
Audio	
Enable Audio	Enables all integrated audio controller. By default, all the options are enabled.
Enable Microphone	Enables the microphone. By default, the Enable Microphone option is enabled.  NOTE: Depending on the configuration ordered, the microphone setup option may not be available.
Enable Internal Speaker	Enables the internal speaker. By default, the Enable Internal Speaker option is enabled.
USB Configuration	
Enable Front USB Ports	Enable or disable the individual front USB ports. By default, Enable Front USB Ports is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 10. System Setup options—Integrated Devices menu (continued)

Integrated Devices	
Enable Rear USB Ports	Enable or disable the individual rear USB ports. By default, Enable Rear USB Ports is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Enable USB Boot Support	Enables booting from USB mass storage devices that are connected to external USB ports. By default, Enable USB Boot Support is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Front USB Configuration	Enables or disables individual USB ports. By default, the Front Port 1 (Top) and Front Port TypeC w/Power Share (Bottom)* options are enabled. *denotes USB 3.0 capable port.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Rear USB Configuration	Enables or disables individual USB ports. By default, the Rear Port TypeC (Bottom)*, Rear Port 2 (Middle)*, Rear Port 3 (Top Left) and Rear Port 4 (Top Right) options are enabled. *denotes USB 3.0 capable port.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 11. System Setup options—Storage menu

Storage	
SATA/NVMe Operation	
SATA/NVMe Operation	Sets the operating mode of the integrated storage device controller. By default, the AHCI/NVMe option is selected.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Storage Interface	Displays the information of various onboard drives.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Port Enablement	By default, the M.2 PCIe SSD option is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Drive Information	Displays the information of M.2 PCIe SSD-0.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 12. System Setup options—Display menu

Display	
Primary Display	Determines which display can be set as primary display when multiple controllers are available in the system.

Table 12. System Setup options—Display menu (continued)

Display	
	By default Auto option is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Full Screen Logo	Enables or disables the computer to display full screen logo, if the image matches screen resolution. By default, the Full Screen Logo option is disabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 13. System Setup options—Connection menu

Connection	
Network Controller Configuration	
Integrated NIC	Controls the onboard LAN controller. By default, the Enabled with PXE option is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Wireless Device Enable	
WLAN	Enables or disables the internal WLAN device. By default, the WLAN option is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Bluetooth	Enables or disables the internal Bluetooth device. By default, the Bluetooth option is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
HTTP(s) Boot Feature	
HTTP(s) Boot	When enabled, supports HTTP(s) boot on the client BIOS, which offers wired or wireless and HTTP/HTTPS connection options. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
HTTP(s) Boot Modes	In Auto Mode, the boot URL is obtained from the DHCP response; the boot URL specifies the HTTP Boot Server and location of the Network Boot Program (NBP) file. In Manual mode, the user enters the URL in the text box, which must start with <code>http://</code> or <code>https://</code> and end with the NBP file name. By default, Auto Mode is selected. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
CA Certificate	Upload or delete the CA certificate. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 14. System Setup options—Power menu

Power	
USB Wake Support	
Enable USB Wake Support	When enabled, you can use the USB devices like a mouse or keyboard to wake your computer from Standby, Hibernation, and Power Off. By default, the Enable USB Wake Support option is enabled. This feature requires Deep Sleep Control to be disabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Wake on Dell USB-C Dock	When enabled, connecting a Dell USB-C Dock wakes the computer from Standby, Hibernate, and Power Off. By default, the Wake on Dell USB-C Dock option is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
AC Behavior	NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
AC Recovery	Enables the system to determine what happens when AC power is restored after unexpected loss of AC power. By default, the Power Off option is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Active State Power Management	Allows to set the Active State Power Management (ASPM). By default, the Auto option is enabled which allows communication between the device and PCI Express hub to determine the best ASPM mode supported by the device. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Deep Sleep Control	Enable or disable the Deep Sleep mode support. By default, this option Enabled in S4 and S5 is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 15. System Setup options—Security menu

Security	
TPM 2.0 Security	Trusted Platform Module (TPM) is a security device that stores computer-generated keys for encryption and features such as BitLocker, Virtual Secure Mode, remote Attestation. By default, the TPM 2.0 Security option is enabled. For additional security, Dell Technologies recommends keeping the Trusted Platform Module (TPM) enabled to allow these security technologies to fully function.
TPM 2.0 Security On	Enables or disables the TPM. By default, the TPM 2.0 Security On option is enabled. For additional security, Dell Technologies recommends keeping TPM enabled to allow these security technologies to fully function.

Table 15. System Setup options—Security menu (continued)

Security	
	 NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Clear	When enabled, the Clear option clears information that is stored in the TPM after exiting the system's BIOS. This option returns to the disabled state when the computer restarts. By default, the Clear option is disabled. Dell Technologies recommends enabling the Clear option only when TPM data is required to be cleared.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
PPI Bypass for Clear Commands	The Physical Presence Interface (PPI) Bypass for Clear Commands option allows the operating system to manage certain aspects of PTT. When enabled, you are not prompted to confirm changes to the PTT configuration. By default, the PPI Bypass for Clear Commands option is disabled. For additional security, Dell Technologies recommends keeping the PPI Bypass for Clear Commands option disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Chassis Intrusion	
Chassis Intrusion	Enables or disables the detection of chassis intrusion events. This feature notifies the user when the base cover has been removed from the computer. When set to Enabled, a notification is displayed on the next boot and the event is logged in the BIOS Events log. When set to Disabled, no notification is displayed and no event is logged in the BIOS Events log. When set to On-Silent, the event is logged in the BIOS Events log, but no notification is displayed. By default, the Disabled option is disabled. For additional security, Dell Technologies recommends keeping the Chassis Intrusion option enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Block Boot Until Cleared	The Block Boot Until Clear option is enabled when Chassis Intrusion is enabled. When enabled, the computer does not boot until the chassis intrusion is cleared.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
Absolute	Absolute Software provides various cyber security solutions, some requiring software preloaded on Dell computers and integrated into the BIOS. To use these features, you must enable the Absolute BIOS setting and contact Absolute for configuration and activation. By default, the Enable Absolute option is enabled. For additional security, Dell Technologies recommends keeping the Absolute option enabled.  WARNING: The Permanently Disabled option can only be selected once. When Permanently Disabled is selected, Absolute Persistence

Table 15. System Setup options—Security menu (continued)

Security	
	cannot be reenabled. No further changes to the Enable/Disable states are allowed. NOTE: The Enable/Disable options are unavailable while the computer is in the activated state. NOTE: When the Absolute features are activated, the Absolute integration cannot be disabled from the BIOS Setup screen.
UEFI Boot Path Security	Enables or disables the computer to prompt the user to enter the Administrator password (if set) when booting to a UEFI boot path device from the F12 boot menu. By default, the Always Except Internal HDD option is enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Authenticated BIOS Interface Legacy Manageability Interface Access	By default Authenticated BIOS Interface is disabled. Allows the platform administrator to control access through the Legacy Manageability Interface when Authenticated BIOS Interface (ABI) is enabled and provisioned. By default, the option is Enabled. NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Firmware Device Tamper Detection	Allows you to control the firmware device tamper detection feature. This feature notifies the user when the firmware device is tampered. When enabled, a screen warning message is displayed on the computer and a tamper detection event is logged in the BIOS Events log. The computer fails to reboot until the event is cleared. By default, the Silent option is enabled. For additional security, Dell Technologies recommends keeping the Firmware Device Tamper Detection option enabled.
Clear Firmware Device Tamper Detection	Allows you to clear the events that are logged when tampering of a firmware device is detected. By default, the Clear Firmware Device Tamper Detection option is disabled.

Table 16. System Setup options—Passwords menu

Passwords	
Admin Password	The Admin Password prevents unauthorized access to the BIOS Setup options. Once the administrator password is set, the BIOS Setup options can only be modified after providing the correct password. The following rules and dependencies apply to the Administrator Password - • The administrator password cannot be set if computer and/or internal storage device passwords are already set. • The administrator password can be used in place of the system and/or internal storage passwords. • When set, the administrator password must be provided during a firmware update. • Clearing the administrator password also clears the system password (if set). Dell Technologies recommends using an administrator password to prevent unauthorized changes to BIOS Setup options.

Table 16. System Setup options—Passwords menu (continued)

Passwords	
	 NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
System Password	The System Password prevents the computer from booting to an operating system without entering the correct password. The following rules and dependencies apply when the System Password is used - • The computer shuts down when idle for approximately 10 minutes at the system password prompt. • The computer shuts down after three incorrect attempts to enter the system password. • The computer shuts down when the Esc key is pressed at the System Password prompt. • The system password is not prompted when the computer resumes from standby mode. Dell Technologies recommends using the system password in situations where it is likely that a computer may be lost or stolen.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Password Configuration	The Password configuration page includes several options for changing the requirements of BIOS passwords. You can modify the minimum and maximum length of the passwords as well as require passwords to contain certain character classes (upper case, lower case, digit, special character). When the Upper Case Letter option is enabled, the password requires at least one upper case letter. When the Lower Case Letter option is enabled, the password requires at least one lower case letter. When the Digit option is enabled, the password requires at least one numeric digit. When the Special Character option is enabled, the password requires at least one special character from the set: !"#%&'()*+,-./:;<=>?@\^_`{ }~. When setting Minimum Characters for password length, Dell Technologies recommends setting the minimum password length to at least eight characters.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Password Changes	
Enable Master Password Lockout	The Master Password Lockout option allows you to disable the Recovery Password feature. If the system, administrator, or hard drive password is forgotten, the computer becomes unusable.  NOTE: When the owner password is set, the Master Password Lockout option is not available.  NOTE: When an internal hard drive password is set, it must first be cleared before Master Password Lockout can be changed. By default, the Enable Master Password Lockout option is disabled. Dell Technologies does not recommend enabling the Master Password Lockout unless you have implemented your own password recovery system.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 17. System Setup options—Update, Recovery menu

Update, Recovery	
BIOS Downgrade	
Allow BIOS Downgrade	Allows downgrading of the system firmware to previous revisions. By default, the Allow BIOS Downgrade option is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
SupportAssist OS Recovery	Enables or disables the boot flow for SupportAssist OS Recovery tool if certain system errors occur. By default, the SupportAssist OS Recovery option is enabled.
Dell Auto OS Recovery Threshold	Allows the control of the automatic boot flow for the SupportAssist System Resolution Console and the Dell OS Recovery Tool. By default, the Dell Auto OS Recovery Threshold value is set to 2.

Table 18. System Setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the computer.
Asset Tag	Creates a computer Asset Tag that an IT administrator can use to uniquely identify a particular computer.  NOTE: Once set in the BIOS, the Asset Tag cannot be changed.
Wake on LAN/WLAN	Enables or disables the computer to turn on by a special LAN signal. By default, the Wake on LAN/WLAN option is disabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Auto On Time	Enable to set the computer to turn on automatically every day or on a preselected date and time. This option can be configured only if the Auto On Time is set to Everyday, Weekdays, or Selected Days. By default, the Disabled option is selected.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
SERR Messages	Enable or disable SERR messages. By default, the Enable SERR Messages is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
First Power On Date	Set Ownership Date Allows to set the Ownership date. By default, the option Set Ownership Date is disabled.

Table 19. System Setup options—Keyboard menu

Keyboard	
Keyboard Errors	
Enable Keyboard Error Detection	Enables or disables the Enable Keyboard Error Detection allows keyboard-related errors to be reported when the system boots. By default, the Enable Keyboard Error Detection option is enabled.

Table 19. System Setup options—Keyboard menu (continued)

Keyboard	
	 NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Numlock LED	
Numlock LED	Enable or disable the Numlock LED. By default, Enable Numlock LED is enabled.
Device Configuration HotKey Access	Allows you to control whether you can access device configuration screens through hotkeys during system startup. By default, the option Enabled is selected.  NOTE: This setting controls only the Intel RAID (CTRL+I), LSI RAID (CTRL+C), or Intel Management Engine BIOS Extension (CTRL+P/F12).  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 20. System Setup options—Pre-boot Behavior menu

Pre-boot Behavior	
Adapter Warnings	
Enable Adapter Warnings	Enable or disable the adapter warning messages. By default, the option is enabled.
Warnings and Errors	Enables or disables the action to be taken when a warning or error is encountered. By default, the Prompt on Warnings and Errors option is selected.  NOTE: Errors deemed critical to the operation of the computer hardware stop the functioning of the computer.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
USB-C Warnings	
Enable Dock Warning Messages	Enables the warning messages during boot when the USB-C adapters with less power capacity are detected. By default, the Enable Dock Warning Messages option is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.
Extend BIOS POST Time	Sets the BIOS Power-On Self-Test (POST) load time. By default, the 0 seconds option is selected.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options.

Table 21. System Setup options—Performance menu

Performance	
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables the computer to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. By default, the Enable Intel SpeedStep Technology option is enabled.

Table 21. System Setup options—Performance menu (continued)

Performance	
	 NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .
PCIe Resizable Base Address Register (BAR)	Enables or disables PCIe Resizable Base Address Register (BAR) . By default, this option is enabled.  NOTE: To view this option, enable Advanced Setup mode as described in View Advanced Setup options .

Table 22. System Setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear BIOS Event Log	Select the option to keep or clear BIOS events logs. By default, the Keep Log option is selected.
Power Event Log	
Clear Power Event Log	Select the option to keep or clear power events logs. By default, the Keep Log option is selected.

Updating the BIOS

Updating the BIOS in Windows

About this task

-  **CAUTION:** If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer [Updating the BIOS on Dell systems with BitLocker enabled](#).
-  **CAUTION:** Do not turn off the computer during the BIOS flash update process. The computer may not boot if you turn off your computer.

Steps

1. Go to [Dell Support Site](#).
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.

 **NOTE:** If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. After the download is complete, navigate to the folder where the BIOS update file has been saved.
8. Double-click the BIOS update file and follow the on-screen instructions.
For more information, search [Dell Support Site](#).

Updating the BIOS using the USB drive in Windows

About this task

 **CAUTION:** If BitLocker is not suspended before updating the BIOS, the BitLocker key is not recognized the next time you reboot the computer. You will then be prompted to enter the recovery key to proceed, and the computer displays a prompt for the recovery key on each reboot. Failure to provide the recovery key can result in data loss or an operating system reinstall. For more information, refer [Updating the BIOS on Dell systems with BitLocker enabled](#).

 **CAUTION:** Do not turn off the computer during the BIOS flash update process. The computer may not boot if you turn off your computer.

Steps

1. Go to [Dell Support Site](#).
2. Go to **Identify your product or ask support**. In the box, enter the product identifier, model, service request or describe what you are looking for, and then click **Search**.
 **NOTE:** If you do not have the Service Tag, click **Detect This PC**. The site automatically detects your device, and you can then click **Explore Product Support** to go to the support page for your device. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**.
4. Select the operating system installed on your computer.
5. In the **Category** drop-down list, select **BIOS**.
6. Select the latest version of BIOS, and click **Download** to download the BIOS file for your computer.
7. Create a bootable USB drive. For more information, search [Dell Support Site](#).
8. Copy the BIOS setup program file to the bootable USB drive.
9. Connect the bootable USB drive to the computer that needs the BIOS update.
10. Restart the computer and press **F12**.
11. Select the USB drive from the **One Time Boot Menu**.
12. Type the BIOS setup program filename and press **Enter**.
The **BIOS Update Utility** appears.
13. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the One-Time boot menu

To update the BIOS from the One-Time boot menu, see [Updating the BIOS from the One Time Boot Menu](#) at [Dell Support Site](#).

System and setup password

 **CAUTION:** The password features provide a basic level of security for the data on your computer.

 **CAUTION:** Ensure that your computer is locked when it is not in use. Anyone can access the data that is stored on your computer, when left unattended.

Table 23. System and setup password

Password type	Description
System password	Password that you must enter to boot to your operating system.
Setup password	Password that you must enter to access and change the BIOS settings of your computer.

You can create a system password and a setup password to secure your computer.

 **NOTE:** The System and setup password feature is disabled by default.

Assigning a System Setup password

Prerequisites

You can assign a new System or Admin Password only when the status is set to **Not Set**. To enter BIOS System Setup, press F2 immediately after a power-on or reboot.

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
The **Security** screen is displayed.
3. Select **System/Admin Password** and create a password in the **Enter the new password** field.
Use the following guidelines to create the system password:
 - Password can be up to 32 characters.
 - Password must contain at least one special character: "(! " # \$ % & ' * + , - . / : ; < = > ? @ [\] ^ _ ` { | })")"
 - The password can contain numbers from 0 to 9.
 - The password can contain alphabets A to Z and a to z.
4. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
5. Press Y to save the changes.
The computer restarts.

Deleting or changing an existing system password or setup password

Prerequisites

Ensure that the **Password Status** is Unlocked in the System Setup before attempting to delete or change the existing system password and/or setup password. You cannot delete or change an existing system password or setup password if the **Password Status** is Locked. To enter the System Setup, press F2 immediately after a power-on or reboot.

Steps

1. To enter the **System Setup**, press **F2** immediately after a power-on or reboot.
2. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
The **System Security** screen is displayed.
3. In the **System Security** screen, verify that the **Password Status** is Unlocked.
4. Select **System Password**. Update or delete the existing system password, and press Enter or Tab.
5. Select **Setup Password**. Update or delete the existing setup password, and press Enter or Tab.
 **NOTE:** If you change the system password and/or setup password, reenter the new password when prompted. If you delete the system password and/or setup password, confirm the deletion when prompted.
6. Press Esc. A message prompts you to save the changes.
7. Press Y to save the changes and exit from **System Setup**.
The computer restarts.

Clearing system and setup passwords

About this task

To clear the system or setup passwords, contact Dell technical support as described at [Contact Support](#).

 **NOTE:** For information about how to reset Windows or application passwords, see the documentation accompanying Windows or your application.

Clearing CMOS settings

About this task

 **CAUTION:** Clearing CMOS settings resets the BIOS settings on your computer.

Steps

1. Remove the [side cover](#).
2. Remove the [coin-cell battery](#).
3. Wait for one minute.
4. Replace the [coin-cell battery](#).
5. Replace the [side cover](#).

Troubleshooting

Dell SupportAssist Pre-boot System Performance Check diagnostics

About this task

SupportAssist diagnostics (also known as system diagnostics) performs a complete check of your hardware. The Dell SupportAssist Pre-boot System Performance Check diagnostics is embedded within the BIOS and launched by the BIOS internally. The embedded system diagnostics provides options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode.
- Repeat the tests.
- Display or save test results.
- Run thorough tests to add more options and obtain details about any failed devices.
- View status messages that inform you when the tests are completed successfully.
- View error messages that inform you of problems encountered during testing.

 **NOTE:** Some tests for specific devices require user interaction. Always ensure that you are present at the computer when the diagnostic tests are performed.

For more information, see [How to Run Dell Preboot Diagnostics and Hardware Tests on Your Dell Computer](#).

Running the SupportAssist Pre-Boot System Performance Check

Steps

1. Turn on your computer.
2. As the computer boots, press the F12 key.
3. On the boot menu screen, select **Diagnostics**.
The quick diagnostic test begins.

 **NOTE:** For more information about running the SupportAssist Pre-Boot System Performance Check on a specific device, see [Dell Support Site](#).

4. If there are any issues, error codes are displayed.
Note the error code and validation number and contact Dell.

Power-Supply Unit Built-in Self-Test

Built-in Self-Test (BIST) helps determine if the power-supply unit is working. To run self-test diagnostics on the power-supply unit of a desktop or all-in-one computer, search in the Knowledge Base Resource at [Dell Support Site](#).

System-diagnostic lights

This section lists the system-diagnostic lights of your Dell Pro Micro Thin Client Q9M1260.

The following table shows different Service LED blinking patterns and associated problems. The diagnostic light codes consist of a two-digit number, and the digits are separated by a comma. The number stands for a blinking pattern; the first digit shows the number of blinks in amber color, and the second digit shows the number of blinks in white color. The Service LED blinks in the following manner:

- The Service LED blinks the number of times equal to the value of the first digit and turns off with a short pause.

- After that, the Service LED blinks the number of times equal to the value of the second digit.
- The Service LED turns off again with a longer pause.
- After the second pause, the blinking pattern will be repeated.

Table 24. Diagnostic light codes

Diagnostic light codes (Amber, White)	Problem description
1,1	TPM Detection Failure
1,2	Unrecoverable SPI Flash Failure
1,5	EC unable to program i-Fuse
1,6	Generic catch-all for ungraceful EC code flow errors
1,7	Non-RPMC Flash on Boot Guard fused system
1,8	Chipset "Catastrophic Error" signal has tripped
2,1	CPU configuration or CPU failure
2,2	System board: BIOS or Read-Only Memory (ROM) failure
2,3	No memory, or Random-Access Memory (RAM) detected
2,4	Memory, or Random-Access Memory (RAM) failure
2,5	Invalid memory module
2,6	System board/Chipset Error
2,7	LCD failure SBIOS message
2,8	Display power-rail failure on the system board
3,1	CMOS battery failure
3,2	PCI of Video card/chip failure
3,3	Recovery image not found
3,4	Recovery image found but invalid
3,5	EC power-rail error
3,6	Flash corruption detected by SBIOS
3,7	Timeout waiting on ME to reply to HECI message
4,1	Memory DIMM power rail failure
4,2	CPU Power cable connection issue

Recovering the operating system

When your computer is unable to boot to the operating system even after repeated attempts, it automatically starts Dell SupportAssist OS Recovery.

Dell SupportAssist OS Recovery is a standalone tool that is preinstalled on Dell computers running the Windows operating system. It consists of tools to diagnose and troubleshoot issues that may occur before your computer boots to the operating system. It enables you to diagnose hardware issues, repair your computer, back up your files, and restore your computer to its factory state.

You can also download it from the Dell Support website to troubleshoot and fix your computer when it fails to boot into the primary operating system due to software or hardware failures.

For more information about the Dell SupportAssist OS Recovery, see *Dell SupportAssist OS Recovery User's Guide* at [Serviceability Tools at the Dell Support Site](#). Click **SupportAssist** and then click **SupportAssist OS Recovery**.

 **NOTE:** Windows 11 IoT Enterprise LTSC 2024 and Dell ThinOS 10 do not support Dell SupportAssist. For more information about recovering ThinOS 10, see [Recovery mode using R-Key](#).

Real-Time Clock (RTC Reset)

The Real-Time Clock (RTC) reset function enables you or the service technician to recover Dell computers from No POST/No Power/No Boot situations.

Start the RTC reset with the computer powered off and connected to AC power. Press and hold the power button for twenty-five seconds. The computer RTC Reset occurs after you release the power button.

Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell provides multiple options for recovering the Windows operating system on your Dell computer. For more information, see [Dell Windows Backup Media and Recovery Options](#).

Network power cycle

About this task

If your computer is unable to access the Internet due to network connectivity issues, reset your network devices by performing the following steps:

Steps

1. Turn off the computer.
2. Turn off the modem.
 **NOTE:** Some Internet service providers (ISPs) provide a modem and router combo device.
3. Turn off the wireless router.
4. Wait for 30 seconds.
5. Turn on the wireless router.
6. Turn on the modem.
7. Turn on the computer.

Getting help and contacting Dell

Self-help resources

You can get information and help on Dell products and services using these self-help resources:

Table 25. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	Dell Site
Contact Support	In Windows search, type <code>Contact Support</code> , and press Enter.
Online help for operating system	Windows Support Site Dell ThinOS Windows IoT Enterprise
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals, and documents.	Your Dell computer is uniquely identified using a Service Tag or Express Service Code. To view relevant support resources for your Dell computer, enter the Service Tag or Express Service Code at Dell Support Site. For more information about how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles	1. Go to Dell Support Site. 2. On the menu bar at the top of the Support page, select Support > Support Library. 3. In the Search field on the Support Library page, type the keyword, topic, or model number, and then click or tap the search icon to view the related articles.

Contacting Dell

To contact Dell for sales, technical support, or customer service issues, see [Contact Support at Dell Support Site](#).

 **NOTE:** Availability of the services may vary depending on the country or region, and product.

 **NOTE:** If you do not have an active Internet connection, you can find contact information in your purchase invoice, packing slip, bill, or Dell product catalog.

Revision history

Tracks all updates that are made to the document. It typically includes the date of change, version number, and a brief description of the modification. This log helps maintain transparency, accountability, and a clear timeline of progress.

Table 26. Revision history

Revision	Date	Description
A02	July 2026	Updated content for compliance with accessibility guidelines.
A01	April 2026	Added note in system board - The power button is soldered to the system board.
A00	March 2026	Original publish date.