Latitude 7230 Rugged Extreme Tablet

Service Manual

Regulatory Model: T06H
Regulatory Type: T06H001
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DELL Technologies

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.

Contents

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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 included 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 the Regulatory Compliance home page at www.dell.com/regulatory_compliance.

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

CAUTION: You should only perform troubleshooting and repairs as authorized or directed by the Dell technical assistance team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. See the safety instructions that is shipped with the product or at www.dell.com/regulatory_compliance.

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: 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 ports and the connectors are correctly oriented and aligned.

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

CAUTION: Exercise caution when handling Lithium-ion batteries in laptops. Swollen batteries should not be used and should be replaced and disposed properly.

NOTE: The color of your computer and certain components may appear differently than shown in this document.

Installation and operating instructions

An installation manual is provided with each unit to direct the user on proper installation and operation of the device.

NOTE: Warning and Safety instructions are provided in English and French for Canadian Certification.

NOTE: Suitable for use in class I, division 2, groups A, B, C and D hazardous locations, or nonhazardous locations only.

WARNING: Explosion hazard - Do not disconnect equipment (rechargeable Lithium-ion battery) unless power has been switched off or the area is known to be non-hazardous.

WARNING: Explosion hazard - Substitution of any component can impair suitability for class I, division 2.

NOTE: Ambient temperature: - Range as under Ratings.

NOTE: Temperature code - T4A

WARNING: Explosion hazard - Do not use these external connections in a hazardous location: POGO ports, smart card reader, SIM-card slot, mini-RS232 port, USB 3.0 port, DC-in Jack, audio jack, mini-HDMI port, microSD-card reader, antenna pass-through port, or USB type-C port.

WARNING: Explosion hazard - The tablet is to be only powered from the battery pack while in hazardous locations. The power adapter is not certified for use in hazardous locations and not to be used in hazardous locations.

WARNING: Explosion hazard - The battery must only be changed or charged in an area free of ignitable concentrations.

WARNING: Explosion hazard - Do not remove or replace the microSD-card and/or battery pack while the circuit is live unless the area is free of ignitible concentrations.

NOTE: To avoid risk of fire or explosion, replace battery manufactured by Simplo Technology Co., Ltd. only. Use of any another battery can cause risk of fire or explosion.

Before working inside your tablet

About this task

To avoid damaging your tablet, perform the following steps before you begin working inside the tablet:

Steps

1. Ensure that you follow the Safety Instruction.
2. Ensure that your work surface is flat and clean to prevent the tablet cover from being scratched.
3. Turn off your tablet.
4. If the tablet is connected to a docking device (docked) such as the mobile keyboard or a docking station, undock it.
5. Disconnect your tablet and all attached devices from their electrical outlets.
6. Press and hold the power button while the tablet is unplugged to ground the system board.

   NOTE: To avoid electrostatic discharge, ground yourself by using a wrist grounding strap or by periodically touching an unpainted metal surface simultaneously as touching a connector on the back of the tablet.

7. Remove any media card and optical disc from your tablet, if applicable.
8. Enter the service mode, if you are able to power on your computer.

   Service Mode

   Service Mode is used to cut-off power, without disconnecting battery cable from system board prior conducting repairs in the computer.

   CAUTION: If you are unable to turn on the computer to put it into Service Mode or the computer does not support Service Mode then proceed to disconnect the battery cable. To disconnect the battery cable, follow the steps in Removing the back-cover assembly.

   NOTE: Ensure that your computer is shut down and the AC adapter is disconnected.

   a. Hold **<B>** key on the keyboard and press the power button for 3 seconds or until the Dell logo appears on the screen.
   b. Press any key to continue.
   c. If the AC adapter is not disconnected, a message prompting you to remove the AC adapter appears on the screen. Remove the AC adapter and then press any key to continue the **Service Mode** procedure. The **Service Mode** procedure automatically skips the following step if the **Owner Tag** of the computer is not set up in advance by the user.
   d. When the ready-to-proceed message appears on the screen, press any key to proceed. The computer emits three short beeps and shuts down immediately.
   e. Once the computer shuts down, it has successfully entered Service Mode.

NOTE: If you are unable to power on your computer or unable to enter service mode skip this process.

Safety precautions

The safety precautions chapter details the primary steps to be taken before performing any disassembly instructions.

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

- Turn off the system and all attached peripherals.
- Disconnect the system and all attached peripherals from AC power.
- Disconnect all network cables, telephone, and telecommunications lines from the system.
- Use an ESD field service kit when working inside any tablet to avoid electrostatic discharge (ESD) damage.
- After removing any system component, carefully place the removed component on an anti-static mat.
- Wear shoes with non-conductive rubber soles to reduce the chance of getting electrocuted.

Standby power

Dell products with standby power must be unplugged before you open the case. Systems that incorporate standby power are essentially powered while turned off. The internal power enables the system to be remotely turned on (wake on LAN) and suspended into a sleep mode and has other advanced power management features.

Unplugging, pressing and holding the power button for 15 seconds should discharge 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 through the use of 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 non-metal surface. The wrist strap should be secure and in full contact with your skin, and ensure that you remove all jewelry such as watches, bracelets, or rings prior to bonding 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 DIMMs, and system boards. Very slight charges 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.

Due to the increased density of semiconductors used in recent Dell products, the sensitivity to static damage is now higher than in previous Dell products. For this reason, some previously approved methods of handling parts are no longer applicable.

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 DIMM that has received a static shock and immediately generates a "No POST/No Video" symptom with a beep code 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 DIMM receives a static shock, but the tracing is merely weakened and does not immediately produce outward symptoms 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, etc.

The more difficult type of damage to recognize and troubleshoot is the intermittent (also called latent or "walking wounded") failure.

Perform the following steps to prevent ESD damage:

- Use a wired ESD wrist strap that is properly grounded. The use of wireless anti-static straps is no longer allowed; they 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, ensure that you discharge static electricity from your body.
- 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.

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 mat and to any bare metal on the system being worked on. Once deployed properly, service parts can be removed from the ESD bag and placed directly on the mat. ESD-sensitive items are safe in your hand, on the ESD mat, in the system, or inside a bag.
- **Wrist Strap and Bonding Wire** – The wrist strap and bonding wire can be either directly connected between your wrist and bare metal on the hardware if the ESD mat is not required, or connected to the anti-static mat to protect hardware that is temporarily placed on the mat. The physical connection of the wrist strap and bonding wire between your skin, the ESD mat, and the hardware is known as bonding. Use only Field Service kits with a wrist strap, mat, and bonding wire. Never use wireless wrist straps. Always be aware 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 of an ESD strap are prone to damage over time. When using an unmonitored kit, it is a best practice to regularly test the strap prior to each service call, and at a minimum, test once per week. A wrist strap tester is the best method for doing this test. If you do not have your own wrist strap tester, check with your regional office to find out if they have one. To perform the test, plug the wrist-strap's bonding-wire into the tester while it is strapped to your wrist and push the button to test. A green LED is lit if the test is successful; a red LED is lit and an alarm sounds if the test fails.
- **Insulator Elements** – It is critical to keep ESD sensitive devices, such as plastic heat sink casings, away from internal parts that are insulators and often highly charged.
- **Working Environment** – Before deploying the ESD Field Service kit, assess the situation at the customer location. For example, deploying the kit for a server environment is different than for a desktop or portable environment. Servers are typically installed in a rack within a data center; desktops or portables 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 system 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 part 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 ESD mat, in the system, or inside an anti-static bag.
- **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.

ESD protection summary

It is recommended to use the traditional wired ESD grounding wrist strap and protective anti-static mat at all times when servicing Dell products. In addition, it is critical to keep sensitive parts separate from all insulator parts while performing service and that they use anti-static bags for transporting sensitive components.

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.

After working inside your tablet

About this task

After you complete any replacement procedure, ensure that you connect external devices, cards, and cables before turning on your tablet.

CAUTION: To avoid damage to the tablet, use only the battery that is designed for this particular Dell tablet. Do not use batteries that are designed for other Dell tablets.

Steps

1. Connect any external devices, such as a mobile keyboard or a docking station, and replace any media card that you removed before working on your tablet.
2. Connect your tablet and all attached devices to their electrical outlets.

   NOTE: To exit service mode, ensure to connect the AC adapter to the power-adapter port on your computer.

3. Press the power button to turn on the tablet. Your tablet will automatically return to normal functioning mode.

BitLocker

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress, and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system reinstall. For more information about this subject, see Knowledge Article: 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

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Removing and installing components

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

Recommended tools

The procedures in this document may require the following tools:

- Phillips screwdriver #0
- Phillips screwdriver #1
- Phillips screwdriver #2
- Torx 8 screwdriver
- Plastic scribe

Screw list

NOTE: When removing screws from a component, it is recommended to note the screw type, 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 with the configuration ordered.

Table 1. Screw list

Component	Screw type	Quantity	Screw image
Handle	M3.5x15	2	
Back-cover assembly	M2x3 M2.5x8 (Torx 8) M2x5	2 19 1	
M.2 solid-state drive	M2x5 M2x3	1 1	
Wireless card	M2x3	1	

Table 1. Screw list (continued)

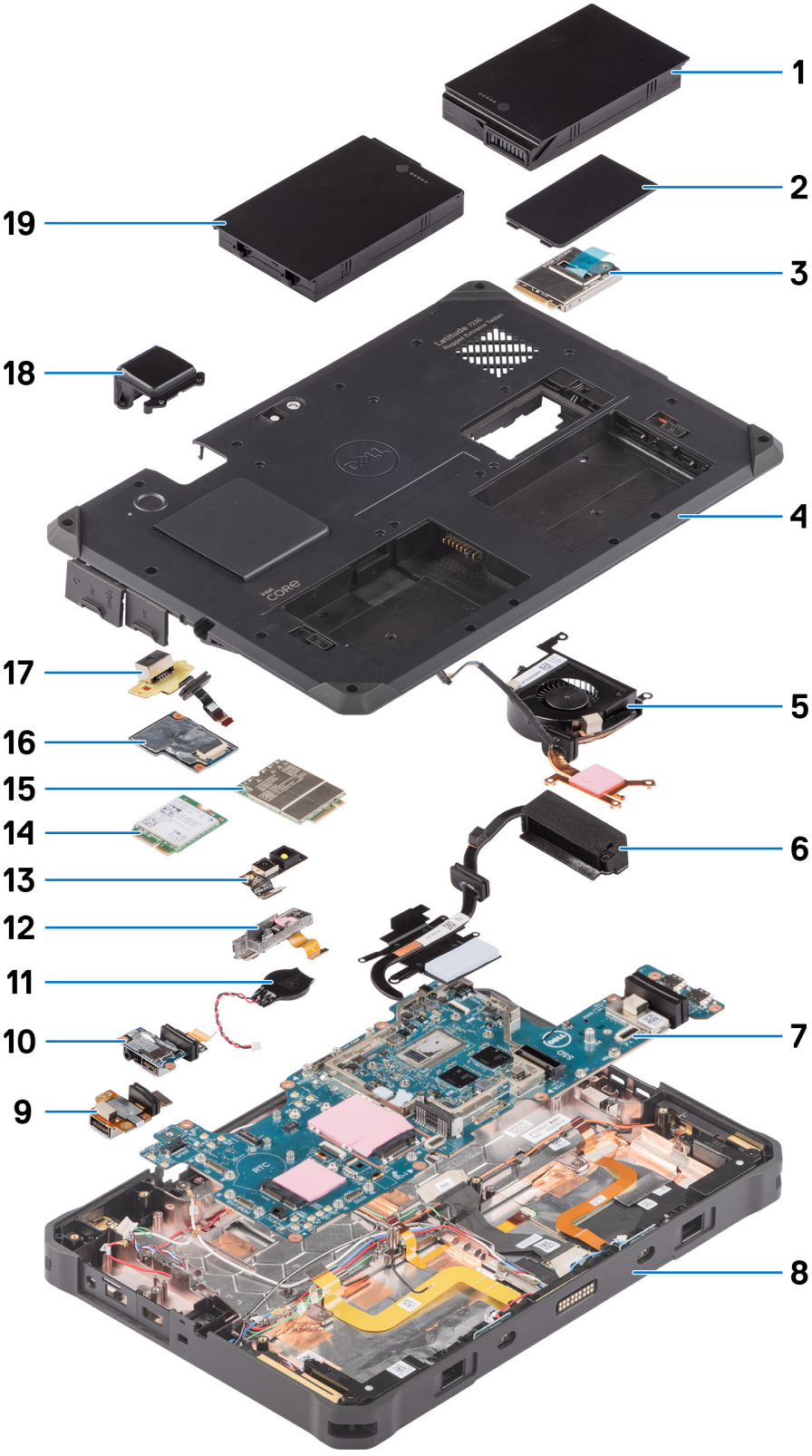
Component	Screw type	Quantity	Screw image
WWAN card	M2x3	3	
I/O daughter-board	M2x3 M2x5	2 4	 
USB/HDMI port	M2x3 M2x5	2 1	 
USB-port assembly	M2x3 M2x5 M2.5x4	6 4	  
Mini-serial RS232 port assembly	M2x3 M2x5	4 4	 
RJ45-port assembly	M2x3 M2x5	2 4	 
Blank top-cover	M2x5	4	
USB daughter-board	M2x3 M1x2.65	2 2	 
Mini-serial RS232 daughter-board	M2x3 M1x2.65	2 2	 
RJ45 daughter-board	M1x2.65	2	
Decoder daughter-board	M1x2.65	2	
World-facing camera	M2x3	5	

Table 1. Screw list (continued)

Component	Screw type	Quantity	Screw image
Heat sink	M2x3	4	
USB/HDMI door	M2x2	2	
Scanner assembly	M2x5	4	
Front camera and microphone assembly	M2x3	2	
Fan with SSD heat-sink assembly	M2x5 M2x2	2 3	 
Docking-FPC bracket	M2x3	2	
USB Type-c bracket	M2x5	3	
SSD release-latch holder	M2x5	1	
System board	M2x3	8	
Mini-serial RS232 bezel	M2x2	1	
Mini-serial RS232 FPC	Hexagonal standoff nuts	4	

Major components of Latitude 7230 Rugged Extreme Tablet

The following image shows the major components of Latitude 7230 Rugged Extreme Tablet.



1. Battery
2. SSD door
3. Solid-state drive
4. Back-cover assembly
5. Fan and SSD heat-sink assembly
6. Heat sink
7. System board
8. Display-panel assembly
9. HDMI/USB port
10. I/O daughter-board

11. Coin-cell battery
12. Front camera and microphone assembly
13. World-facing camera
14. Wireless card
15. WWAN card
16. RJ45 daughter-board
17. RJ45-port assembly
18. Blank top-cover
19. Battery

NOTE: Dell provides a list of components and their part numbers for the original system configuration purchased. These parts are available according to warranty coverages purchased by the customer. Contact your Dell sales representative for purchase options.

Batteries

Lithium-ion battery precautions

CAUTION:

- **Exercise caution when handling Lithium-ion batteries.**
- **Discharge the battery completely before removing it. Disconnect the AC power adapter from the system and operate the computer solely on battery power—the battery is fully discharged when the computer no longer turns on when the power button is pressed.**
- **Do not crush, drop, mutilate, or penetrate the battery with foreign objects.**
- **Do not expose the battery to high temperatures, or disassemble battery packs and cells.**
- **Do not apply pressure to the surface of the battery.**
- **Do not bend the battery.**
- **Do not use tools of any kind to pry on or against the battery.**
- **Ensure any screws during the servicing of this product are not lost or misplaced, to prevent accidental puncture or damage to the battery and other system components.**
- **If the battery gets stuck inside your computer as a result of swelling, do not try to release it as puncturing, bending, or crushing a lithium-ion battery can be dangerous. In such an instance, contact Dell technical support for assistance. See www.dell.com/contactdell.**
- **Always purchase genuine batteries from www.dell.com or authorized Dell partners and resellers.**
- **Swollen batteries should not be used and should be replaced and disposed properly. For guidelines on how to handle and replace swollen Lithium-ion batteries, see Handling swollen Lithium-ion batteries.**

Removing the batteries

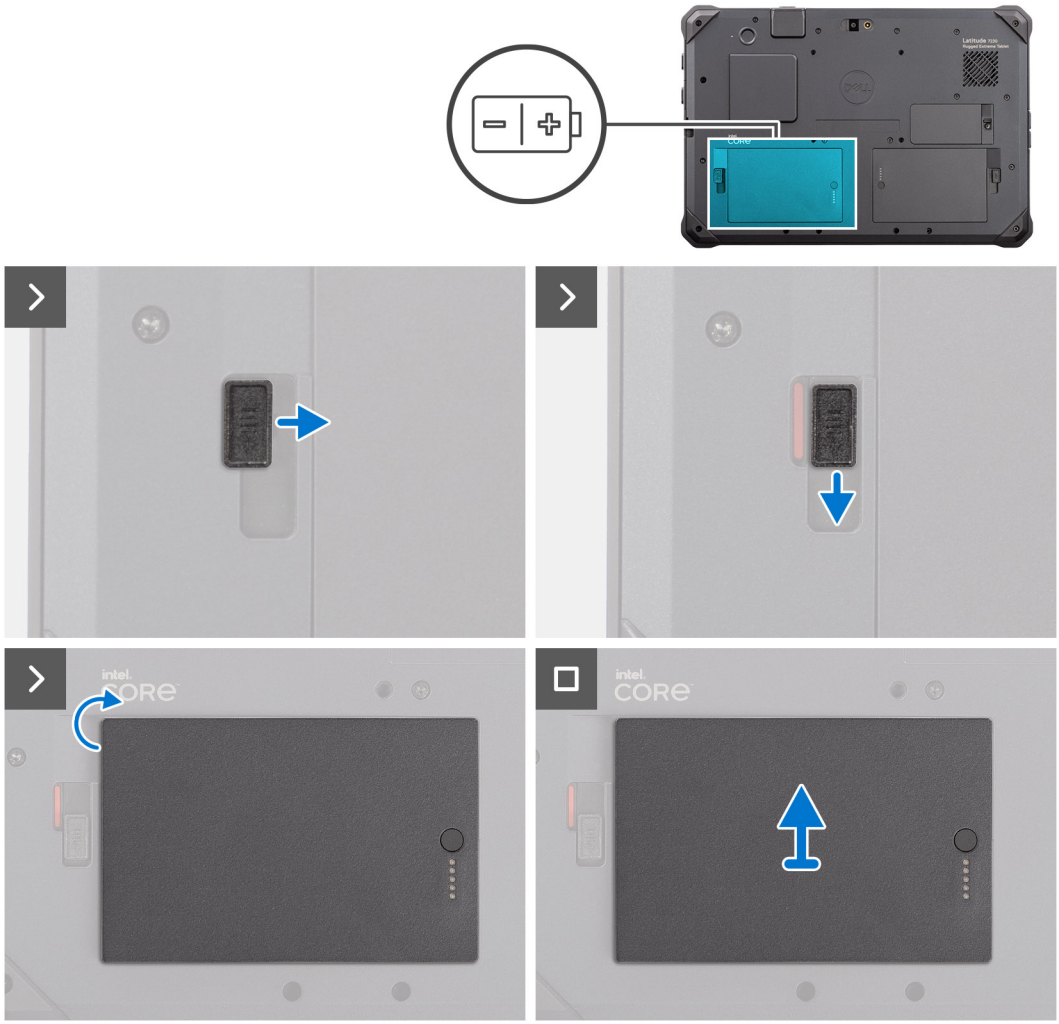
Prerequisites

1. Follow the procedure in before working inside your tablet.

NOTE: This tablet can accommodate two hot-swap capable batteries (Primary and optional). The removal procedure of the primary and optional battery are identical.

About this task

The figure indicates the location of the batteries and provides a visual representation of the removal procedure.



Steps

1. Slide the battery release latch to the unlock position.
2. Slide the latch down to unlock the battery.
3. Lift the battery out of the battery bay.
4. Remove the battery from the tablet.

Installing the batteries

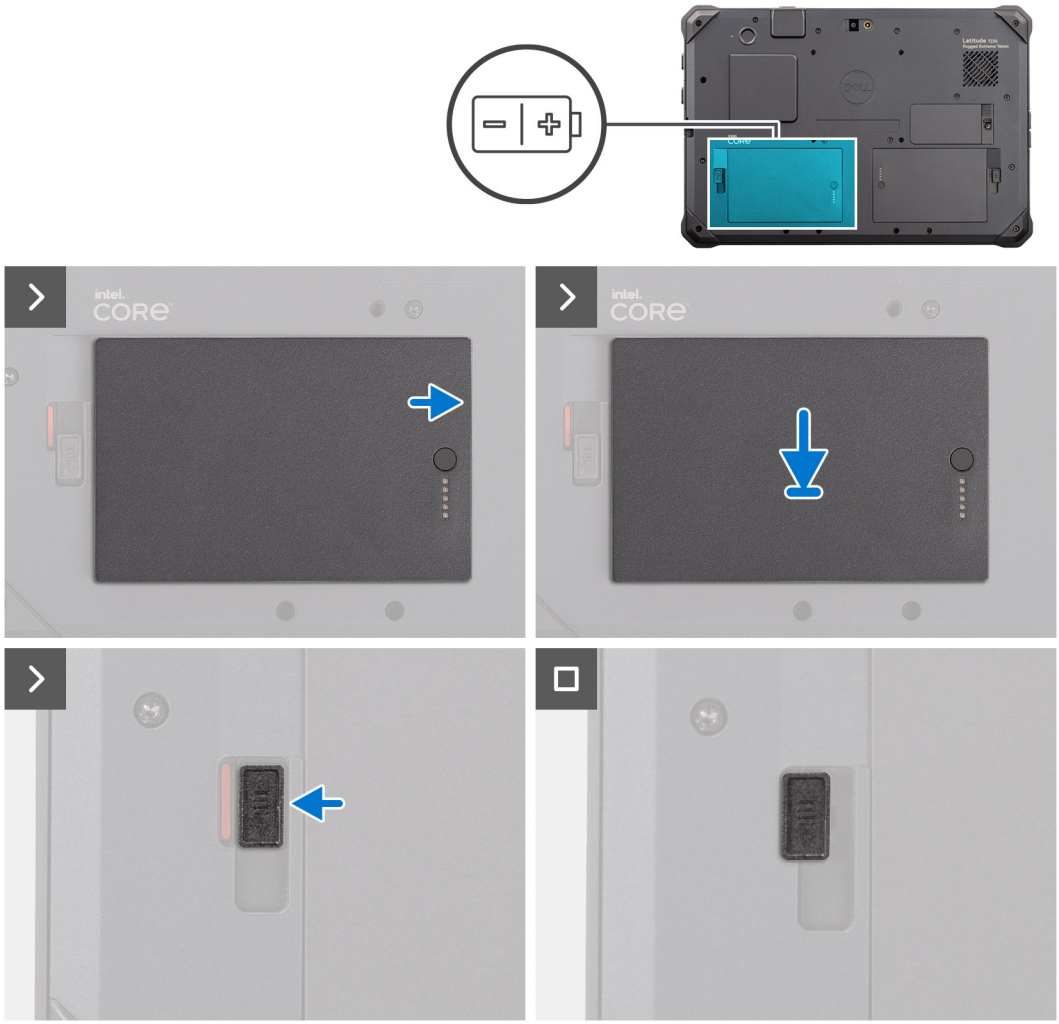
Prerequisites

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

About this task

NOTE: This tablet can accommodate two hot-swap capable batteries (Primary and optional). The installation procedure of the primary and optional battery are identical.

The figure indicates the location of the battery and provides a visual representation of the installation procedure.



Steps

1. Align the pins on the battery with the connector on the tablet.

   NOTE: Ensure that the metal pin of the battery is aligned in place.

2. Place the battery into the battery bay until it clicks into place.
3. Slide the battery latch to the locked state.
4. Ensure that the battery release latch is in the locked state.

Next steps

1. Follow the procedure in after working inside your tablet.

Subscriber Identification Module (SIM) card

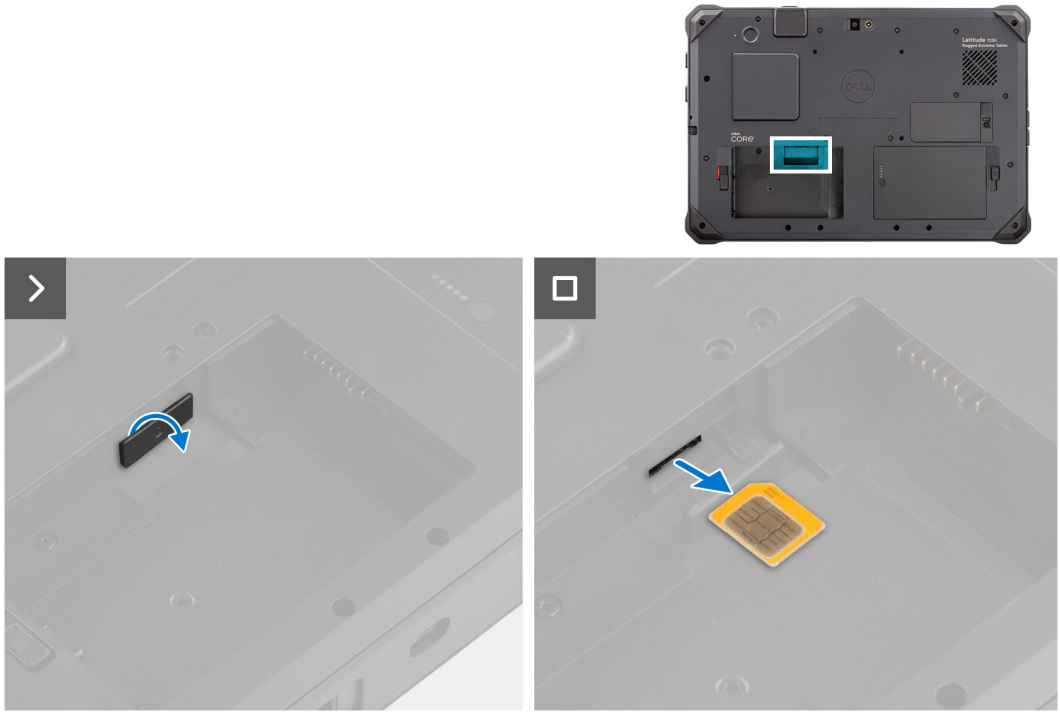
Removing the uSIM

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the batteries.

About this task

The figure indicates the location of the uSIM and provides a visual representation of the removal procedure.



Steps

1. Open the uSIM slot cap.
2. Press the uSIM card, and slide it out of the slot.

   NOTE: Use a flat pointed scribe to ease removing the SIM.

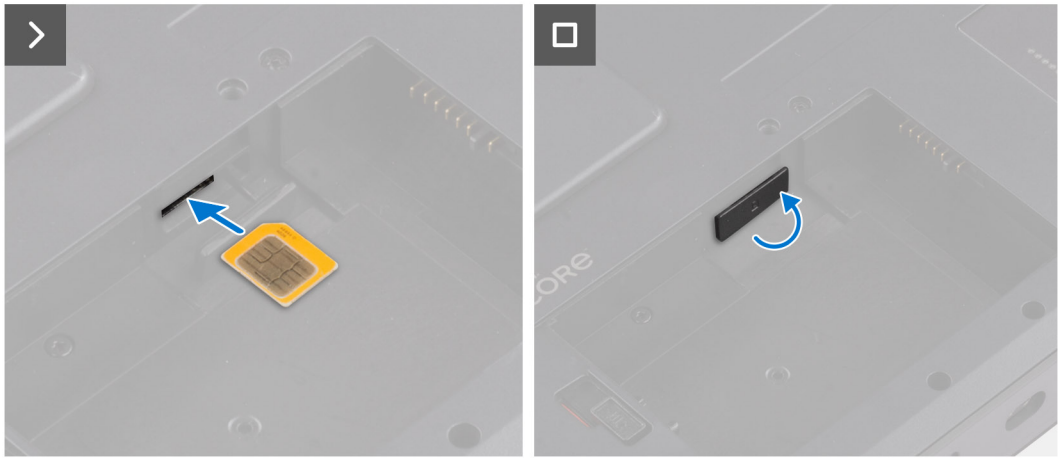
Inserting the uSIM

Prerequisites

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

About this task

The figure indicates the location of the uSIM and provides a visual representation of the installation procedure.



Steps

1. Insert the uSIM card in the slot until it is locked.
2. Close the uSIM slot cap to initial state.

Next steps

1. Install the batteries.
2. Follow the procedure in after working inside your tablet.

Stylus

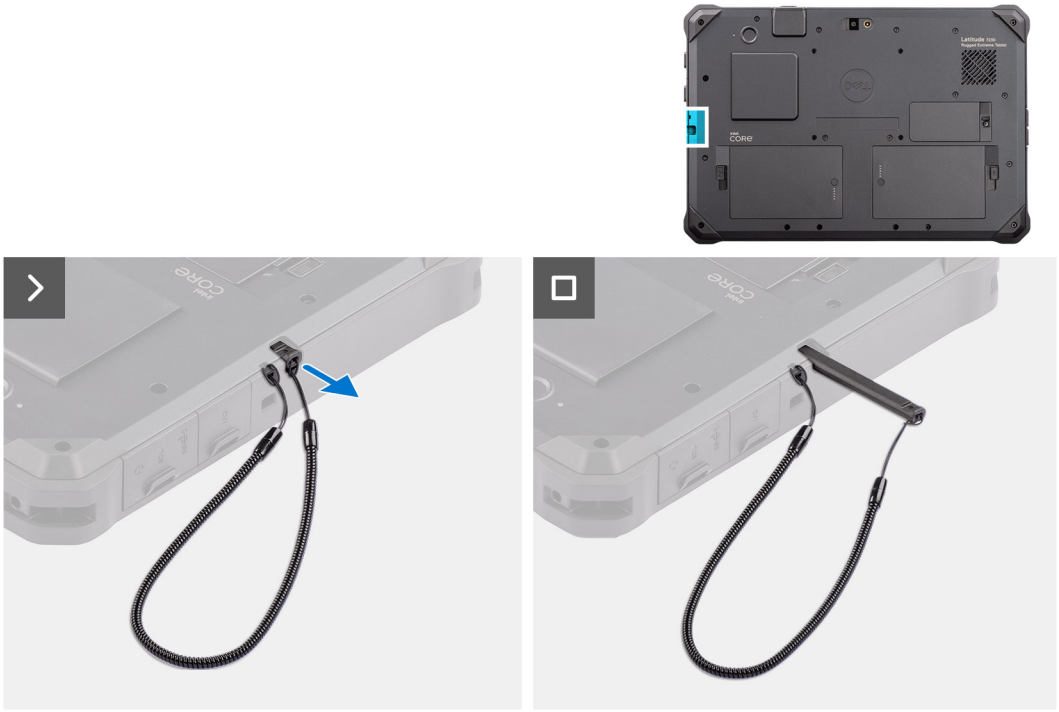
Removing the stylus

Prerequisites

1. Follow the procedure in before working inside your tablet.

About this task

The figure indicates the location of the stylus and provides a visual representation of the removal procedure.



Steps

1. Slide the stylus upward using the groove on the stylus pen.

   NOTE: Avoid pulling the stylus with the stretchable thread.

2. Loosen the knot and slip the stylus through the hole to remove the tether from the chassis.

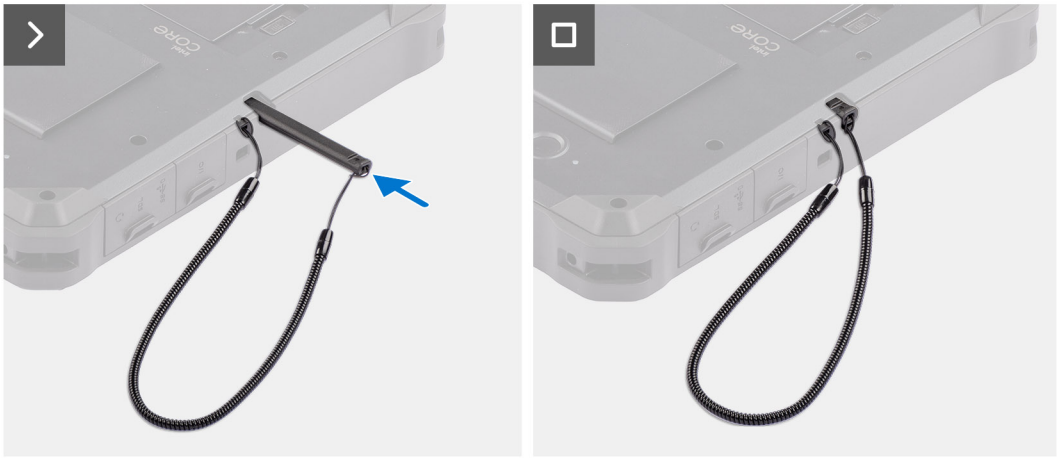
Installing the stylus

Prerequisites

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

About this task

The figure indicates the location of the stylus and provides a visual representation of the installation procedure.



Steps

1. Slip the stylus through the hole to create a knot that holds the tether to the chassis.
2. Insert the stylus into the slot on the tablet.

   NOTE: When not in use, avoid hanging the stylus that is detached from its groove.

Next steps

1. Follow the procedure in after working inside your tablet.

Handle

Removing the handle

Prerequisites

1. Follow the procedure in before working inside your tablet.

About this task

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

2x
M3.5x15

Steps

1. Remove the two (M3.5x15) screws that secure the handle to the chassis.
2. Remove the handle from the tablet.

Installing the handle

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 handle and provides a visual representation of the installation procedure.

2x
M3.5x15

Steps

1. Align the screw holes on the handle with the screw holes on the tablet.
2. Replace the two screws (M3.5x15) to secure the handle to the chassis .

Next steps

1. Follow the procedure in after working inside your tablet.

Back-cover assembly

Removing the base-cover assembly

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.

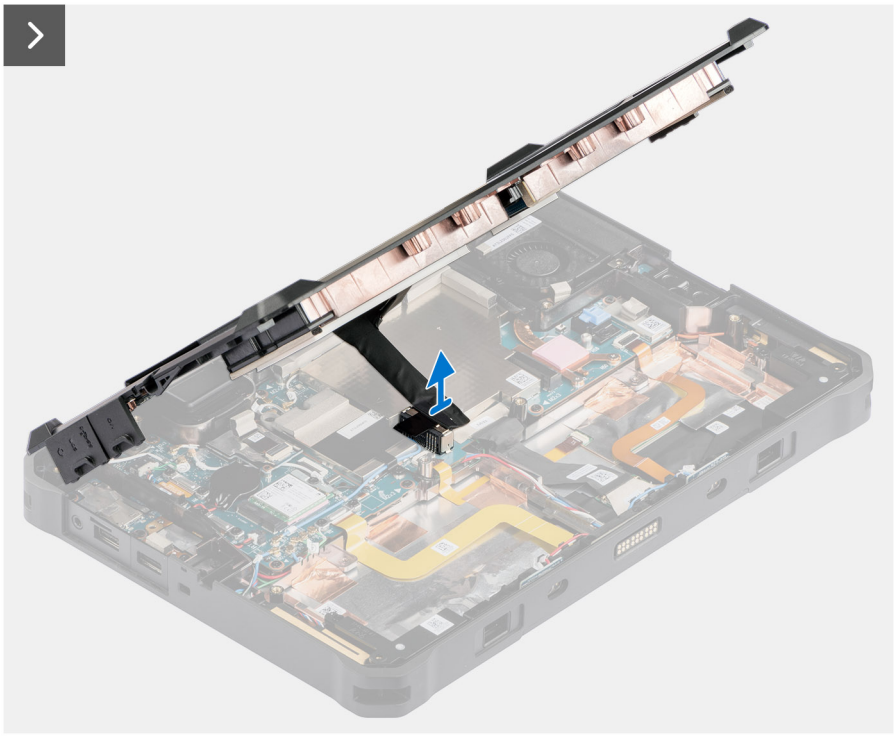
About this task

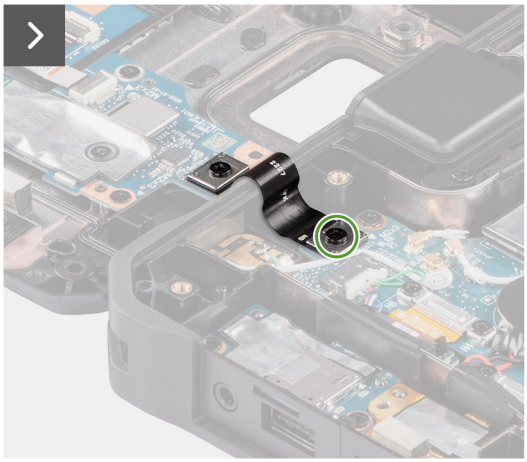
The figure indicates the location of the base-cover assembly and provides a visual representation of the removal procedure.

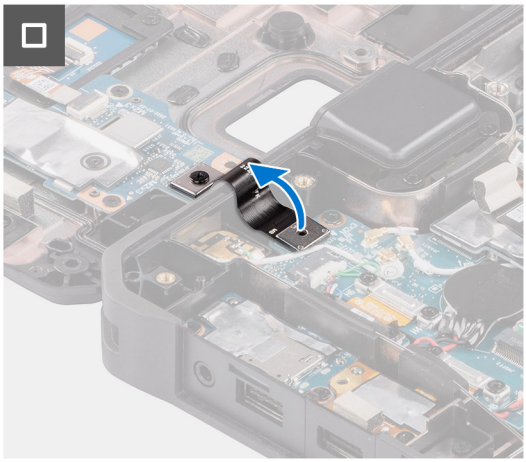
19x M2.5x8

2x M2x3

1x M2x5







Steps

NOTE: For models shipped with an M.2 SSD door, do not remove the M.2 SSD door in order to remove the back-cover assembly.

1. Place the tablet on a flat and clean surface.
2. Remove the two screws (M2x3) and 19 screws (M2.5x8—Torx 8) that secure the base-cover assembly in place.
3. Using a plastic scribe, pry the back-cover assembly from its bottom side.
4. Carefully lift the bottom side of the base-cover assembly and open it 45° angle.

   CAUTION: Do not open the back-cover assembly beyond 90° angle as it damages the battery cable. The battery cable must be disconnected in order to remove the back-cover assembly.

5. Disconnect the battery cable from the connector on the system board.
6. Flip over the back-cover assembly and place it on a flat surface.
7. Remove the single screw (M2x5) that secures the power-button daughter board FPC to the system board.

   CAUTION: Do not pull the back-cover assembly away from the tablet while the power-button daughter board FPC is still connected to the system board.

8. Disconnect the power-button daughter board FPC from the connector system board.

9. Remove the back-cover assembly away from the tablet.

Installing the base-cover assembly

Prerequisites

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

About this task

The figure indicates the location of the component and provides a visual representation of the installation procedure.

Steps

1. Place the tablet on a flat and clean surface.
2. Connect the power-button daughter board FPC to the connector on the system board.
3. Replace the single screw (M2x5) to secure the power-button daughter board FPC to the system board.
4. Carefully close the base-cover assembly to its 45° angle.
5. Connect the battery cable to the connector on the system board.
6. Place the base-cover assembly and press the edges of the base-cover assembly to secure in to the tablet.
7. Replace the two screws (M2x3) and 19 screws (M2.5x8—Torx 8) to secure the base-cover assembly in place.

Next steps

1. Install the handle (for the models shipped with a handle).
2. Install the stylus.

3. Install the batteries.
4. Follow the procedure in after working inside your tablet.

M.2 solid-state drive

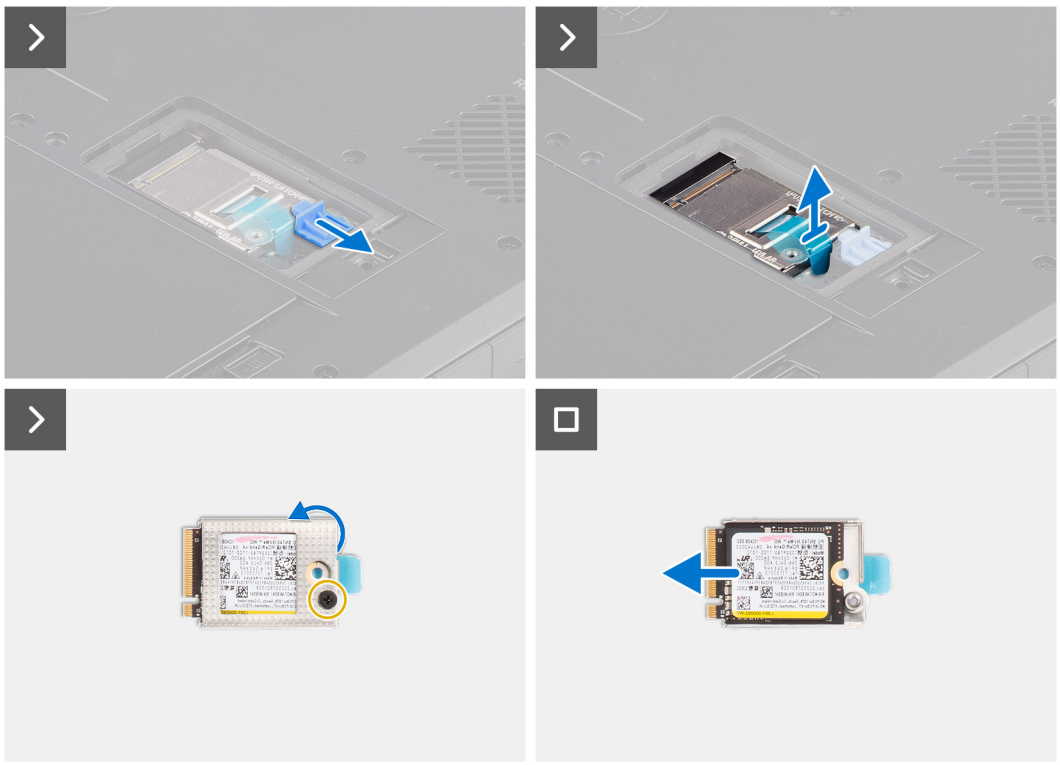
Removing the M.2 2230 solid-state drive

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the handle (for models shipped with/without an M.2 SSD door).
3. Remove the batteries (for models shipped without an M.2 SSD door).
4. Remove the back-cover assembly (for models shipped without an M.2 SSD door).

About this task

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



Steps

1. For models shipped with an M.2 SSD door, remove the single screw (M2x2) that locks the SSD door release latch.
2. For models shipped with an M.2 SSD door, slide down and hold the SSD-door release latch and then remove the SSD door from the tablet.
3. Slide the SSD release latch into the unlock position.
4. Remove the single screw (M2x3) that secures the solid-state drive assembly in place.
5. Pull the tab to remove the solid-state drive assembly from the tablet.
6. Flip the solid-state drive assembly and remove the single screw (M2x3) that secures the SSD cap to the SSD carrier.
7. Remove the SSD cap from the SSD carrier.
8. Remove the solid-state drive from the SSD carrier.

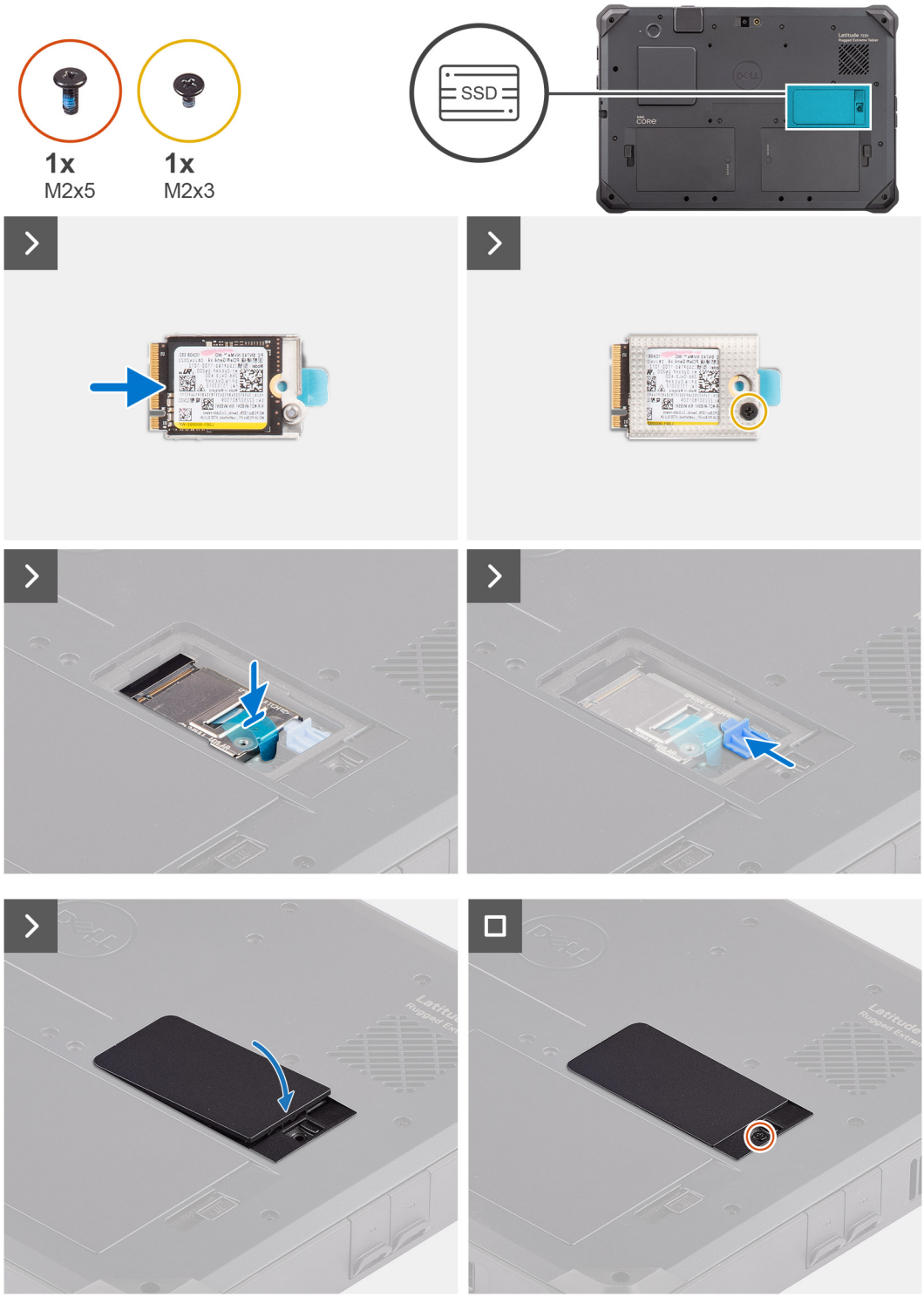
Installing the M.2 2230 solid-state drive

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 and place the solid-state drive on the SSD carrier.
2. Align the screw hole on the SSD cap with screw hole on the SSD carrier.
3. Replace the single screw (M2x3) to secure the SSD cap to the SSD carrier and flip the solid-state drive assembly.
4. Using the pull tab, align the notch on the solid-state drive with the tab on the M.2 card slot.
5. Remove the single screw (M2x3) that secures the solid-state drive assembly in place.
6. Slide the SSD release latch into the lock position.

7. For models shipped with an M.2 SSD door, slide down and hold the SSD-door release latch and then place the SSD door from the tablet.
8. For models shipped with an M.2 SSD door, replace the single screw (M2x2) to lock the SSD door release latch.

Next steps

1. Install the back-cover assembly (for models shipped without an M.2 SSD door).
2. Remove the batteries (for models shipped without an M.2 SSD door).
3. Remove the handle (for models shipped with/without an M.2 SSD door).
4. Follow the procedure in after working inside your tablet.
5. Verify if the storage device is installed correctly:
   a. Turn on or restart your computer.
   b. Press F2 when the Dell logo is displayed on the screen to enter the system setup (BIOS) program.
      NOTE: A list of storage devices are displayed under the **System Information** in the **General** group.
   c. If you have replaced the primary storage device that had the operating system installed, see **Reinstall Windows 10 to the Dell factory image using recovery media** in the knowledge base article 000176966.

Wireless card

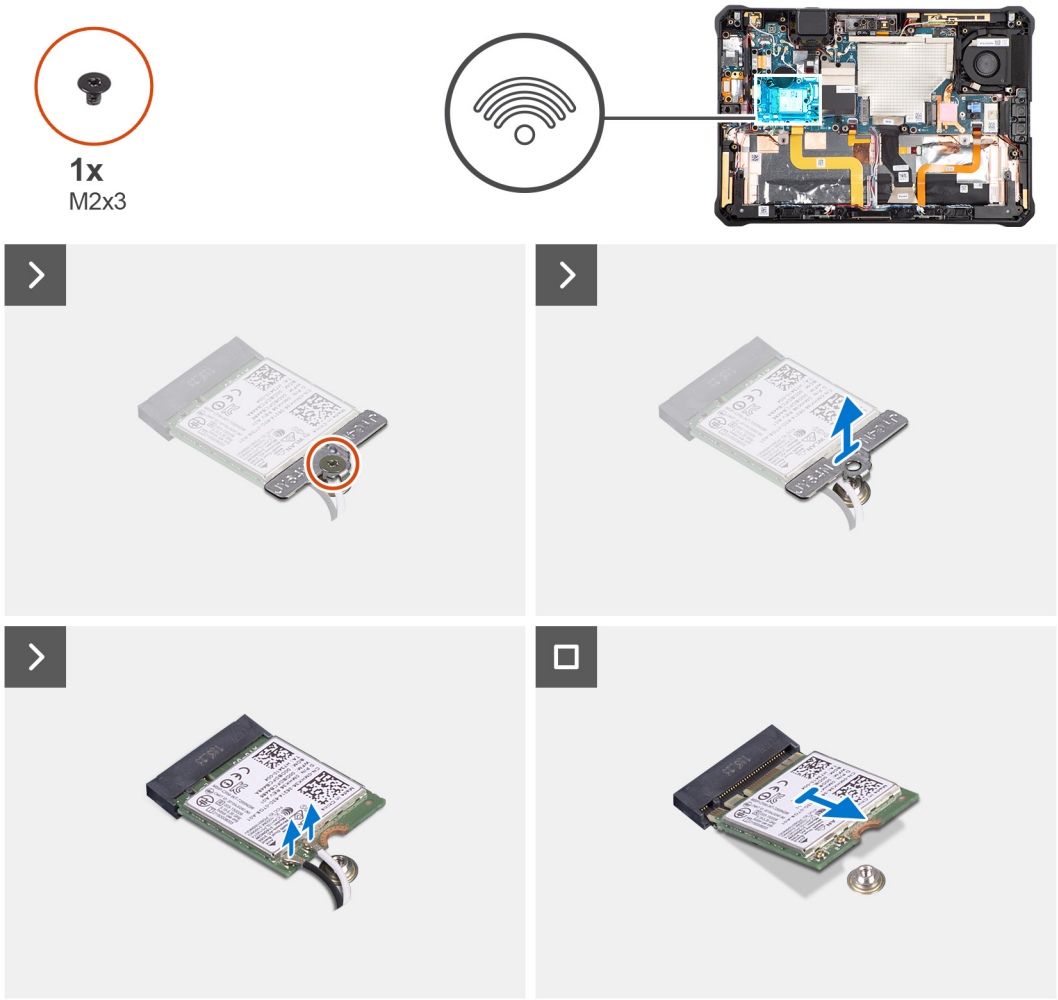
Removing the wireless card

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

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



Steps

1. Remove the screw (M2x3) that secures the wireless-card bracket to the wireless card.
2. 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.

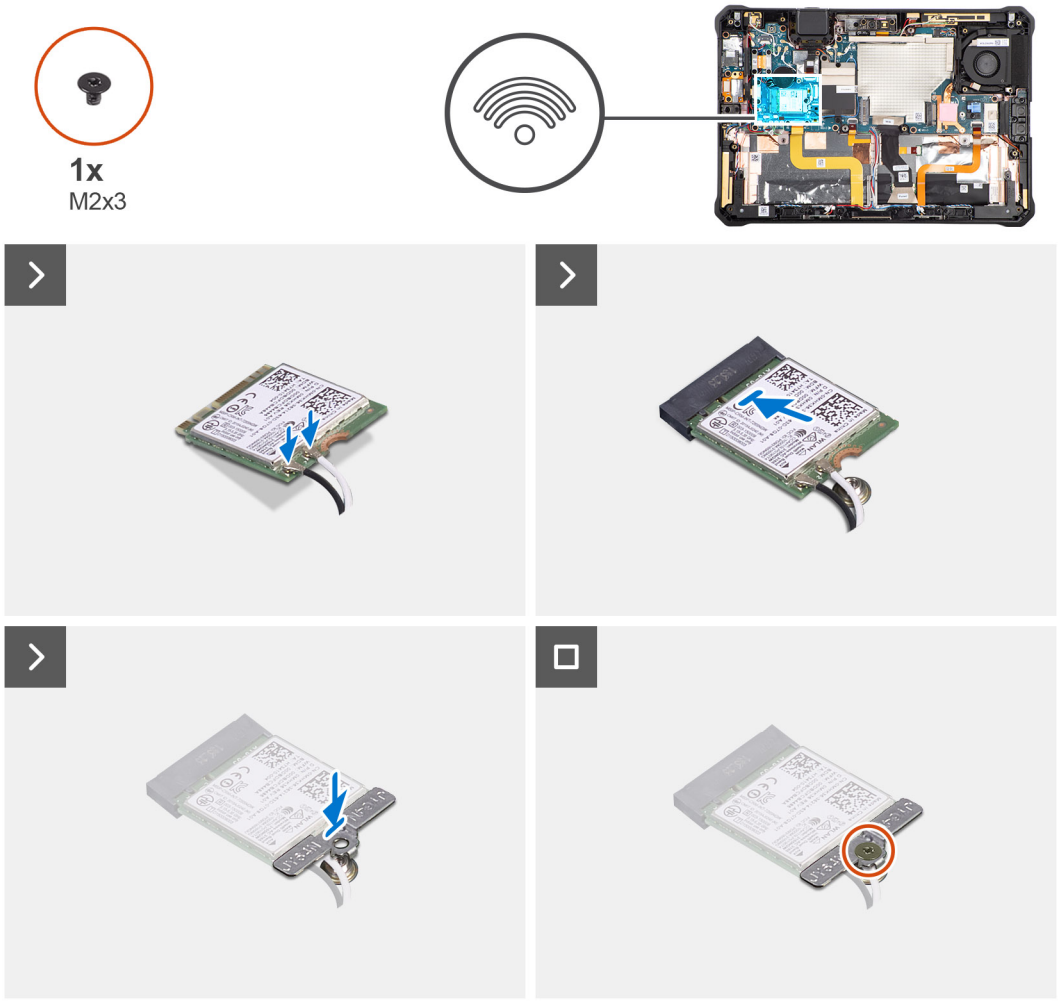
Installing the wireless card

Prerequisites

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

About this task

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



Steps

1. Connect the antenna cables to the wireless card.

Table 2. Antenna-cable color scheme

Antenna	Cable Color
WLAN Auxiliary	Black
WLAN Main	White

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

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

WWAN card

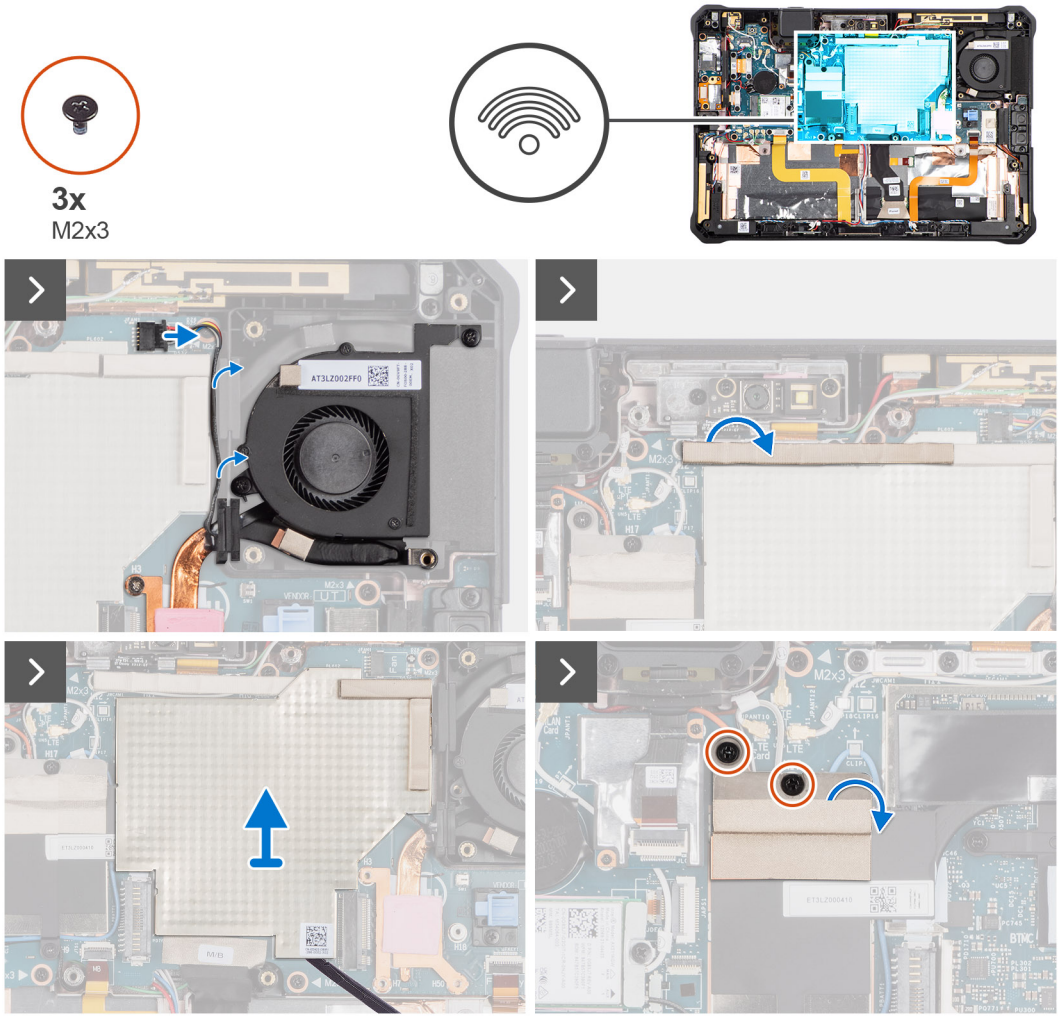
Removing the WWAN card

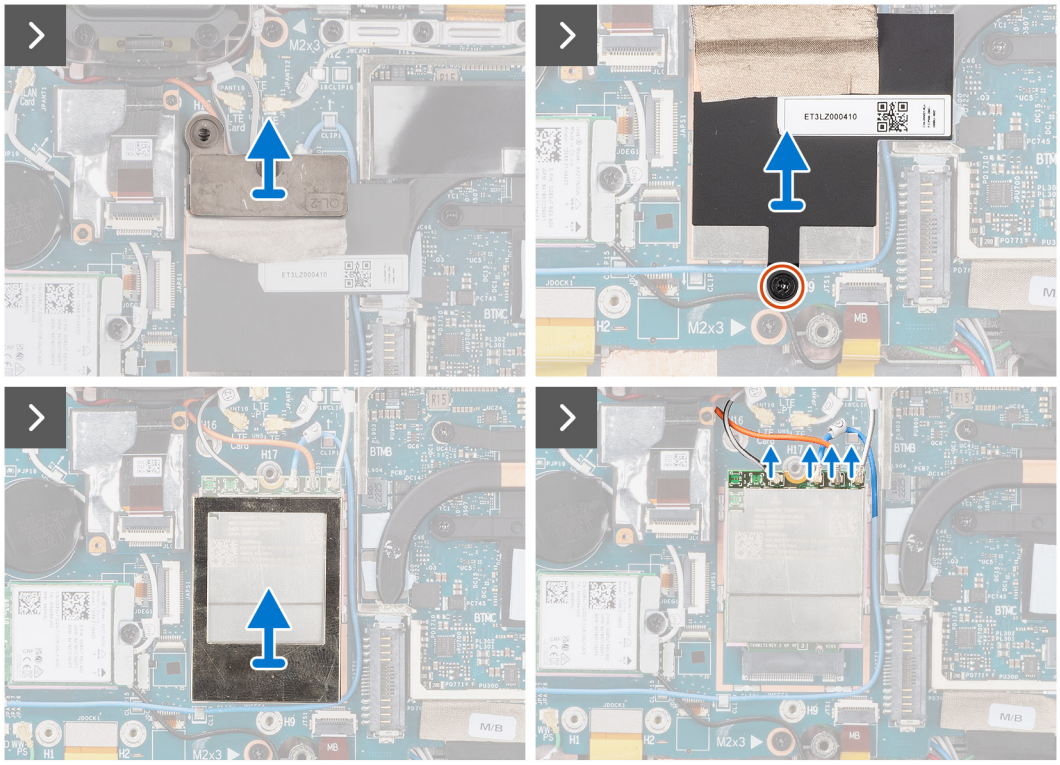
Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the WWAN card and provides a visual representation of the removal procedure.





Steps

1. Disconnect the fan cable from the connector on the system board.
2. Unroute the fan cable from its routing guides along the right side of the system-board shielding cover.
3. Peel the gasket at the top-left side of the system-board shielding cover.
4. Pry and open the system-board shielding cover from its bottom side.
5. Continue to pry the system-board shielding cover along its right, top, and left sides.
6. Remove the system-board shielding cover from the tablet.
7. Peel the conductive tape from the WWAN thermal plate.
8. Remove the two screws (M2x3) that secure the WWAN bracket to the system board.
9. Remove the WWAN bracket from the tablet.
10. Remove the single screw (M2x3) that secure the WWAN thermal plate to the system board.
11. Remove the WWAN thermal plate away from the tablet.
12. Pry and remove the WWAN shielding cover from the tablet.
13. Disconnect the antenna cables from the connectors on the WWAN card.
14. Slide and remove the WWAN card from the WWAN-card slot.

Installing the WWAN card

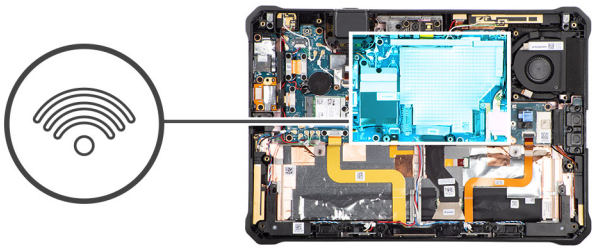
Prerequisites

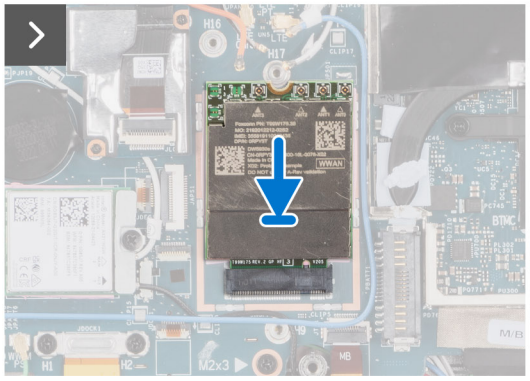
If you are replacing a component, remove the existing component before performing the installation procedure.

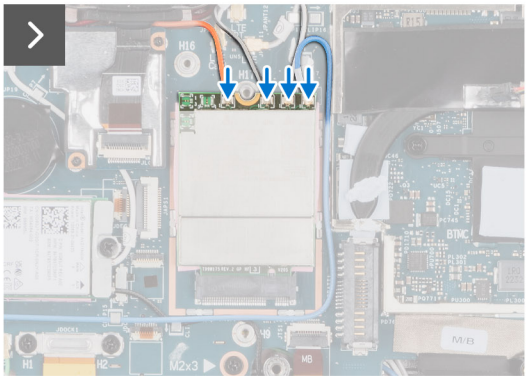
About this task

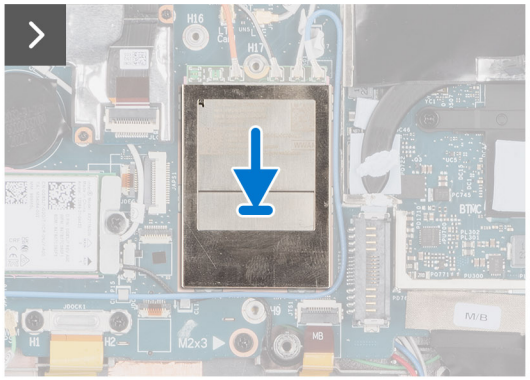
The figure indicates the location of the WWAN card and provides a visual representation of the installation procedure.

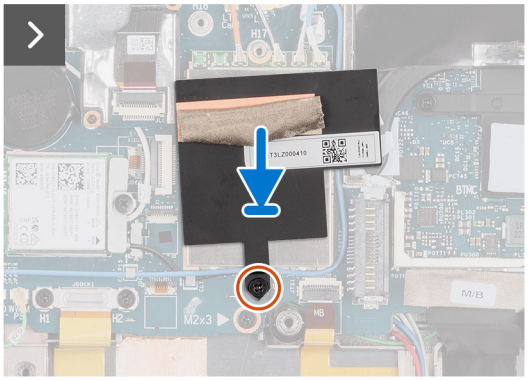
3x
M2x3

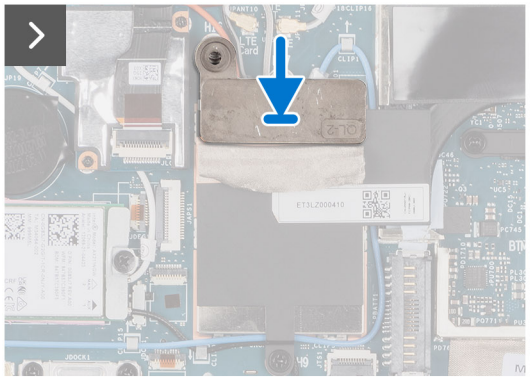


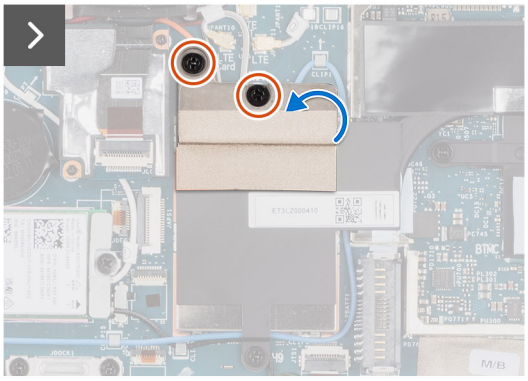


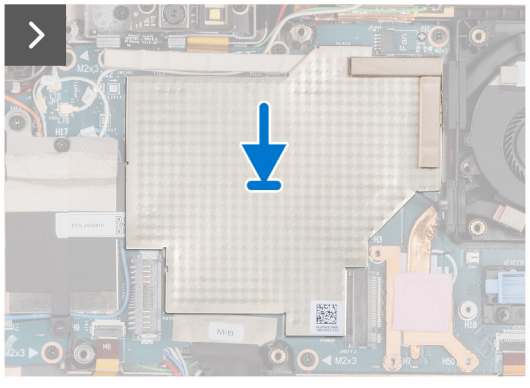


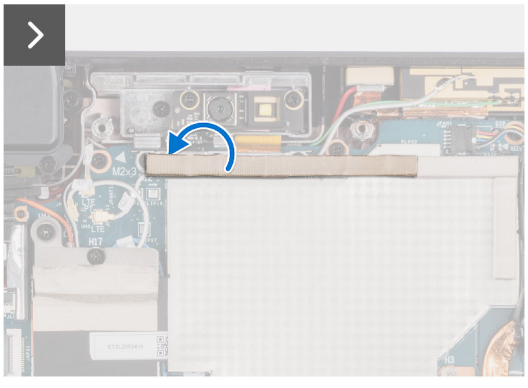


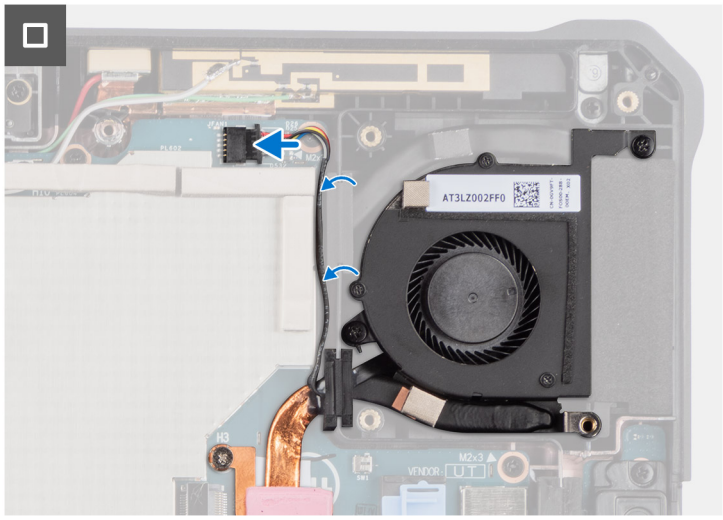












Steps

1. Align the notch on the WWAN card with the tab on the WWAN-card slot.
2. Slide the WWAN card at an angle into the WWAN-card slot.
3. Connect the antenna cables to the WWAN card.

Table 3. Antenna-cable color scheme

Color	Cable Color
WWAN Main * WWAN Main Bridge **	A (white/grey)
WWAN MIMO3	B (orange)
WWAN MIMO2 * WWAN MIMO2 Bridge **	C (blue)
WWAN Auxiliary	D (black/grey)

- * For models shipped without pass-through cables
- ** For models shipped with pass-through cables

4. Align and place the WWAN shielding cover on the WWAN card.
5. Align the screw hole on the WWAN thermal plate with the screw hole on the system board.
6. Replace the single screw (M2x3) to secure the WWAN thermal plate to the system board.
7. Align the screw hole on the WWAN bracket with the screw hole on the system board.
8. Replace the two screws (M2x3) to secure the WWAN bracket to the system board.
9. Adhere the conductive tape to the WWAN thermal plate.
10. Align and place the system-board shielding cover on the WWAN card. Press along the sides until it clicks in place.
11. Adhere the gasket to the top-left side of the system-board shielding cover.
12. Route the fan cable through the routing guides along the right side of the system-board shielding cover.
13. Connect the fan cable to the connector on the system board.

NOTE: For instructions on how to find your computer's IMEI (International Mobile Station Equipment Identity) number, see the knowledge base article 000143678 at https://www.dell.com/support/.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).

4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

I/O daughter-board

Removing the I/O daughter-board

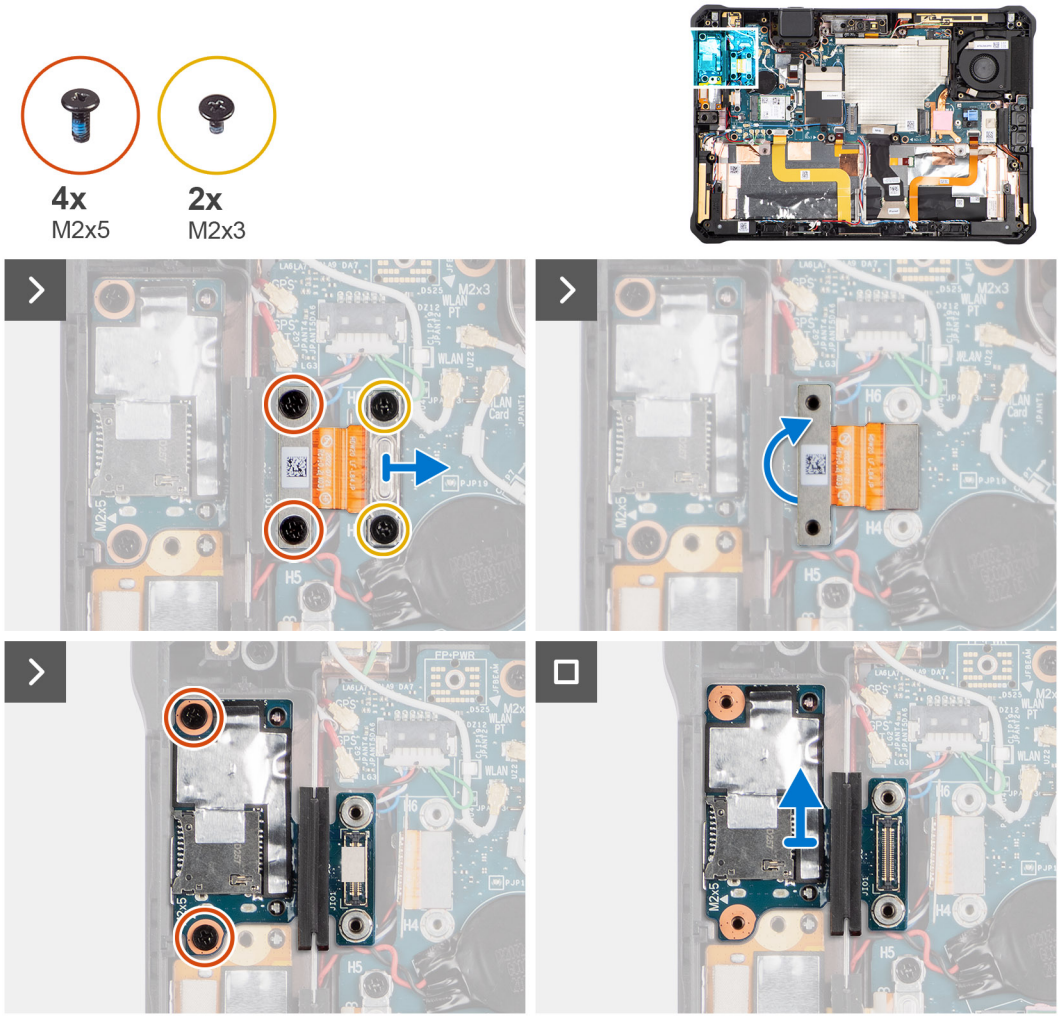
Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the I/O daughter-board and provides a visual representation of the removal procedure.

NOTE: The headset port, USB 3.2 Gen 1 port with PowerShare, and microSD-card slot are part of I/O daughter-board.



Steps

1. Peel the conductive tape from the I/O daughter-board FPC.

2. Remove the two screws (M2x3) that secure the I/O daughter-board FPC bracket in place.
3. Remove the I/O daughter-board FPC bracket away from the system board.
4. Disconnect the I/O daughter-board FPC from the connector on the system board.
5. Remove the two (M2x5) and two (M2x3) screws that secure the I/O daughter-board to the tablet.
6. Remove the I/O daughter-board away from the tablet.

Installing the I/O daughter-board

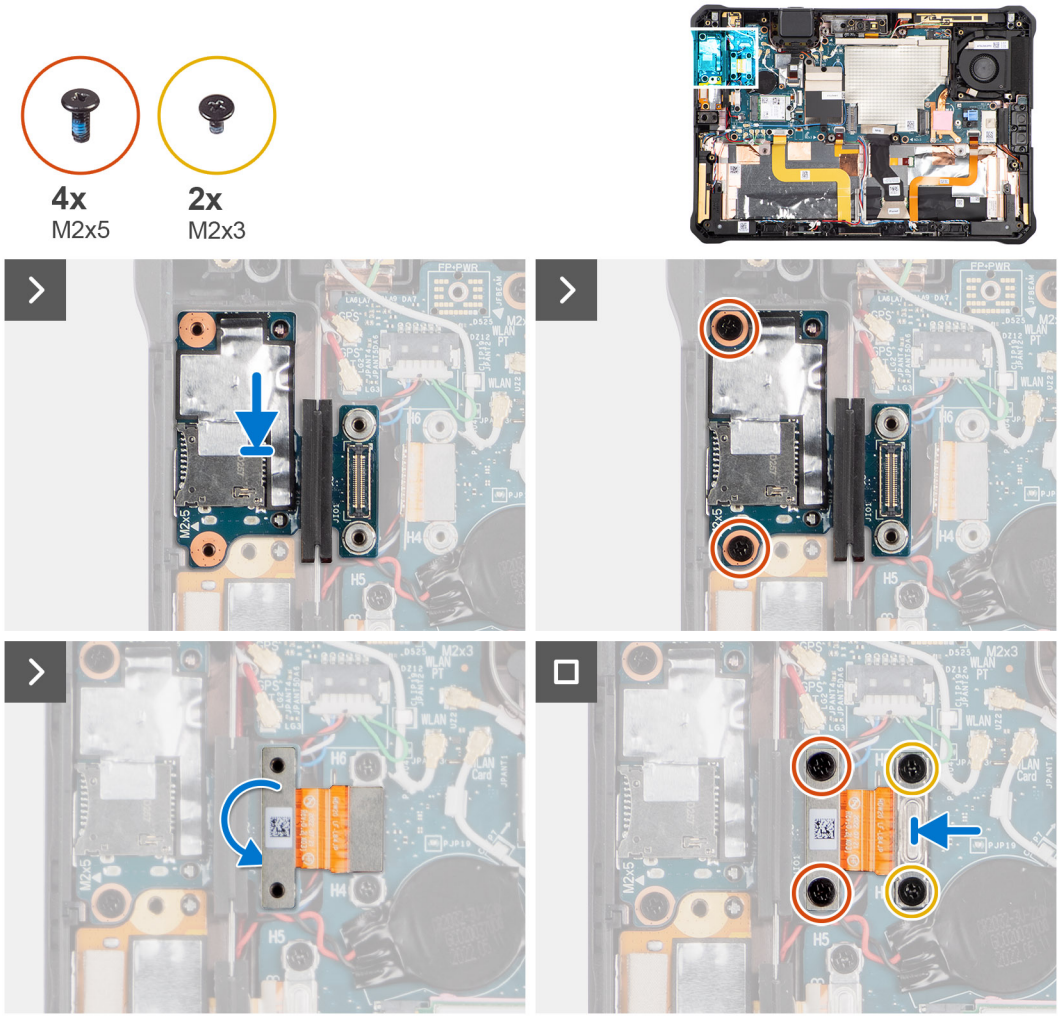
Prerequisites

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

About this task

The figure indicates the location of the I/O daughter-board and provides a visual representation of the installation procedure.

NOTE: The headset port, USB 3.2 Gen 1 port with PowerShare, and microSD-card slot are part of I/O daughter-board.



Steps

1. Align the screw holes on the I/O daughter-board with the screw holes on the tablet.
2. Replace the two (M2x5) and two (M2x3) screws to secure the I/O daughter-board to the tablet.
3. Connect the I/O daughter-board FPC to the connector on the system board.
4. Align the screw holes on the I/O daughter-board FPC bracket with the screw holes on the system board.
5. Replace the two screws (M2x3) to secure the I/O daughter-board FPC bracket in place.

6. Adhere the conductive tape to the I/O daughter-board FPC.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

USB/HDMI port

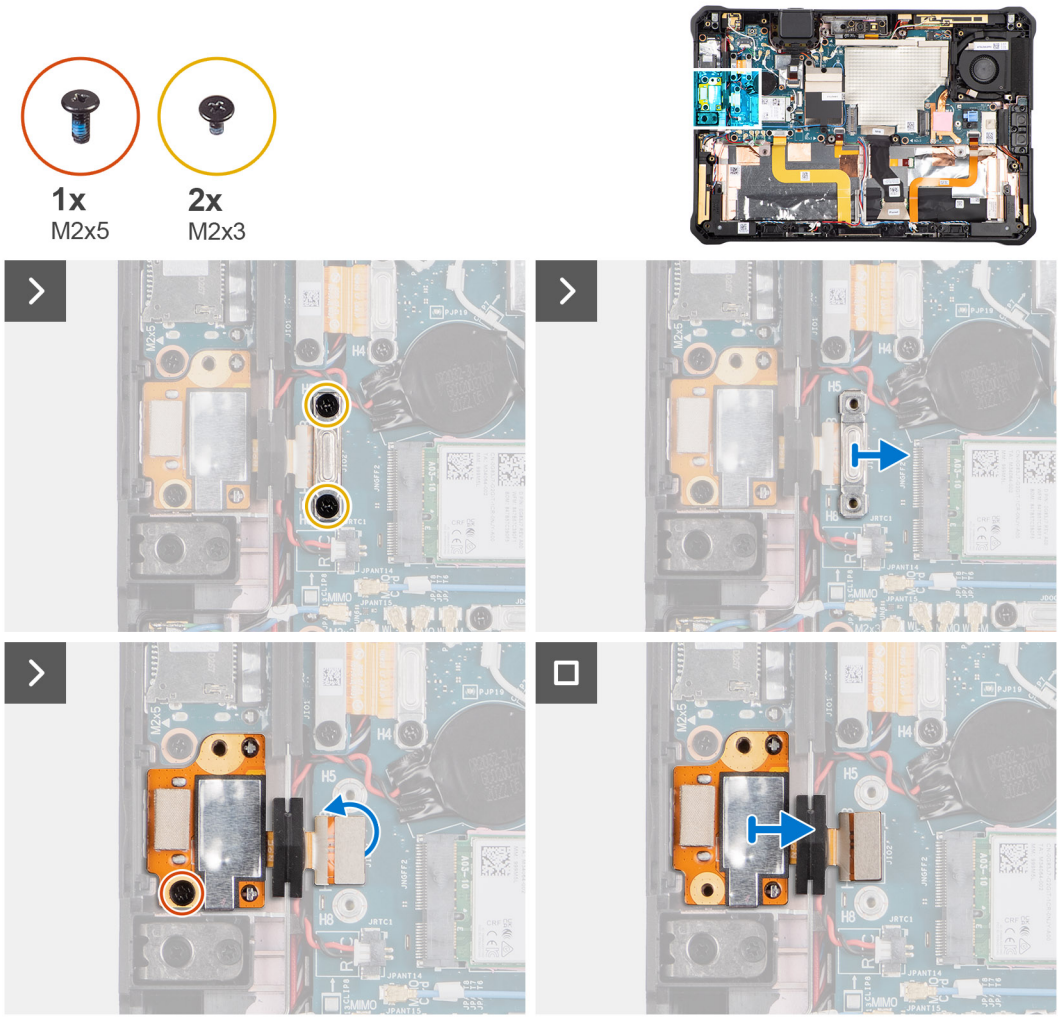
Removing the USB/HDMI port

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the USB/HDMI port and provides a visual representation of the removal procedure.



Steps

1. Peel the conductive tape from the USB/HDMI port.
2. Remove the two screws (M2x3) that secure the USB/HDMI port bracket in place.
3. Remove the USB/HDMI port bracket away from the tablet.
4. Disconnect the USB/HDMI port cable from the connector on the system board.
5. Remove the single screw (M2x5) that secures the USB/HDMI port to the tablet.
6. Remove the USB/HDMI port away from the tablet.

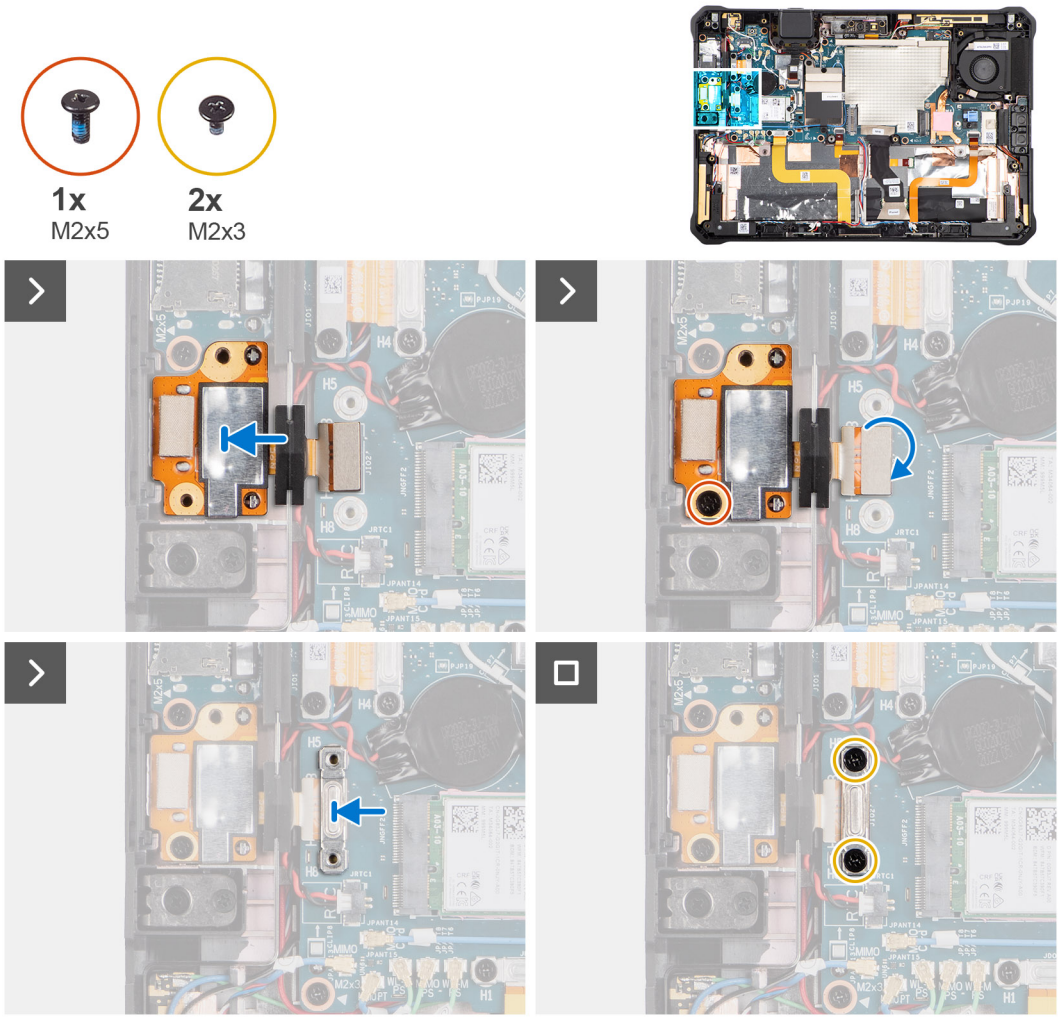
Installing the USB/HDMI port

Prerequisites

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

About this task

The figure indicates the location of the USB/HDMI port and provides a visual representation of the installation procedure.



Steps

1. Align the screw holes on the USB/HDMI port with the screw holes on the tablet.
2. Replace the single screw (M2x5) to secure the USB/HDMI port to the tablet.
3. Connect the USB/HDMI port cable to the connector on the system board.
4. Align the screw holes on the USB/HDMI port bracket with the screw holes on the system board.
5. Replace the two screws (M2x3) to secure the USB/HDMI port bracket in place.
6. Adhere the conductive tape to the USB/HDMI port.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

USB-port assembly

Removing the USB-port assembly

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

Steps

NOTE: For models shipped with an USB connector in the expansion bay at the top side of the tablet.

1. Remove the two screws (M2x3) that secure the USB-FPC bracket to the system board.
2. Remove the USB-FPC bracket away from the system board.
3. Disconnect the USB FPC from the USB daughter-board.
4. Remove the four screws (M2x5) that secure the USB-port cover to the USB-port bezel .
5. Remove the USB-port cover from the tablet.
6. Remove the two screws (M2x3) that secure the USB-port bezel in place.
7. Remove the USB-port bezel away from the tablet.
8. Remove the two screws (M2x3) that secure the USB-port assembly in place.
9. Remove the USB-port assembly from the tablet.

Installing the USB-port assembly

Prerequisites

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

Steps

NOTE: For models shipped with an expansion bay at the top side of the tablet.

1. Align the screw holes on the USB-port assembly with the screw holes on the tablet.
2. Replace the two screws (M2x3) to secure the USB-port assembly in place.
3. Align the screw holes on the rugged USB-port bezel with the screw holes on the tablet.
4. Replace the two screws (M2x3) to secure the USB-port bezel in place.
5. Align the screw holes on the USB-port cover with the screw holes on the USB-port bezel.
6. Replace the four screws (M2x5) to secure the USB-port cover to the USB-port bezel.
7. Connect the USB FPC to the connector on the USB daughter-board.
8. Align the screw holes on the USB-FPC bracket with the screw holes on the system board.
9. Replace the two screws (M2x3) to secure the USB-FPC bracket to the system board.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

Mini-serial RS232 port assembly

Removing the Mini-serial RS232 port assembly

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

Steps

NOTE: For models shipped with a Mini-serial RS232 connector in the expansion bay at the top side of the tablet.

1. Remove the two screws (M2x3) that secure the Mini-serial RS232 FPC bracket to the system board.
2. Remove the Mini-serial RS232 FPC bracket away from the system board.
3. Disconnect the Mini-serial RS232 FPC from the Mini-serial RS232 daughter-board.
4. Remove the four screws (M2x5) that secure the Mini-serial RS232 port cover in place .
5. Remove the Mini-serial RS232 port cover from the tablet.
6. Remove the two screws (M2x3) that secure the Mini-serial RS232 port assembly in place.
7. Remove the Mini-serial RS232 port assembly from the tablet.

Installing the Mini-serial RS232 port assembly

Prerequisites

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

Steps

NOTE: For models shipped with an expansion bay at the top side of the tablet.

1. Align the screw holes on the Mini-serial RS232 port assembly with the screw holes on the tablet.
2. Replace the two screws (M2x3) to secure the Mini-serial RS232 port assembly in place.
3. Align the screw holes on the Mini-serial RS232 port cover with the screw holes on the Mini-serial RS232 port.
4. Replace the four screws (M2x5) to secure the Mini-serial RS232 port cover in place.
5. Connect the Mini-serial RS232 FPC to the connector on the Mini-serial RS232 daughter-board.
6. Align the screw holes on the Mini-serial RS232 FPC bracket with the screw holes on the system board.
7. Replace the two screws (M2x3) to secure the Mini-serial RS232 FPC bracket to the system board.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

RJ45-port assembly

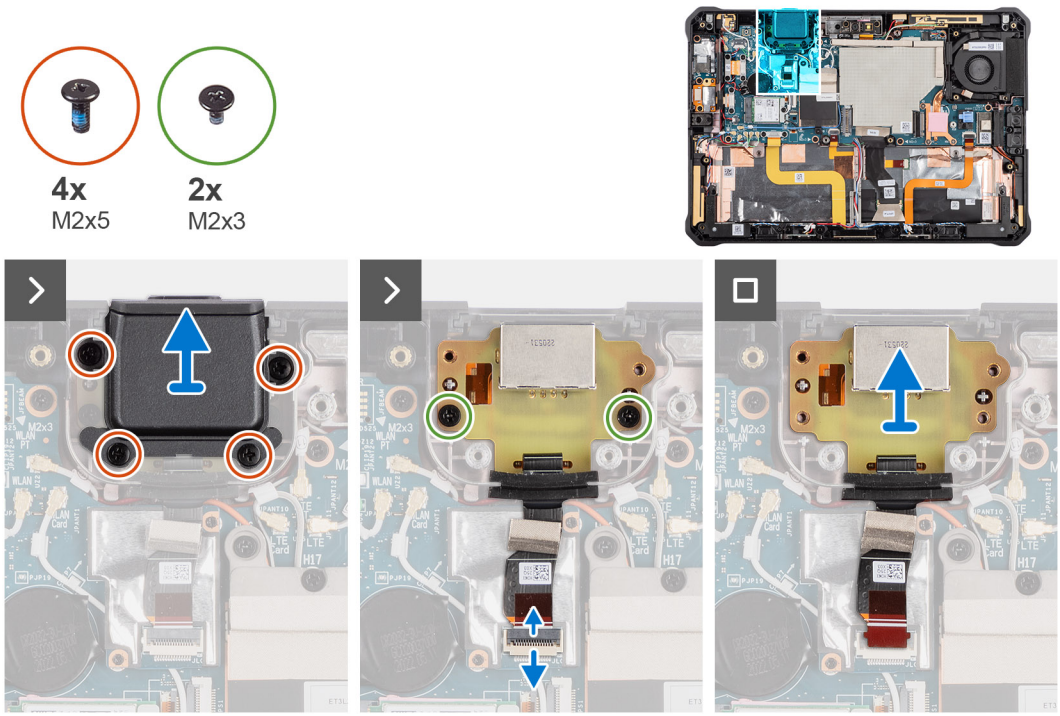
Removing the RJ45-port assembly

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the RJ45-port assembly and provides a visual representation of the removal procedure.



Steps

NOTE: For models shipped with an RJ45 connector in the expansion bay at the top side of the tablet.

1. Open the latch and disconnect the RJ45 FPC from the connector on the RJ45 daughter-board.
2. Remove the four screws (M2x5) that secure the RJ45-port cover to the RJ45-port assembly.
3. Remove the RJ45-port cover from the tablet.
4. Remove the two screws (M2x3) that secure the RJ45-port bezel to the tablet.
5. Remove the RJ45-port assembly away from the tablet.

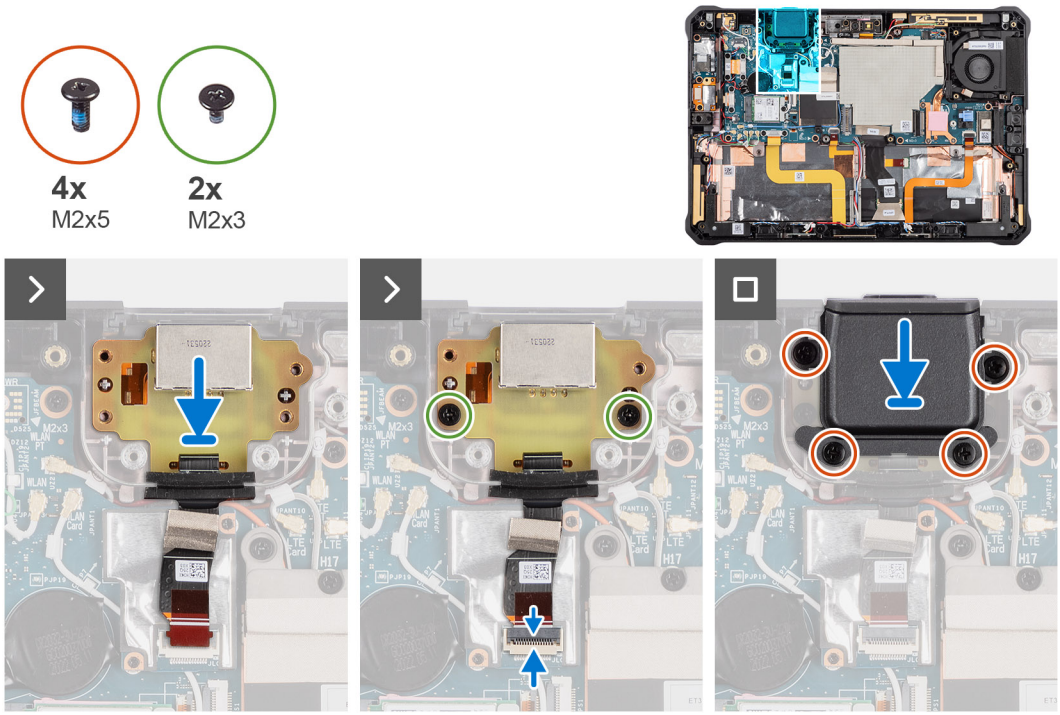
Installing the RJ45-port assembly

Prerequisites

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

About this task

The figure indicates the location of the RJ45-port assembly and provides a visual representation of the installation procedure.



Steps

NOTE: For models shipped with an expansion bay at the top side of the tablet.

1. Align the screw holes on the RJ45-port assembly with the screw holes on the tablet.
2. Replace the two screws (M2x3) to secure the RJ45-port assembly in place.
3. Align the screw holes on the RJ45-port cover with the screw holes on the RJ45-port assembly.
4. Replace the four screws (M2x5) to secure the RJ45-port cover to the RJ45-port assembly.
5. Connect the RJ45 FPC to the connector on the RJ45 daughter-board and close the latch.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

Blank top-cover

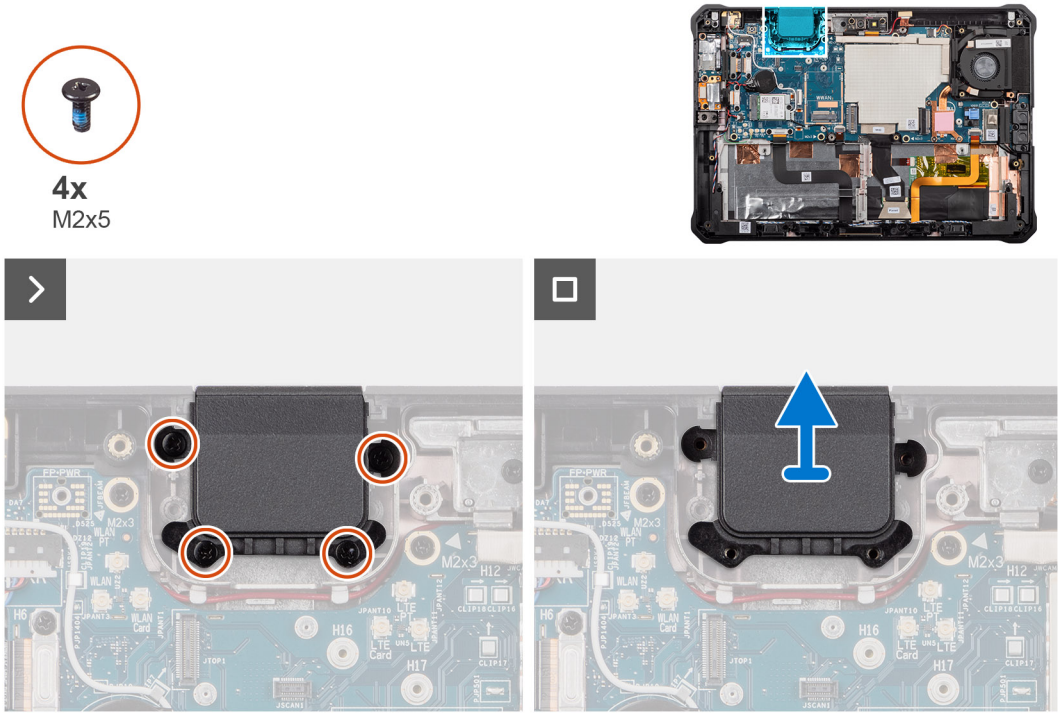
Removing the blank top-cover

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the blank top-cover and provides a visual representation of the removal procedure.



Steps

NOTE: For models shipped with an empty expansion bay at the top side of the tablet.

1. Remove the four screws (M2x5) that secure the blank top-cover to the tablet.
2. Remove the blank top-cover from the tablet.

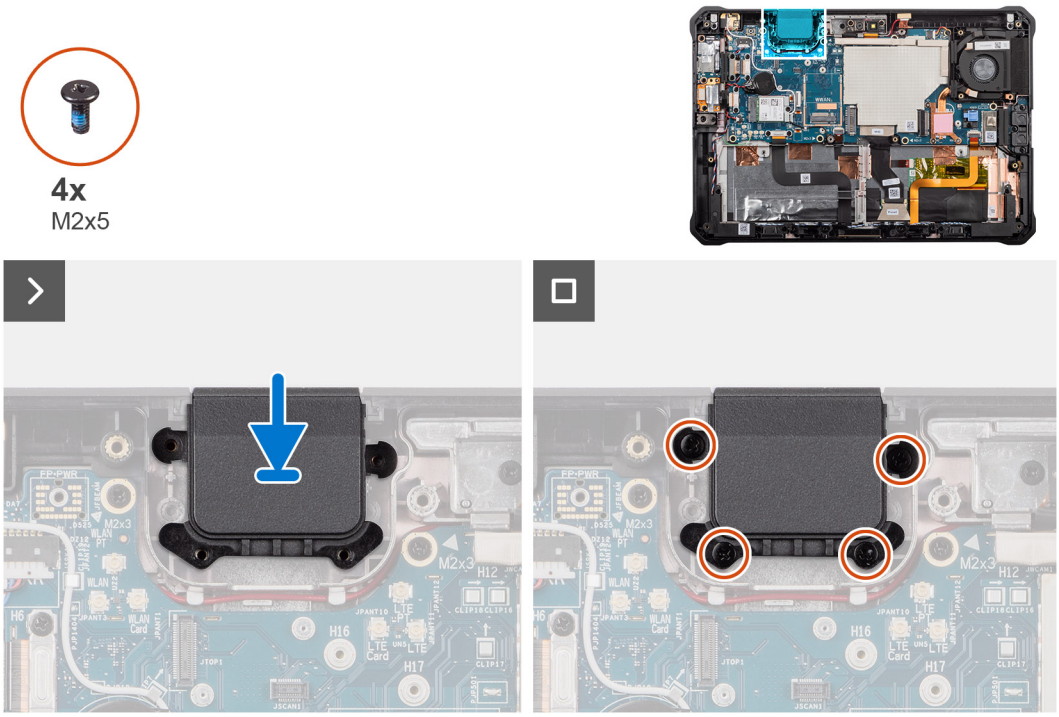
Installing the blank top-cover

Prerequisites

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

About this task

The figure indicates the location of the blank top-cover and provides a visual representation of the installation procedure.



Steps

NOTE: For models shipped with an empty expansion bay at the top side of the tablet.

1. Align the screw holes on the blank top-cover with the screw holes on the tablet.
2. Replace the four screws (M2x5) to secure the blank top-cover to the tablet.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

USB daughter-board

Removing the USB daughter-board

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

Steps

NOTE: For models shipped with a USB connector in the expansion bay at the top side of the tablet.

1. Remove the two screws (M2x3) that secure the USB-FPC bracket to the system board.
2. Remove the USB-FPC bracket away from the tablet.
3. Disconnect the USB FPC from the connector on the USB daughter-board.

4. Remove the two screws (M1x2.65) that secure the USB daughter-board to the system board.
5. Remove the USB daughter-board away from the tablet.

Installing the USB daughter-board

Prerequisites

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

Steps

NOTE: For models shipped with a USB connector in the expansion bay at the top side of the tablet.

1. Align the screw holes on the USB daughter-board with the screw holes on the system board.
2. Replace the two screws (M1x2.65) to secure the USB daughter-board to the system board.
3. Connect the USB FPC to the connector on the USB daughter-board.
4. Align the screw holes on the USB-FPC bracket with the screw holes on the system board.
5. Replace the two screws (M2x3) to secure the USB-FPC bracket to the system board.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

Mini-serial RS232 daughter-board

Removing the Mini-serial RS232 daughter-board

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

Steps

NOTE: For models shipped with a Mini-serial RS232 connector in the expansion bay at the top side of the tablet.

1. Remove the two screws (M2x3) that secure the Mini-serial RS232 FPC bracket to the system board.
2. Remove the Mini-serial RS232 FPC bracket away from the tablet.
3. Disconnect the Mini-serial RS232 FPC from the connector on the Mini-serial RS232 daughter-board.
4. Remove the two screws (M1x2.65) that secure the Mini-serial RS232 daughter-board to the system board.
5. Remove the Mini-serial RS232 daughter-board away from the tablet.

Installing the Mini-serial RS232 daughter-board

Prerequisites

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

Steps

NOTE: For models shipped with a Mini-serial RS232 connector in the expansion bay at the top side of the tablet.

1. Align the screw holes on the Mini-serial RS232 daughter-board with the screw holes on the system board.
2. Replace the two screws (M1x2.65) to secure the Mini-serial RS232 daughter-board to the system board.
3. Connect the Mini-serial RS232 FPC to the connector on the Mini-serial RS232 daughter-board.
4. Align the screw holes on the Mini-serial RS232 FPC bracket with the screw holes on the system board.
5. Replace the two screws (M2x3) to secure the Mini-serial RS232 FPC bracket to the system board.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

RJ45 daughter-board

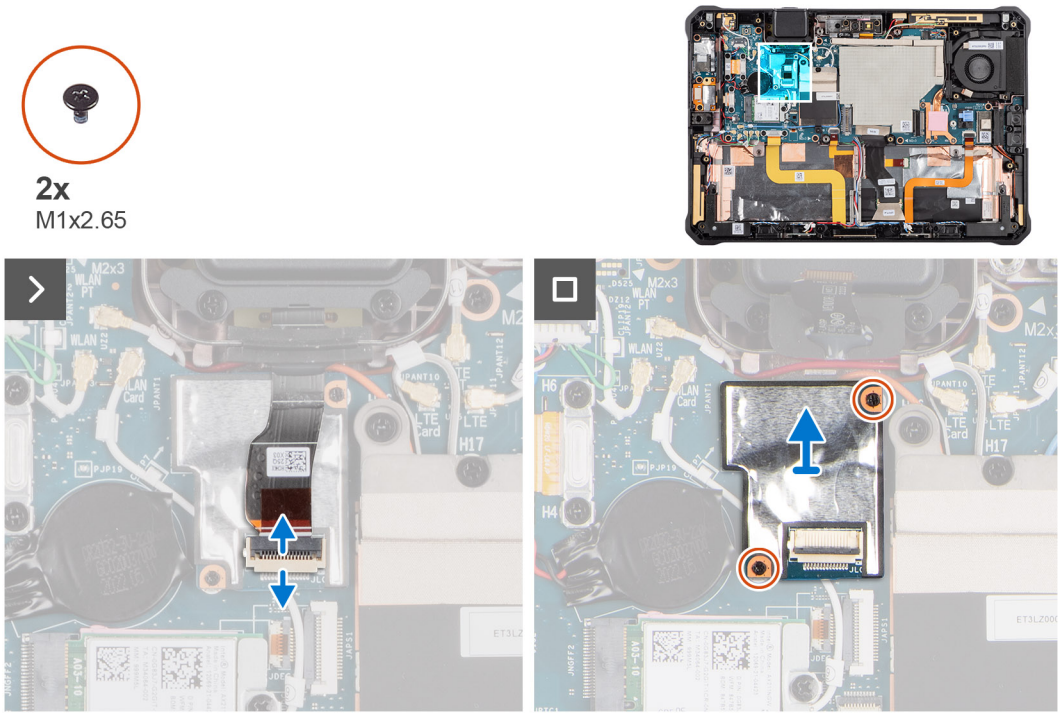
Removing the RJ45 daughter-board

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the RJ45 daughter-board and provides a visual representation of the removal procedure.



Steps

NOTE: For models shipped with an RJ45 connector in the expansion bay at the top side of the tablet.

1. Peel the gasket from the RJ45 FPC.
2. Open the latch and disconnect the RJ45 FPC from the connector on the RJ45 daughter-board.
3. Remove the two screws (M1x2.65) that secure the RJ45 daughter-board to the system board.
4. Remove the RJ45 daughter-board away from the tablet.

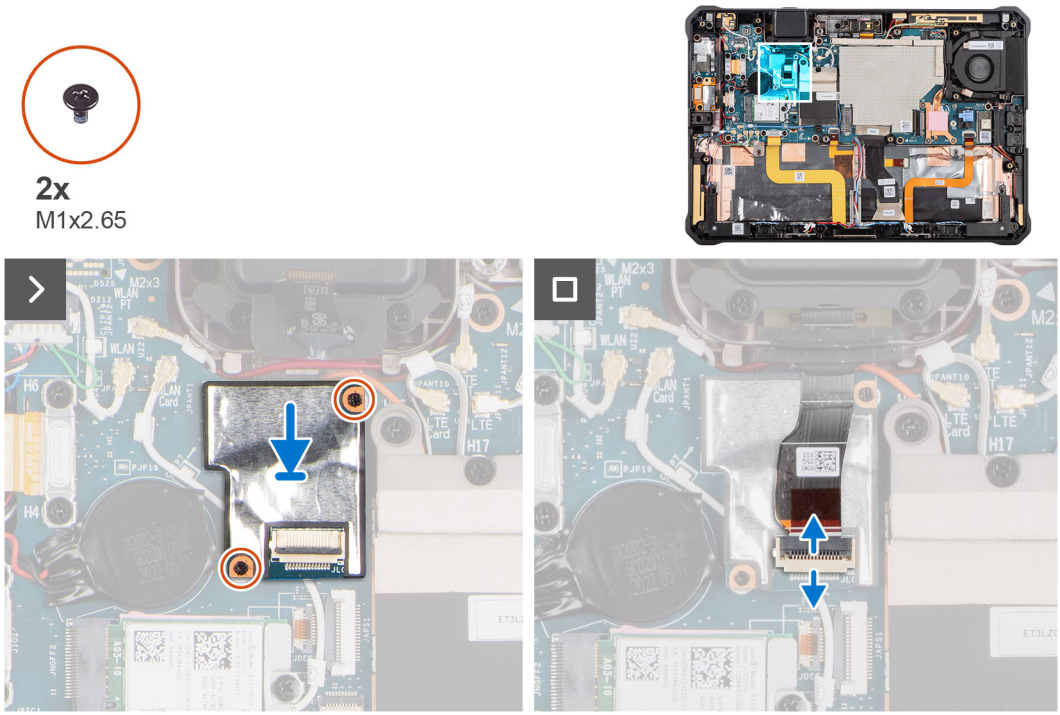
Installing the RJ45 daughter-board

Prerequisites

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

About this task

The figure indicates the location of the RJ45 daughter-board and provides a visual representation of the installation procedure.



Steps

NOTE: For models shipped with an RJ45 connector in the expansion bay at the top side of the tablet.

1. Align the screw holes on the RJ45 daughter-board with the screw holes on the system board.
2. Replace the two screws (M1x2.65) to secure the RJ45 daughter-board to the system board.
3. Connect the RJ45 FPC to the connector on the RJ45 daughter-board and close the latch.
4. Adhere the gasket to the RJ45 FPC.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

Decoder daughter-board

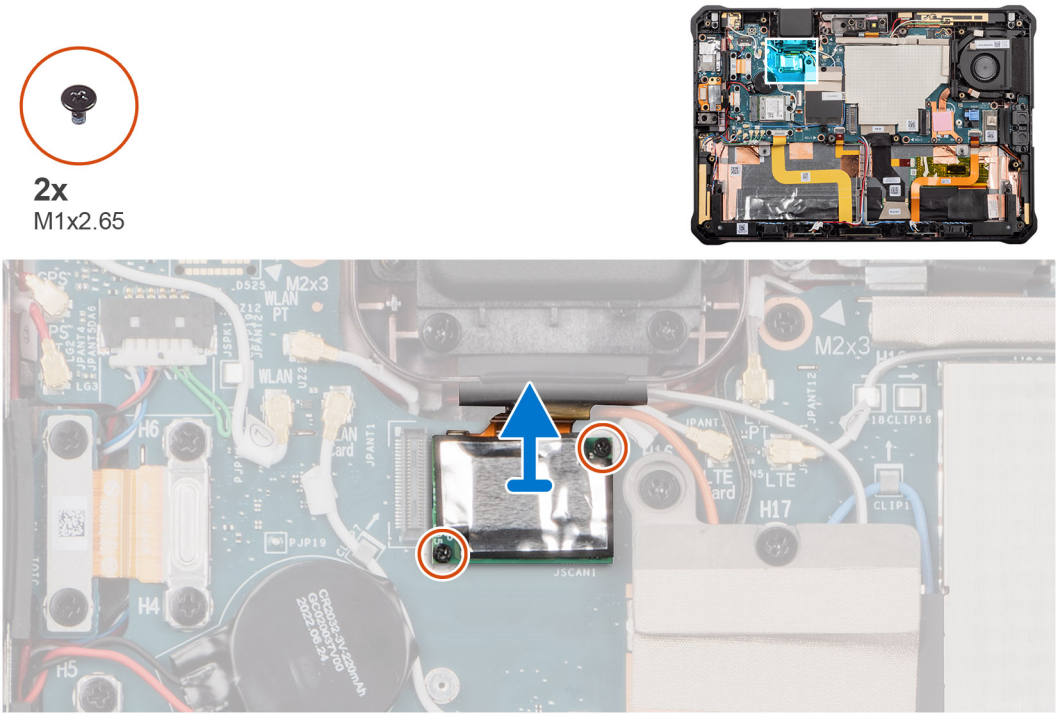
Removing the decoder daughter-board

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the decoder daughter-board and provides a visual representation of the removal procedure.



Steps

NOTE: For models shipped with a scanner in the expansion bay at the top side of the tablet.

1. Remove the two screws (M1x2.65) that secure the decoder daughter-board to the system board.
2. Disconnect the scanner FPC from the connector in the decoder daughter-board.
3. Remove the decoder daughter-board away from the tablet.

Installing the decoder daughter-board

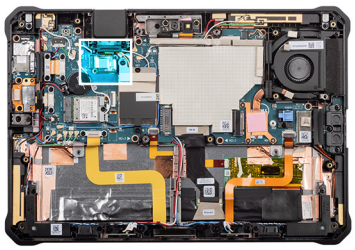
Prerequisites

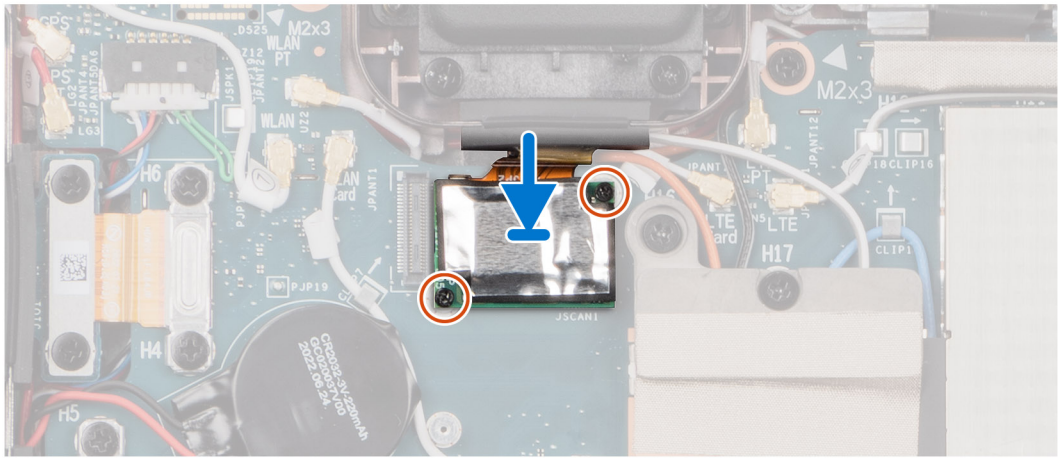
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the decoder daughter-board and provides a visual representation of the installation procedure.

2x
M1x2.65





Steps

NOTE: For models shipped with a scanner in the expansion bay at the top side of the tablet.

1. Connect the scanner FPC to the connector in the decoder daughter-board.
2. Align the screw holes on the decoder daughter-board with the screw holes on the system board.
3. Replace the two screws (M1x2.65) to secure the decoder daughter-board to the system board.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

World-facing camera

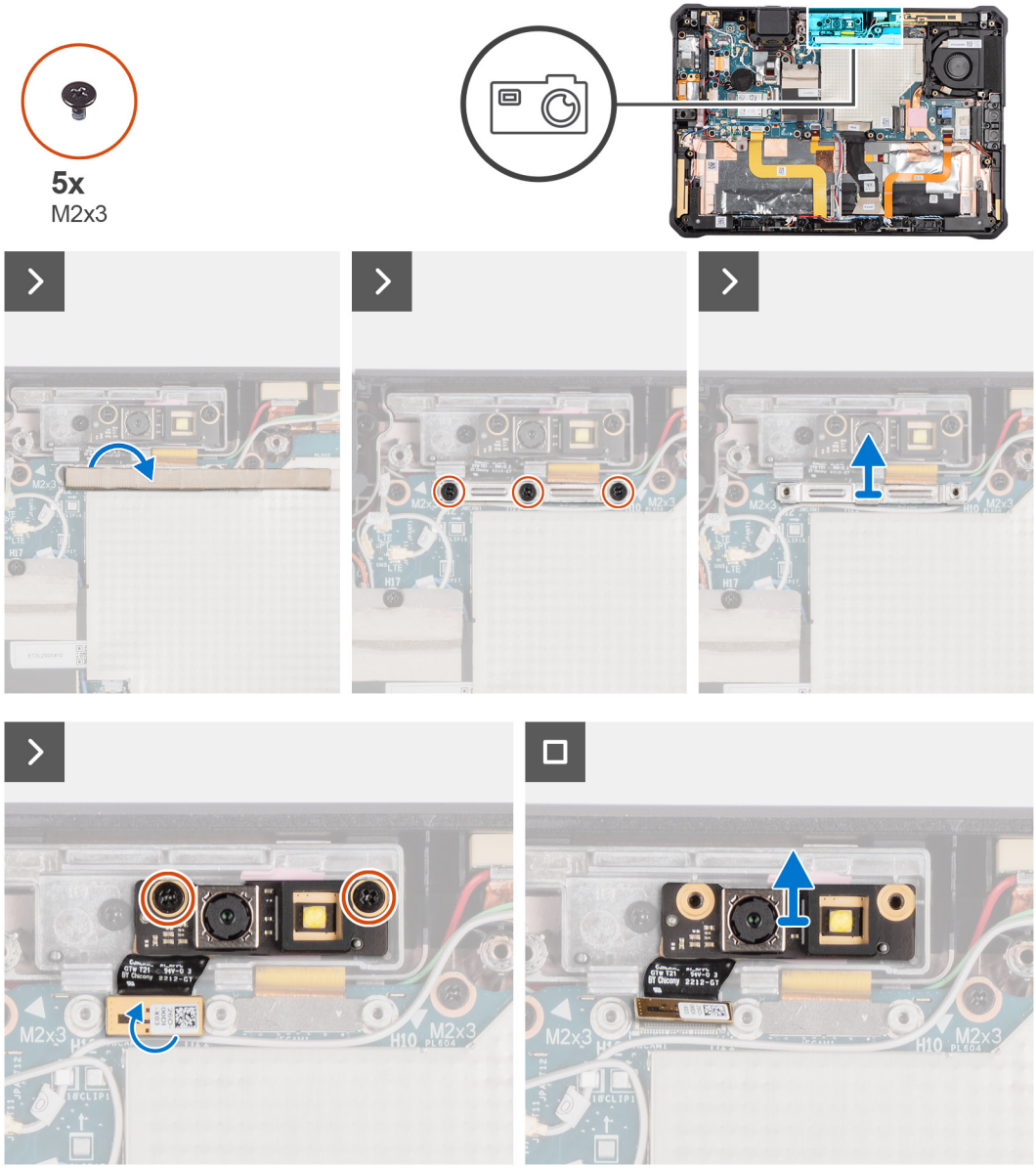
Removing the world-facing camera

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the world-facing camera and provides a visual representation of the removal procedure.



Steps

NOTE: For models shipped with a world-facing camera.

1. Peel the gasket at the top-left side of the system-board shielding cover.
2. Remove the three screws (M2x3) that secure the camera-connector bracket to the system board.
3. Remove the camera-connector bracket away from the tablet.
4. Disconnect the world-facing camera FPC from the connector on the system board.
5. Remove the two screws (M2x3) that secure the world-facing camera to the tablet.
6. Remove the world-facing camera away from the tablet.

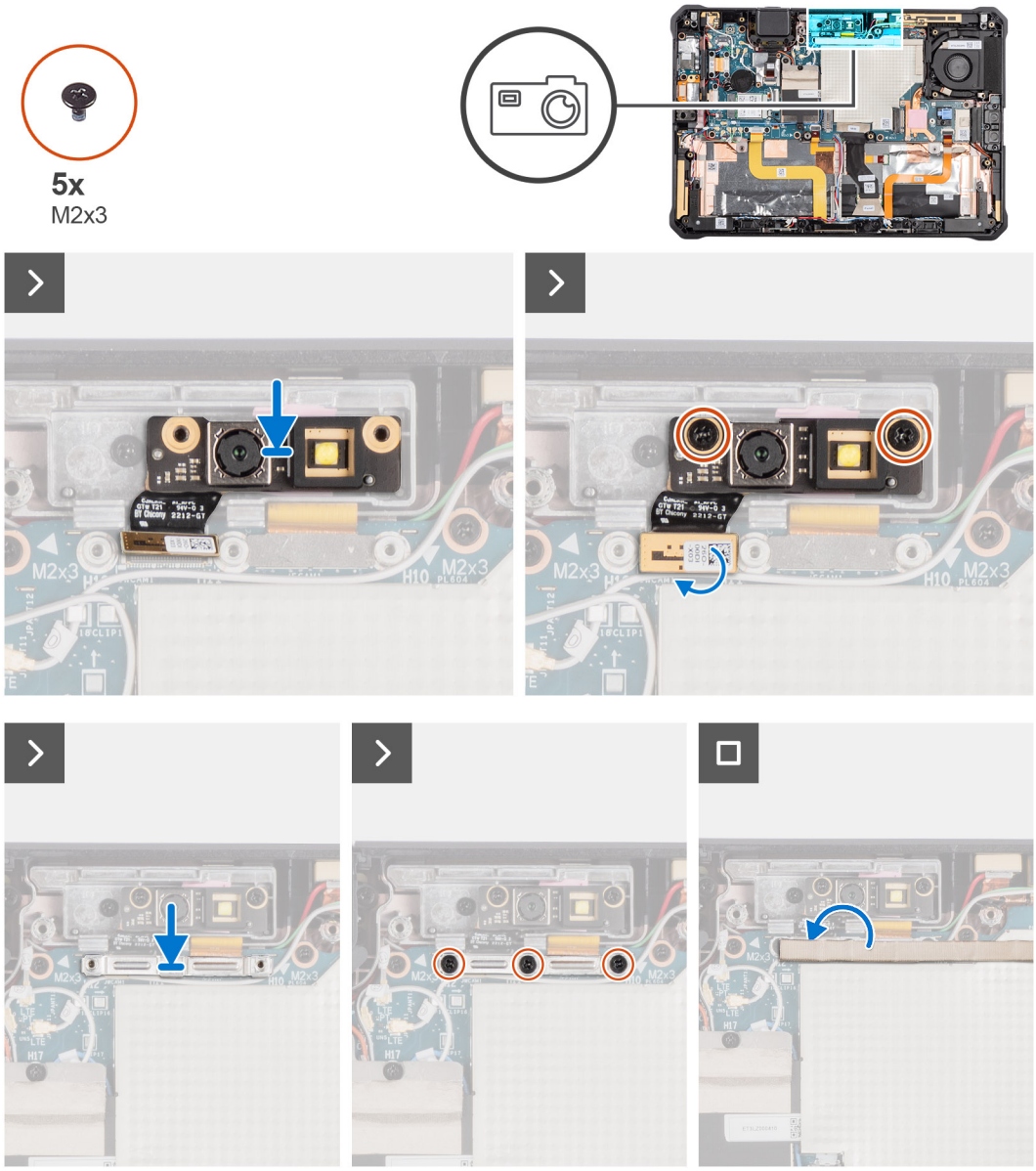
Installing the world-facing camera

Prerequisites

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

About this task

The figure indicates the location of the world-facing camera and provides a visual representation of the removal procedure.



Steps

NOTE: For models shipped with a world-facing camera.

1. Align the screw holes on the world-facing camera with the screw holes on the tablet.
2. Replace the two screws (M2x3) to secure the world-facing camera to the tablet.
3. Connect the world-facing camera FPC to the connector on the system board.
4. Align the screw holes on the camera-connector bracket with the screw holes on the system board.
5. Replace the three screws (M2x3) to secure the camera-connector bracket to the system board.
6. Adhere the gasket on the top-left side of the system-board shielding cover.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.

5. Follow the procedure in after working inside your tablet.

Heat sink

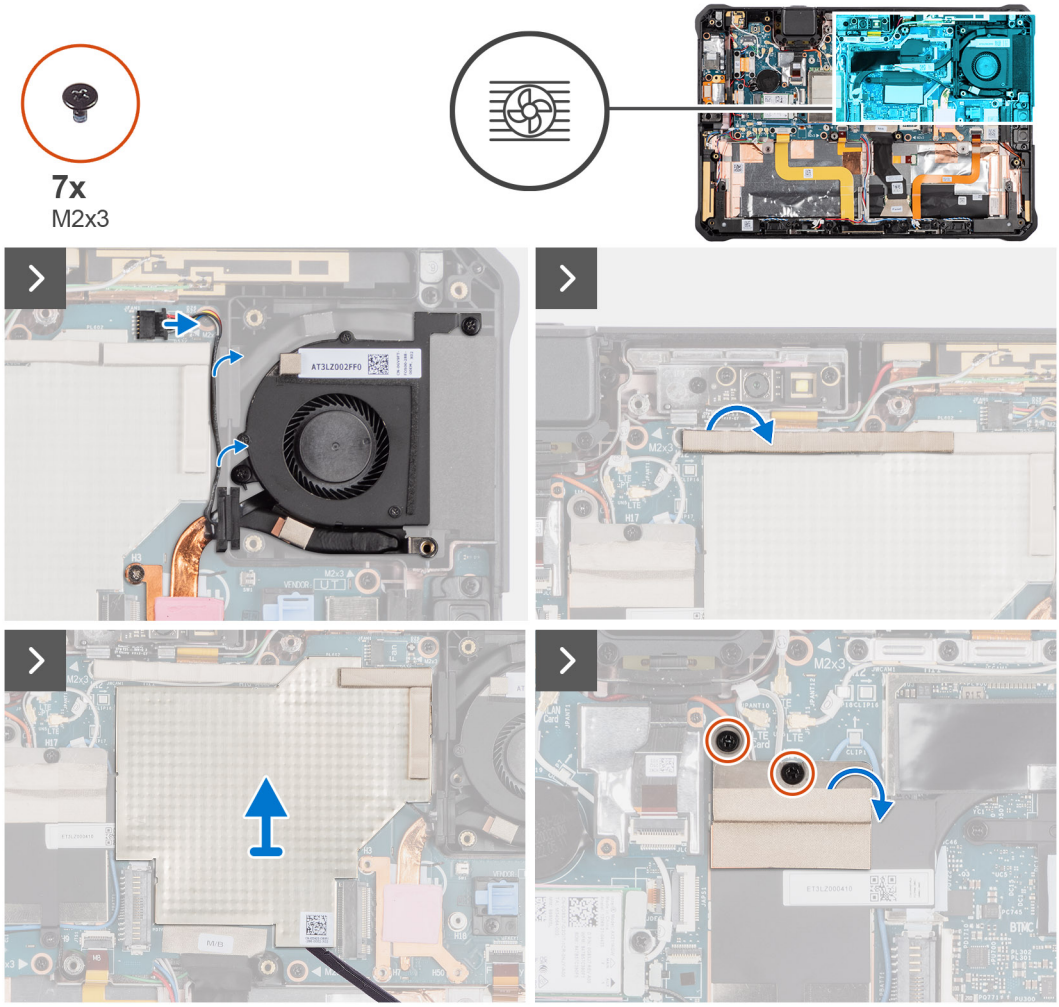
Removing the heat sink

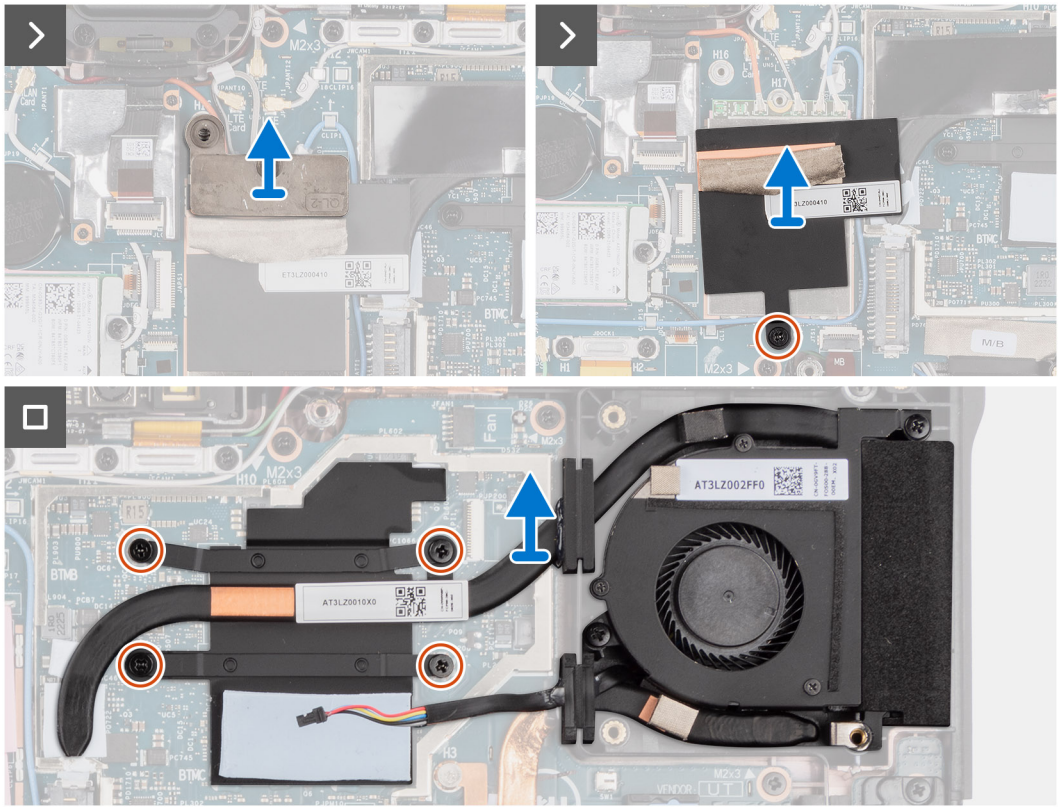
Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the heat sink and provides a visual representation of the removal procedure.





Steps

1. Disconnect the fan cable from the connector on the system board.
2. Unroute the fan cable from its routing guides along the right side of the system-board shielding cover.
3. Peel the gasket at the top-left side of the system-board shielding cover.
4. Pry and open the system-board shielding cover from its bottom side.
5. Continue to pry the system-board shielding cover along its right, top, and left sides.
6. Remove the system-board shielding cover from the tablet.
7. Peel the conductive tape from the WWAN thermal plate.
8. Remove the two screws (M2x3) that secure the WWAN bracket to the system board.
9. Remove the WWAN bracket from the tablet.
10. Remove the single screw (M2x3) that secure the WWAN thermal plate to the system board.
11. Remove the WWAN thermal plate away from the tablet.
12. In reverse sequential order (as indicated on the heat sink), remove the four screws (M2x3) that secure the heat sink to the system board.
13. Remove the heat sink away from the tablet.

Installing the heat sink

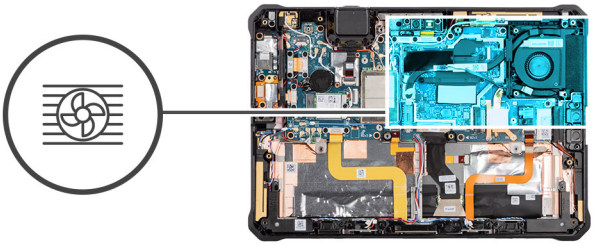
Prerequisites

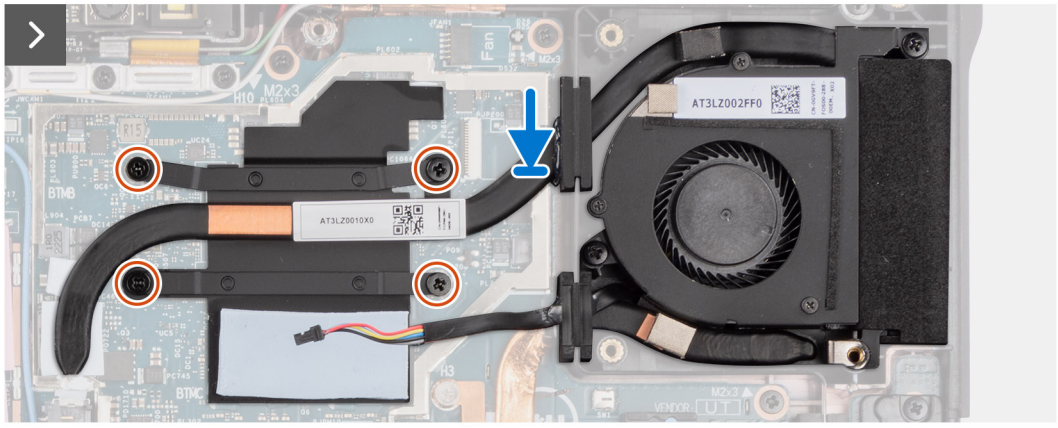
If you are replacing a component, remove the existing component before performing the installation procedure.

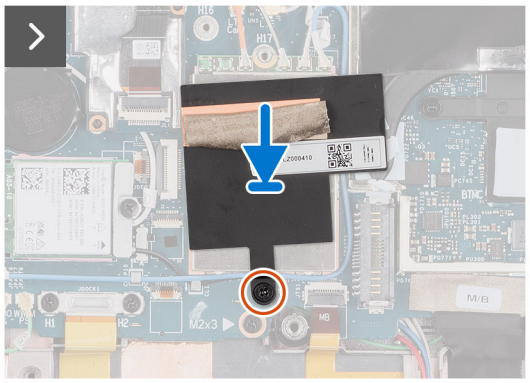
About this task

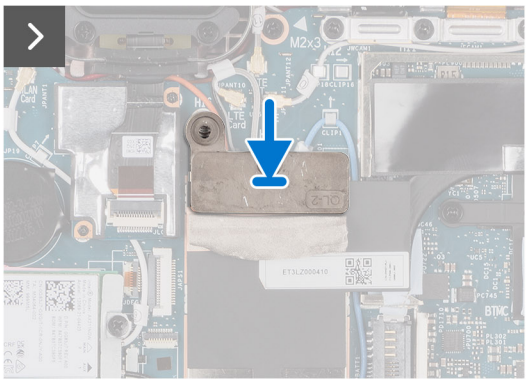
The figure indicates the location of the heat sink card and provides a visual representation of the installation procedure.

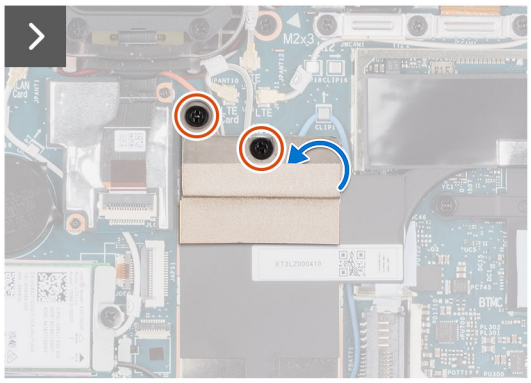
7x
M2x3

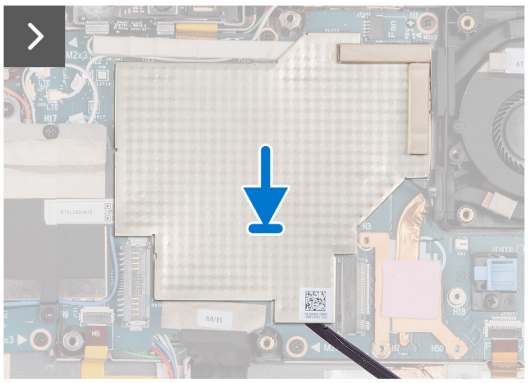


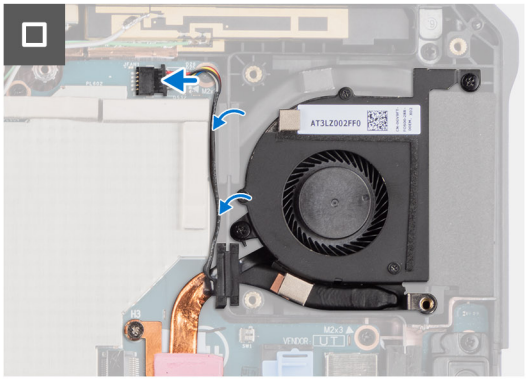












Steps

1. Align the screw holes on the heat sink with the screw holes on the system board.
2. In sequential order (as indicated on the heat sink), replace the four screws (M2x3) to secure the heat sink to the system board.
3. Align the screw hole on the WWAN thermal plate with the screw hole on the system board.
4. Replace the single screw (M2x3) to secure the WWAN thermal plate to the system board.
5. Align the screw hole on the WWAN bracket with the screw hole on the system board.
6. Replace the two screws (M2x3) to secure the WWAN bracket to the system board.
7. Adhere the conductive tape to the WWAN thermal plate.
8. Align and place the system-board shielding cover on the WWAN card and heat sink. Press along the sides until it clicks in place.
9. Adhere the gasket to the top-left side of the system-board shielding cover.
10. Route the fan cable through the routing guides along the right side of the system-board shielding cover.
11. Connect the fan cable to the connector on the system board.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

Coin-cell battery

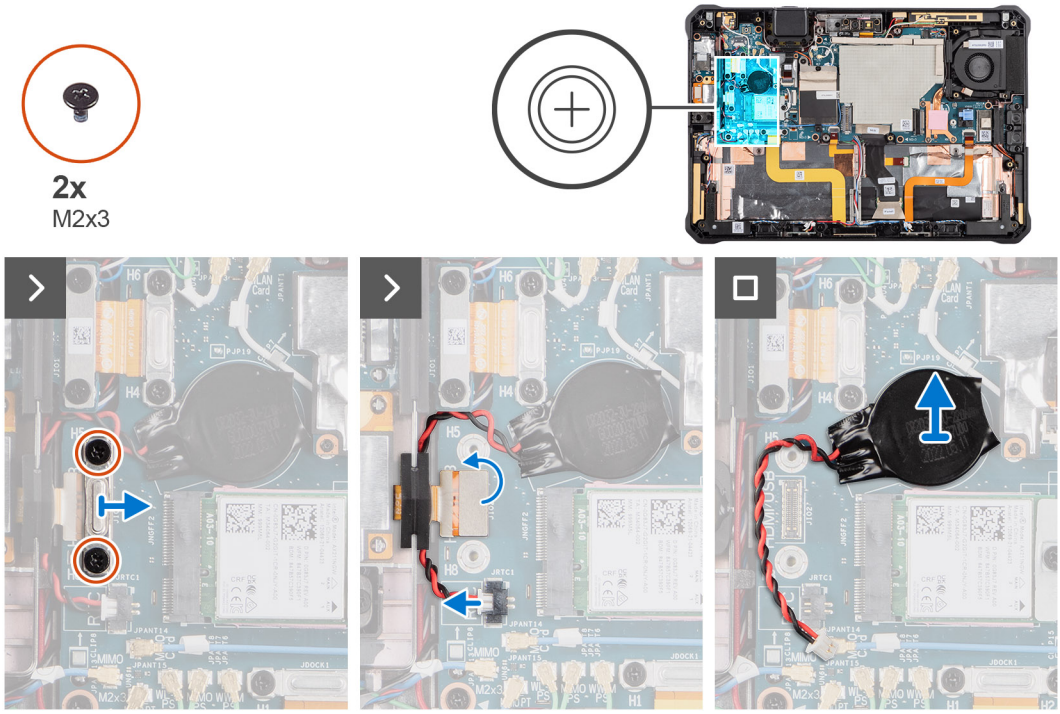
Removing the coin-cell battery

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

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



Steps

1. Remove the two screws (M2x3) that secure the USB/HDMI port bracket in place.
2. Remove the USB/HDMI port bracket away from the tablet.
3. Disconnect the USB/HDMI port cable from the connector on the system board and move it away from the system board.
4. Disconnect the coin-cell battery cable.
5. Unroute the coin-cell battery cable from the routing guides along the left side of the system board.
6. Peel the coin-cell battery off the system board.

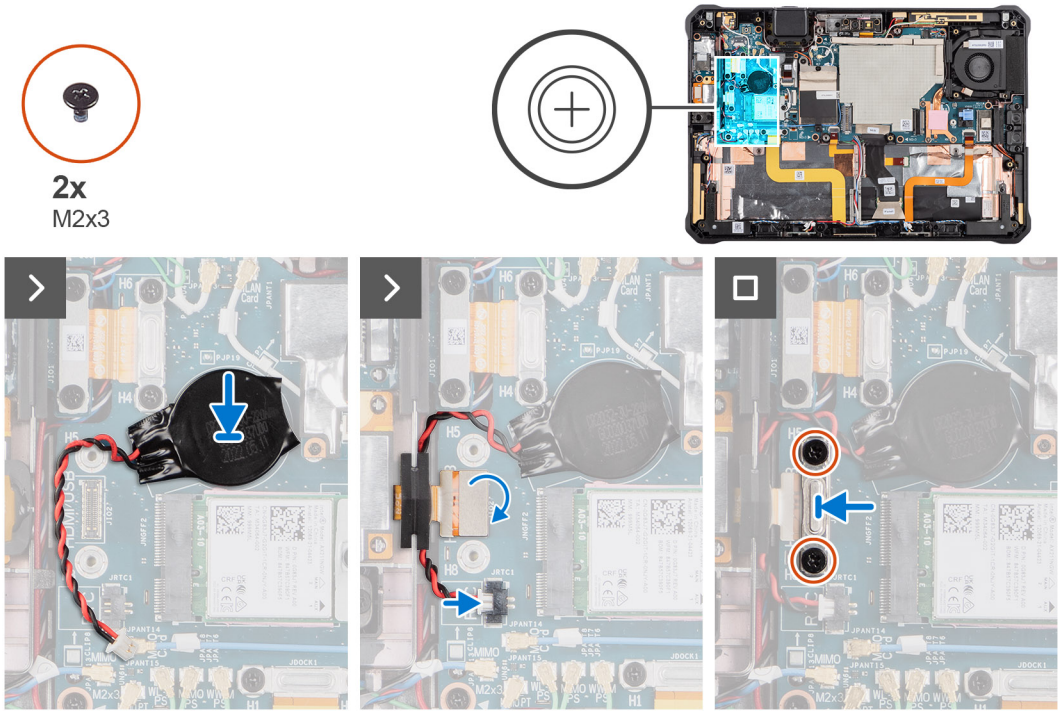
Installing the coin-cell battery

Prerequisites

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

About this task

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



Steps

1. Adhere the coin-cell battery to the slot on the system board.
2. Route the coin-cell battery cable through the routing guides along the left side of the system board.
3. Connect the coin-cell battery cable to the connector on the system board.
4. Connect the USB/HDMI port cable to the connector on the system board.
5. Align the screw holes on the USB/HDMI port bracket with the screw holes on the system board.
6. Replace the two screws (M2x3) to secure the USB/HDMI port bracket in place.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

USB/HDMI door

Removing the USB/HDMI door

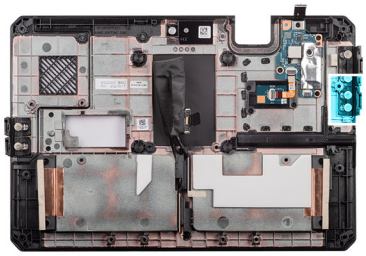
Prerequisites

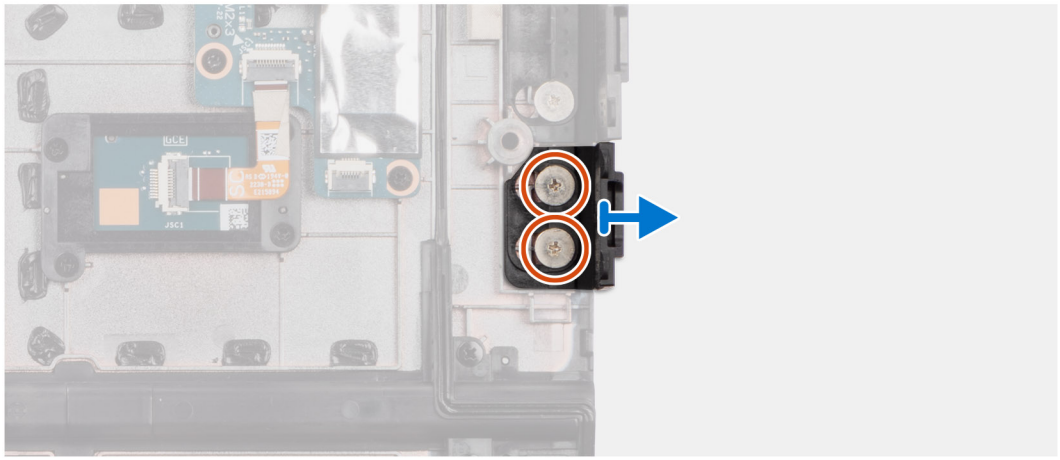
1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.

About this task

The figure indicates the location of the USB/HDMI door and provides a visual representation of the removal procedure.

2x
M2x2





Steps

1. Remove the two screws (M2x2) that secure the USB/HDMI door to the back-cover assembly.
2. Remove the USB/HDMI door away from the back-cover assembly.

Installing the USB/HDMI door

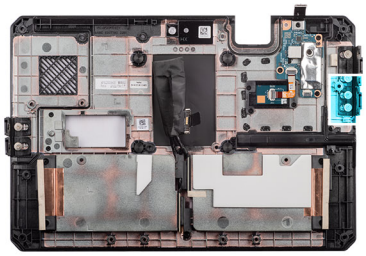
Prerequisites

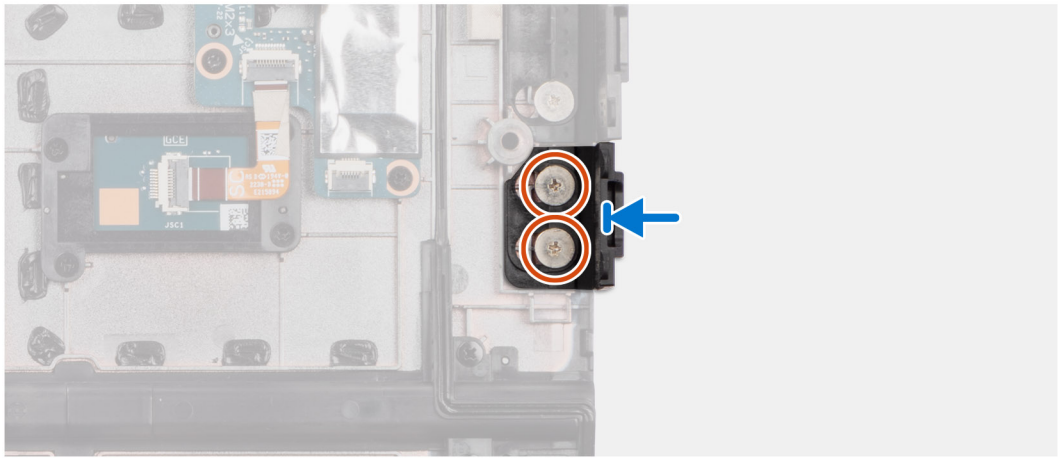
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the USB/HDMI door and provides a visual representation of the installation procedure.

2x
M2x2





Steps

1. Align the screw holes on the USB/HDMI door with the screw holes on the back cover.
2. Replace the two screws (M2x2) to secure the USB/HDMI door to the back cover.

Next steps

1. Install the back-cover assembly.
2. Install the batteries.
3. Install the handle (for models shipped with handle).
4. Install the stylus.
5. Follow the procedure in after working inside your tablet.

Scanner assembly

Removing the scanner assembly

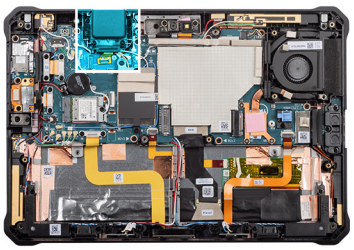
Prerequisites

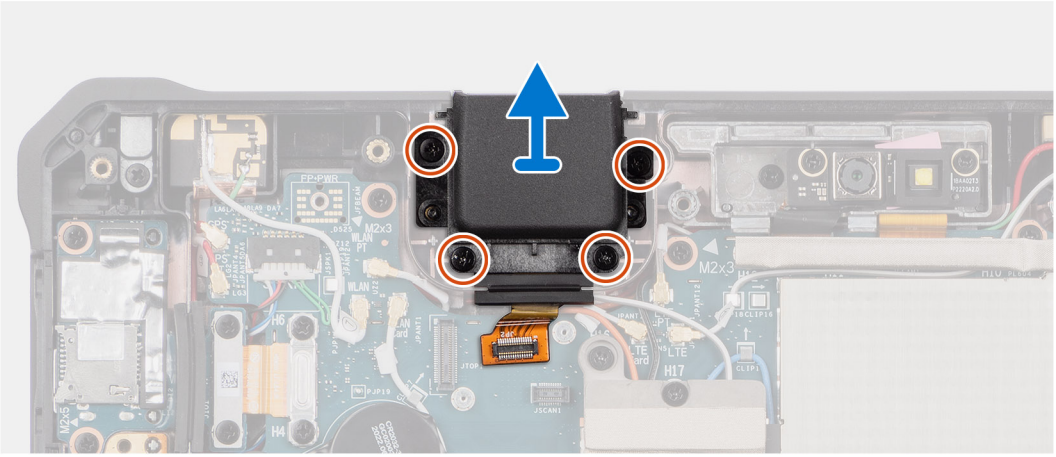
1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.
6. Remove the decoder daughter-board.

About this task

The figure indicates the location of the scanner assembly and provides a visual representation of the removal procedure.

4x
M2x5





Steps

1. Remove the four screws (M2x5) that secure the scanner module to the tablet.
2. Remove the scanner assembly away from the tablet.

Installing the scanner assembly

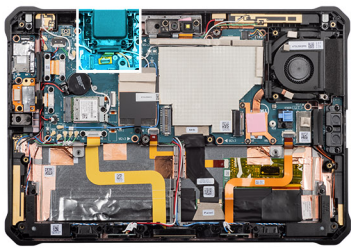
Prerequisites

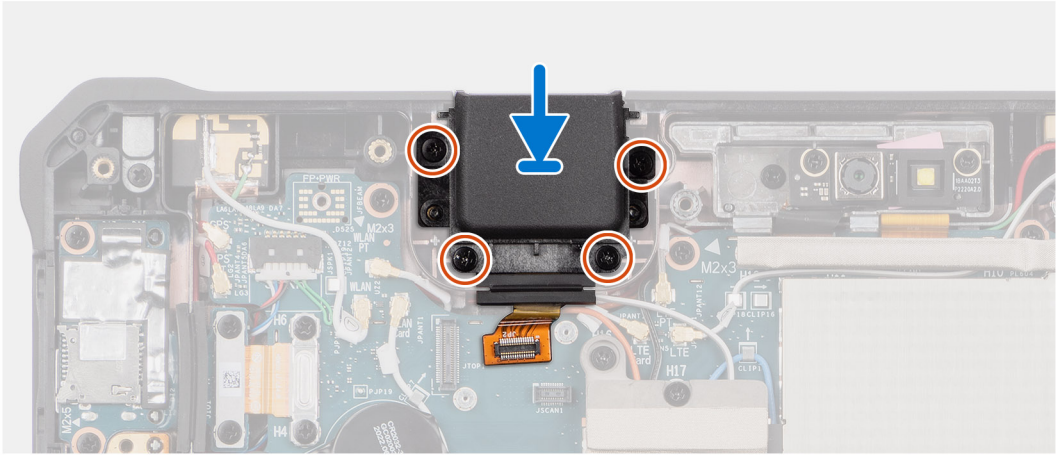
If you are replacing a component, remove the existing component before performing the installation procedure.

About this task

The figure indicates the location of the heat sink card and provides a visual representation of the installation procedure.

4x
M2x5





Steps

1. Align the screw holes on the scanner module with the screw holes on the tablet.
2. Replace the four screws (M2x5) to secure the scanner module to the tablet.

Next steps

1. Install the decoder daughter-board.
2. Install the back-cover assembly.
3. Install the batteries.
4. Install the handle (for models shipped with handle).
5. Install the stylus.
6. Follow the procedure in after working inside your tablet.

Front camera and microphone assembly

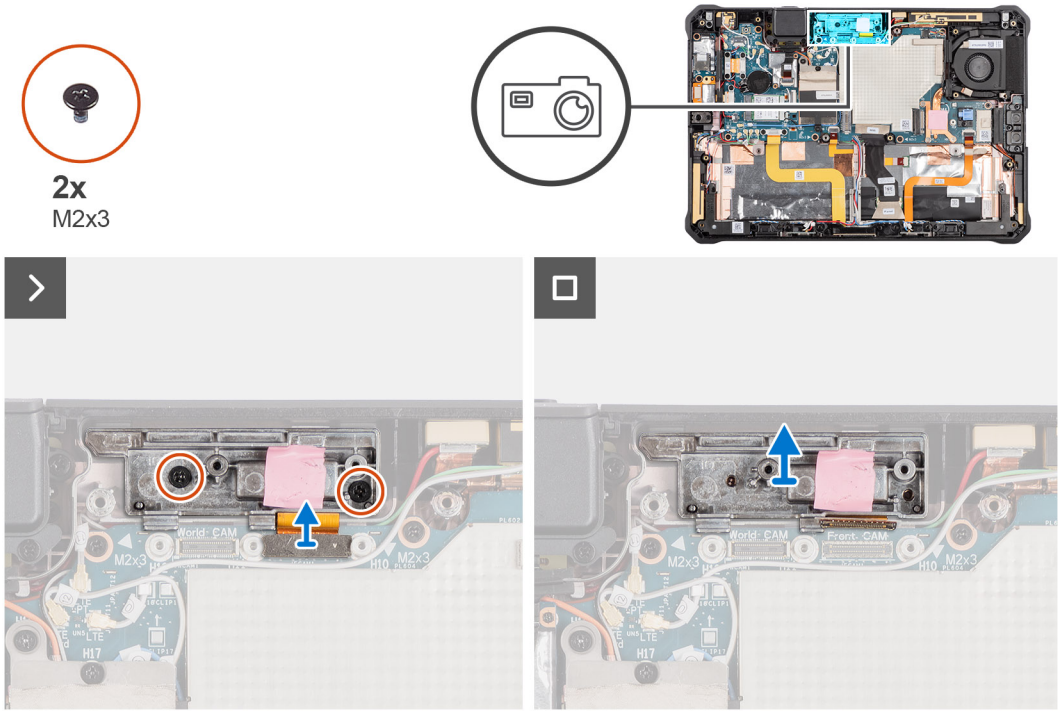
Removing the front camera and microphone assembly

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.
6. Remove the world-facing camera.

About this task

The figure indicates the location of the front camera and microphone assembly and provides a visual representation of the removal procedure.



Steps

NOTE: Latitude 7230 Rugged Extreme Tablet features three configurations for the front camera and microphone assembly:

a. Front camera and microphone assembly
b. Microphone and bracket (without front camera)
c. Bracket only (without front camera and microphone)

NOTE: If any component in the assembly is faulty, you must replace the entire assembly.

1. For a and b configurations, disconnect the front-camera FPC or microphone FPC from the connector on the system board.
2. Remove the two screws (M2x3) that secure the bracket to the tablet.
3. Remove the front camera and microphone assembly away from the tablet.

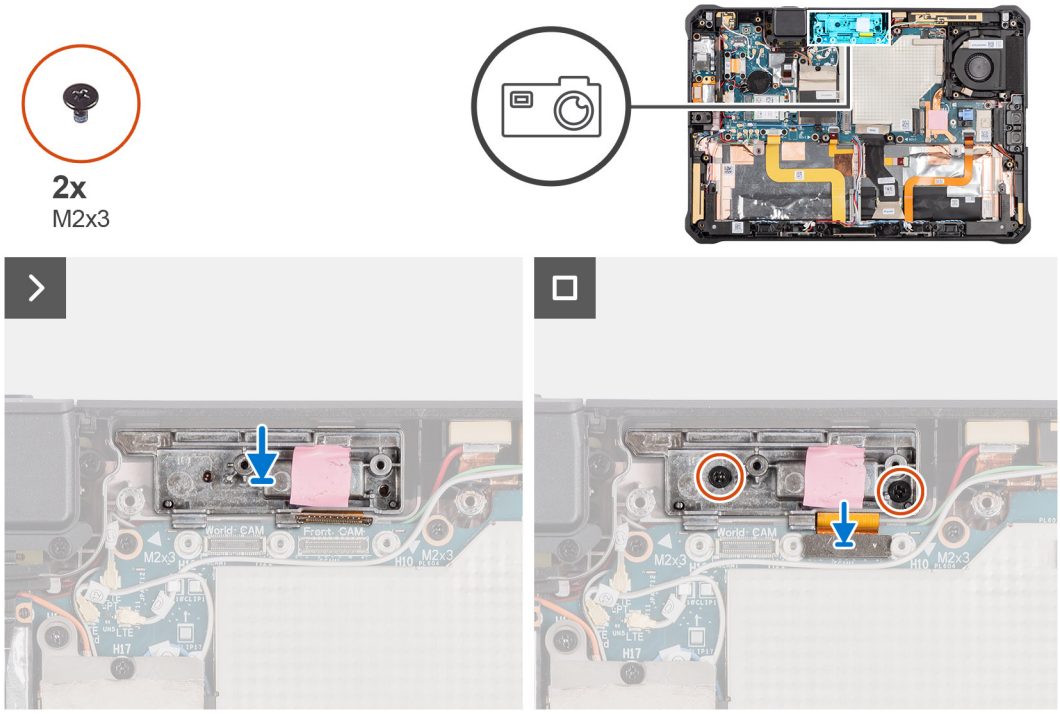
Installing the front camera and microphone assembly

Prerequisites

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

About this task

The figure indicates the location of the front camera and microphone assembly and provides a visual representation of the installation procedure.



Steps

1. Align the screw holes on the bracket with the screw holes on the tablet.
2. Replace the two screws (M2x3) to secure the front camera and microphone assembly to the tablet.
3. Connect the front-camera FPC or microphone FPC to the connector on the system board.

Next steps

1. Install the world-facing camera.
2. Install the back-cover assembly.
3. Install the batteries.
4. Install the handle (for models shipped with handle).
5. Install the stylus.
6. Follow the procedure in after working inside your tablet.

Fan and SSD heat-sink assembly

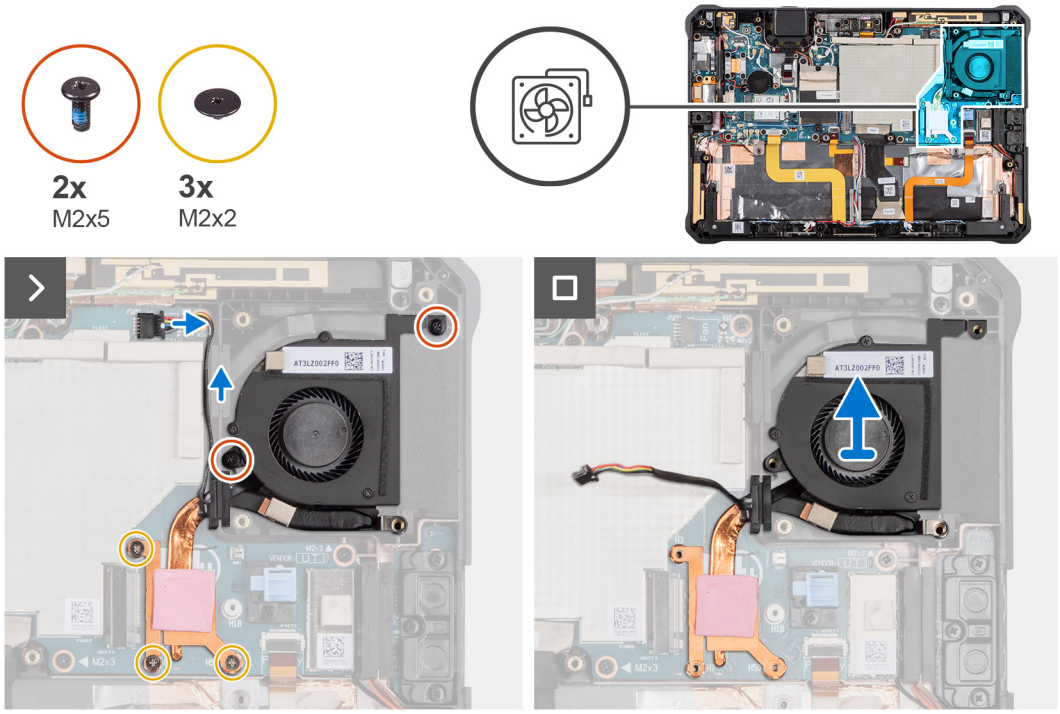
Removing the fan with SSD heat-sink

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the back-cover assembly.
6. Remove the M.2 2230 solid-state drive.

About this task

The figure indicates the location of the SSD heat-sink and provides a visual representation of the removal procedure.



Steps

1. Disconnect the fan cable from the connector on the system board.
2. Unroute the fan cable from the routing guides along the right-side of the system-board shielding cover.
3. Remove the two screws (M2x5) that secure the fan to the tablet.
4. Remove the three screws (M2x2) that secure the SSD heat-sink to the system board.
5. Lift the fan with SSD heat-sink away from the tablet.

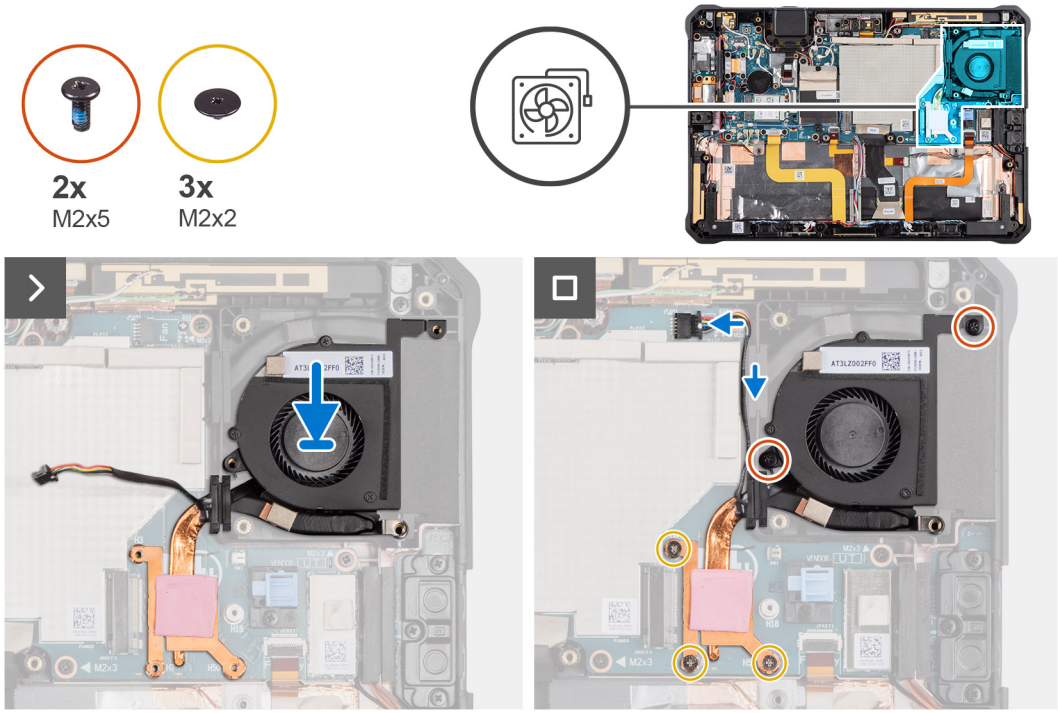
Installing the fan with SSD heat-sink

Prerequisites

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

About this task

The figure indicates the location of the fan with SSD heat-sink and provides a visual representation of the installation procedure.



Steps

1. Align the screw holes on the SSD heat-sink with the screw holes on the system board.
2. Align the screw holes on the fan with the screw holes on the tablet.
3. Replace the three screws (M2x2) to secure the SSD heat-sink to the system board.
4. Replace the two screws (M2x5) to secure the fan to the tablet.
5. Route the fan cable through the routing guides along the right-side of the system-board shielding cover.
6. Connect the fan cable to the connector on the system board.

Next steps

1. Install the M.2 2230 solid-state drive.
2. Install the back-cover assembly.
3. Install the batteries.
4. Install the handle (for models shipped with handle).
5. Install the stylus.
6. Follow the procedure in after working inside your tablet.

System board

Removing the system board

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the SIM card (for models shipped with WWAN antennas).
6. Remove the back-cover assembly.
7. Remove the M.2 2230 solid-state drive.
8. Remove the wireless card.

9. Remove the WWAN card (for models shipped WWAN card).
10. Remove the I/O daughter-board.
11. Remove the USB/HDMI port.
12. Remove the USB-port assembly, Mini-serial RS232 port assembly, RJ45-port assembly, or blank top-cover.
13. Remove the USB daughter-board, Mini-serial RS232 daughter-board, RJ45 daughter-board, and decoder daughter-board.
14. Remove the world-facing camera.
15. Remove the heat sink.
16. Remove the scanner assembly.
17. Remove the front camera and microphone assembly.
18. Remove the fan with SSD heat-sink assembly.

About this task

The following image indicates the connectors on your system board.

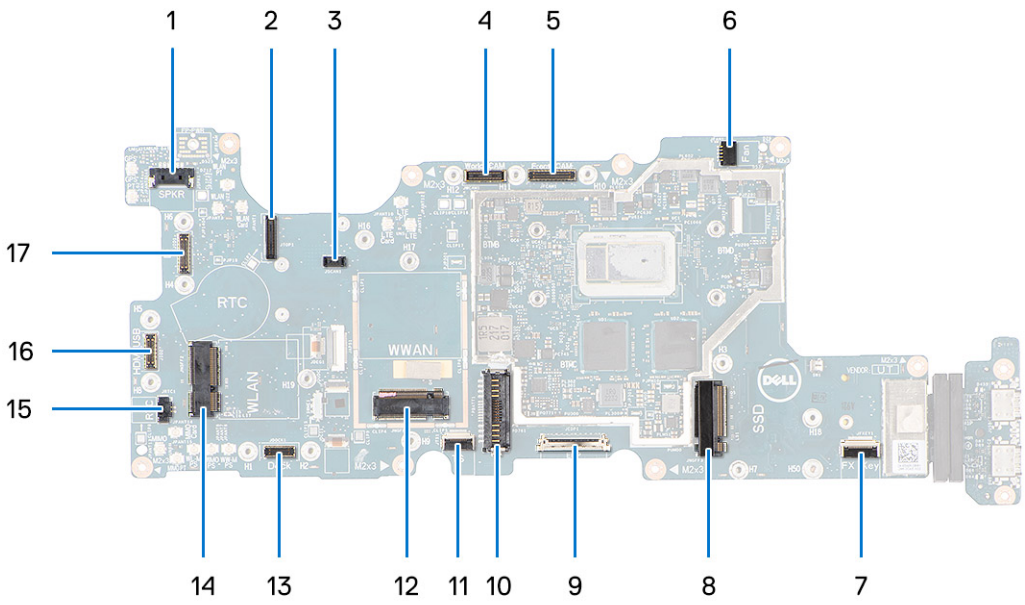
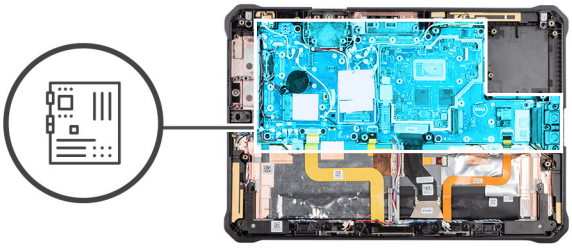


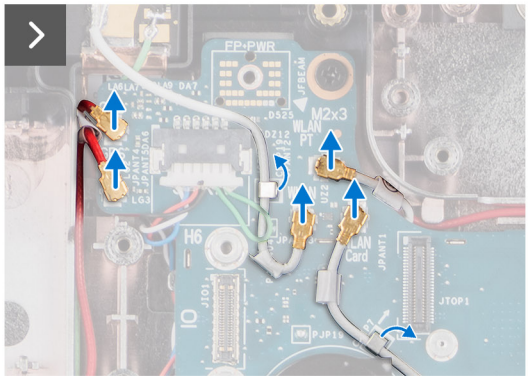
Figure 1. System board connectors

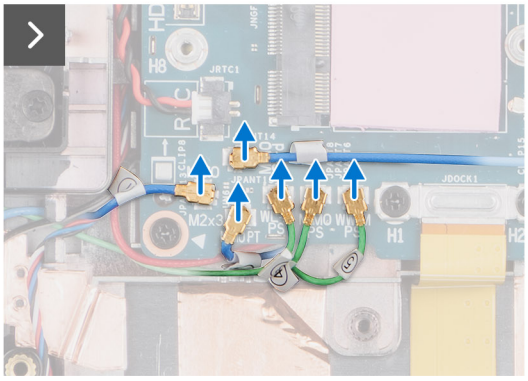
1. Speaker cable connector
2. RJ-45/Fischer USB 3.0/Mini-serial RS-232 daughter-board connector
3. 1D-2D barcode scanner daughter-board connector
4. World-facing camera cable connector
5. Front-camera cable connector
6. Fan cable connector
7. Function-button cable connector
8. Solid-state drive connector
9. eDP cable connector
10. Battery cable connector
11. Touch-screen cable connector
12. WWAN connector
13. Dock cable connector
14. Wireless cable connector
15. Coin-cell battery cable connector
16. USB/HDMI cable connector
17. I/O daughter-board cable connector

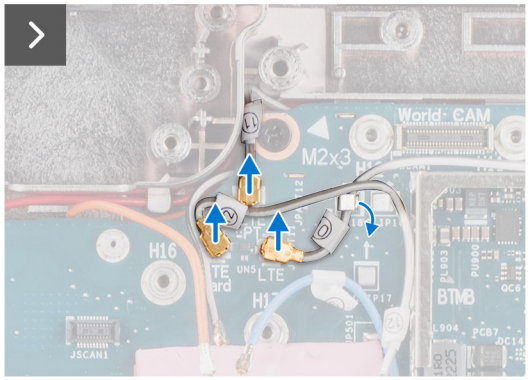
The figure indicates the location of the system board and provides a visual representation of the removal procedure.

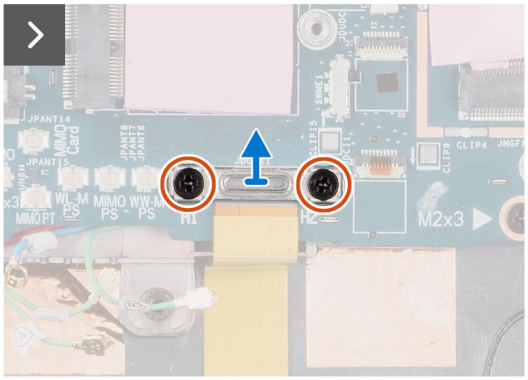

10x
M2x3
4x
M2x5

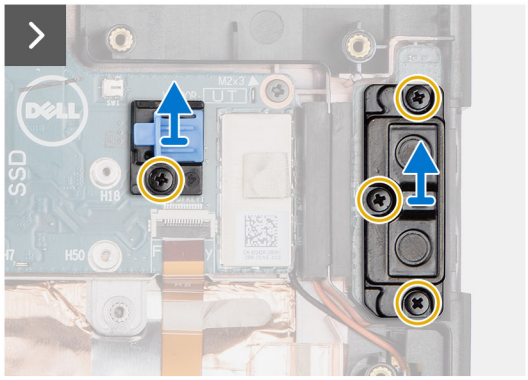


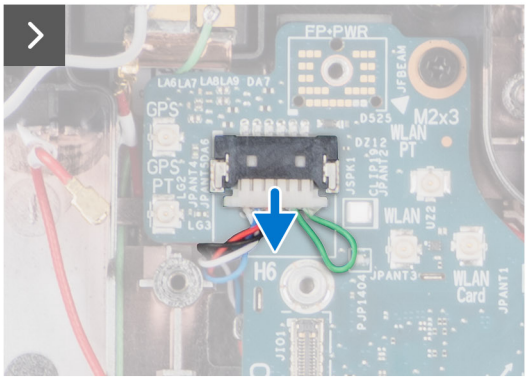

FP-PWR
M2x3
WLAN
PT
LAN
Card
H6
JTOP1

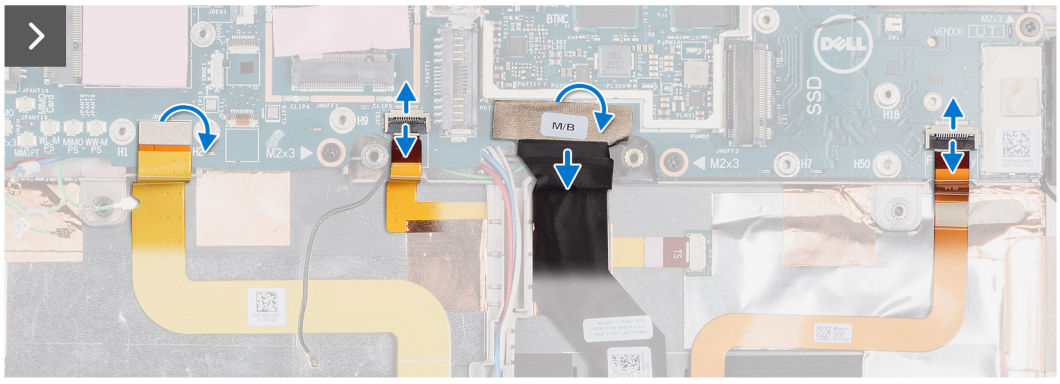

H8
JRTC1
JDOCK1
M2x3
H1
H2

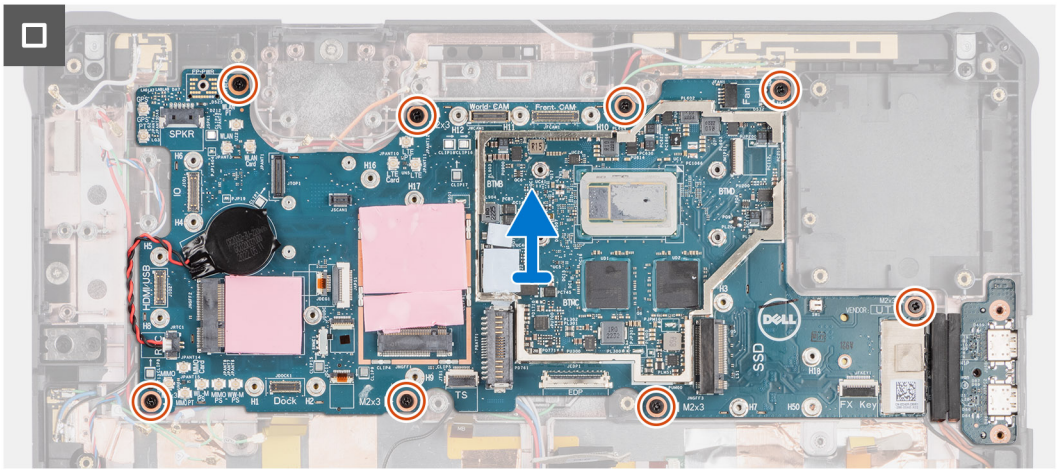

World-CAM
M2x3
H16
LTE
H17
BTMB
JSCAN1


JPANT14
MIMO
Card
M2x3
H1
H2


SSD
M2x3
H18
H7
H50


FP-PWR
GPS
M2x3
WLAN
PT
H6
WLAN
Card


M/B
SSD
M2x3
H18
H7
H50



Steps

1. For models shipped with WLAN antennas, disconnect the red GPS antenna cable, green WLAN Aux P-sensor cable, and green WLAN Main P-sensor cable from the connectors on the system board and unroute the cables from the routing guides.
2. For models shipped with WWAN antennas, disconnect the red GPS antenna cable, green WWAN Main P-sensor cable, green WLAN Aux P-sensor cable, green MIMO 2 P-sensor cable, and green WLAN Main P-sensor cable from the connectors on the system board and unroute the cables from the routing guides.
3. For models shipped with WWAN antennas with full RF pass-through function, disconnect the red GPS antenna cable, white WLAN Main antenna to switch cable, white WLAN Main pass-through to switch cable, white/gray WWAN Main antenna to switch cable, white/gray WWAN pass-through to switch cable, green WWAN Main P-sensor cable, green WLAN Aux P-sensor cable, green MIMO 2 P-sensor cable, green WLAN Main P-sensor cable, blue MIMO 2 pass-through to switch cable, blue MIMO 2 antenna to switch cable, and red GPS pass-through to switch cable from the connectors on the system board and unroute the cables from the routing guides.
4. Remove the two screws (M2x3) that secure the docking FPC bracket to the system board.
5. Remove the docking FPC bracket away from the system board.
6. Remove the single screw (M2x5) that secure the SSD release-latch holder to the system board.
7. Remove the SSD release-latch holder away from the system board.
8. Remove the three screws (M2x5) that secure the USB Type-C bracket to the system board.
9. Remove the USB Type-C bracket away from the tablet.
10. Peel the adhesive tape off the display cable connector on the system board.
11. Disconnect the speaker cable, docking FPC, touch panel FPC, display cable, and function daughter-board FPC from the connector on the system board.
12. Remove the eight screws (M2x3) that secure the system board to the display assembly.
13. Remove the system board with the RTC battery away from the display assembly.

Installing the system board

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.

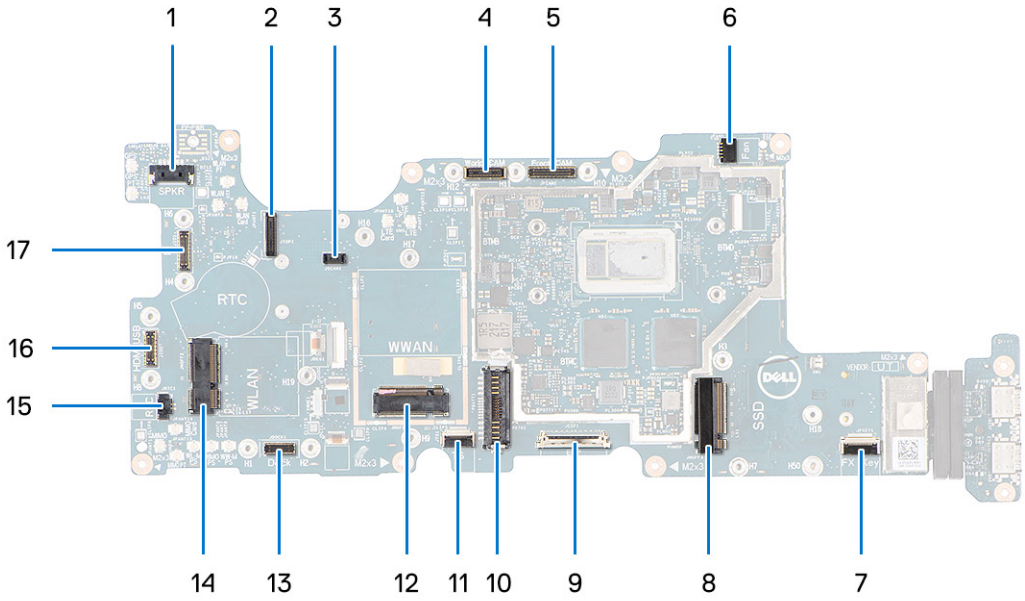
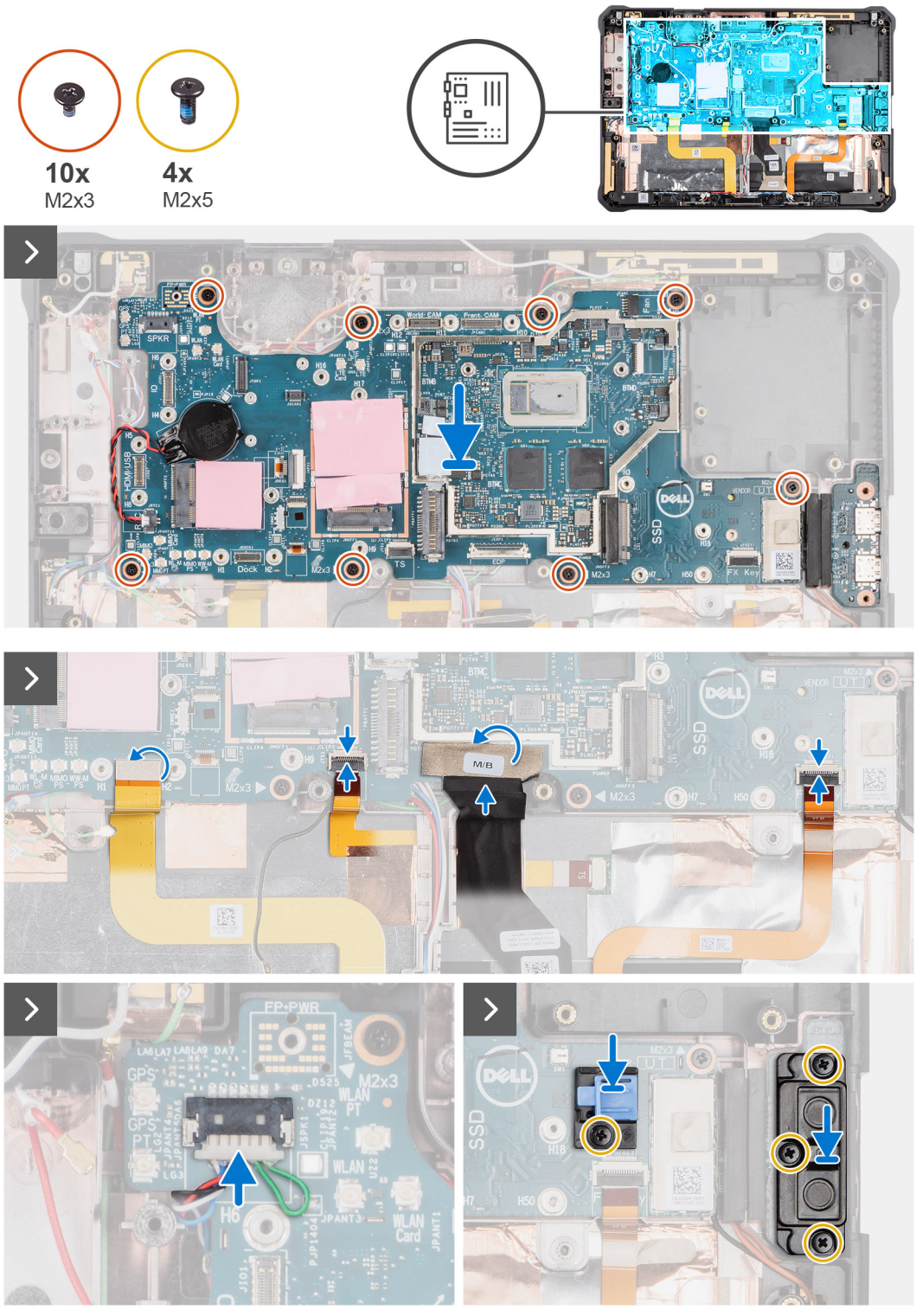
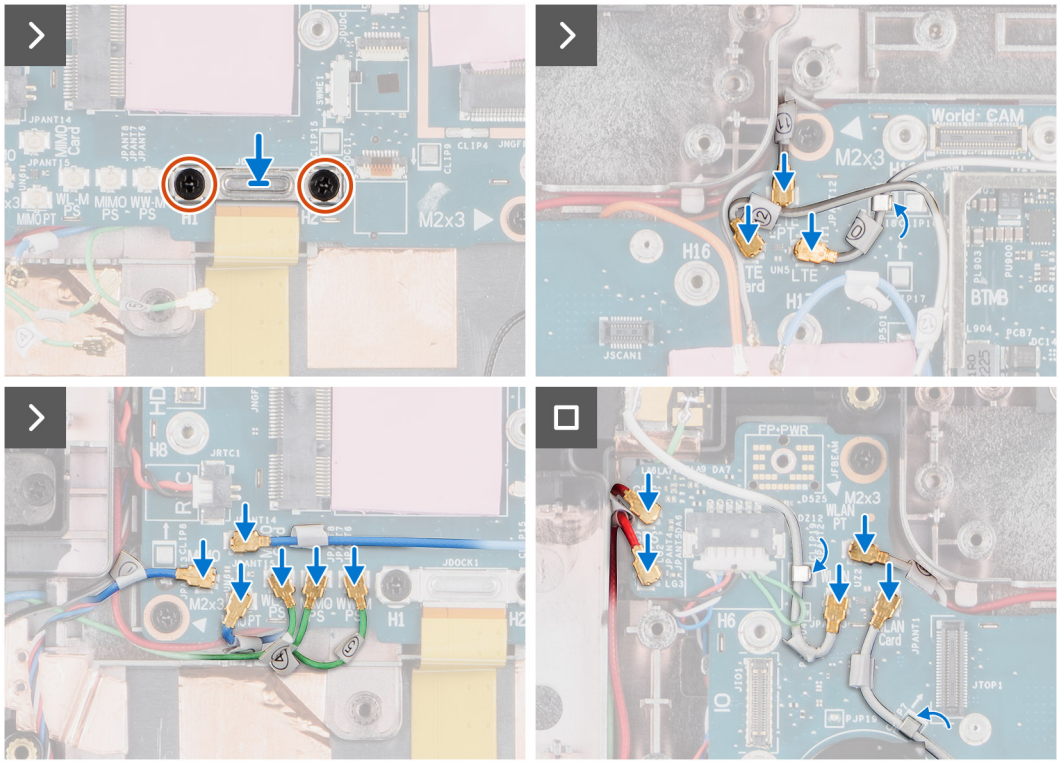


Figure 2. System board connectors

1. Speaker cable connector
2. RJ-45/Fischer USB 3.0/Mini-serial RS-232 daughter-board connector
3. 1D-2D barcode scanner daughter-board connector
4. World-facing camera cable connector
5. Front-camera cable connector
6. Fan cable connector
7. Function-button cable connector
8. Solid-state drive connector
9. eDP cable connector
10. Battery cable connector
11. Touch-screen cable connector
12. WWAN connector
13. Dock cable connector
14. Wireless cable connector
15. Coin-cell battery cable connector
16. USB/HDMI cable connector
17. I/O daughter-board cable connector

The figure indicates the location of the system board and provides a visual representation of the installation procedure.


10x
M2x3
4x
M2x5
SPKR
World-CAM
Front-CAM
Fan
HDMI-USB
Dock
TS
EDP
SSD
FX Key
M2x3
M/B
FP-PWR
GPS
WLAN
WLAN Card



Steps

1. Align the screw holes on the system board with the screw holes on the tablet.
2. Replace the eight screws (M2x3) to secure the system board to the tablet.
3. Connect the speaker cable, docking FPC, touch panel FPC, display cable, and function daughter-board FPC to the connector on the system board.
4. Adhere the adhesive tape to the display cable connector on the system board.
5. Align the screw holes on the USB Type-C bracket with the screw holes on the system board.
6. Replace the three screws (M2x5) to secure the USB Type-C bracket to the system board.
7. Align the screw hole on the SSD release-latch holder with the screw hole on the system board.
8. Replace the single screw (M2x5) to secure the SSD release-latch holder to the system board.
9. Align the screw holes on the docking FPC bracket with the screw holes on the system board.
10. Replace the two screws (M2x3) to secure the docking FPC bracket to the system board.
11. For models shipped with WWAN antennas with full RF pass-through function, connect the red GPS antenna cable, white WLAN Main antenna to switch cable, white WLAN Main pass-through to switch cable, white/gray WWAN Main antenna to switch cable, white/gray WWAN pass-through to switch cable, green WWAN Main P-sensor cable, green WLAN Aux P-sensor cable, green MIMO 2 P-sensor cable, green WLAN Main P-sensor cable, blue MIMO 2 pass-through to switch cable, blue MIMO 2 antenna to switch cable, and red GPS pass-through to switch cable from the connectors on the system board and route the cables through the routing guides.
12. For models shipped with WWAN antennas, connect the red GPS antenna cable, green WWAN Main P-sensor cable, green WLAN Aux P-sensor cable, green MIMO 2 P-sensor cable, and green WLAN Main P-sensor cable from the connectors on the system board and route the cables through the routing guides.
13. For models shipped with WLAN antennas, connect the red GPS antenna cable, green WLAN Aux P-sensor cable, and green WLAN Main P-sensor cable from the connectors on the system board and unroute the cables through the routing guides.

Next steps

1. Install the fan with SSD heat-sink assembly.
2. Install the front camera and microphone assembly.
3. Install the scanner assembly.
4. Install the heat sink.
5. Install the world-facing camera.
6. Install the USB daughter-board, Mini-serial RS232 daughter-board, RJ45 daughter-board, and decoder daughter-board.

7. Install the USB-port assembly, Mini-serial RS232 port assembly, RJ45-port assembly, or blank top-cover.
8. Install the USB/HDMI port.
9. Install the I/O daughter-board.
10. Install the WWAN card (for models shipped WWAN card).
11. Install the wireless card.
12. Install the M.2 2230 solid-state drive.
13. Install the back-cover assembly.
14. Install the SIM card (for models shipped with WWAN antennas).
15. Install the batteries.
16. Install the handle (for the models shipped with a handle).
17. Install the stylus.
18. Follow the procedure in after working inside your tablet.

Display assembly

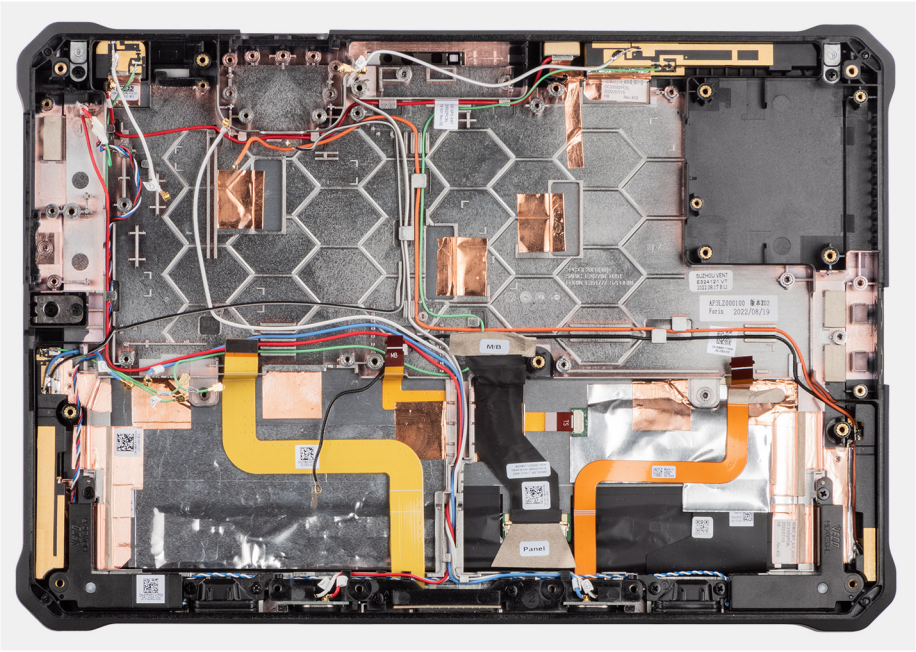
Removing the display-panel assembly

Prerequisites

1. Follow the procedure in before working inside your tablet.
2. Remove the stylus.
3. Remove the handle (for the models shipped with a handle).
4. Remove the batteries.
5. Remove the SIM card (for models shipped with WWAN antennas).
6. Remove the back-cover assembly.
7. Remove the M.2 2230 solid-state drive.
8. Remove the wireless card.
9. Remove the WWAN card (for models shipped WWAN card).
10. Remove the I/O daughter-board.
11. Remove the USB/HDMI port.
12. Remove the USB-port assembly, Mini-serial RS232 port assembly, RJ45-port assembly, or blank top-cover.
13. Remove the USB daughter-board, Mini-serial RS232 daughter-board, RJ45 daughter-board, and decoder daughter-board.
14. Remove the world-facing camera.
15. Remove the heat sink.
16. Remove the scanner assembly.
17. Remove the front camera and microphone assembly.
18. Remove the fan with SSD heat-sink assembly.
19. Remove the system board.

About this task

The figure indicates the location of the display-panel assembly and provides a visual representation of the removal procedure.



Steps

1. For models shipped with a Mini-serial RS232 port or RJ45 port, remove the single screw (M2x2) that secure the Mini-serial RS232/RJ45 bezel from the display-panel assembly.
2. Remove the Mini-serial RS232/RJ45 bezel away from the display-panel assembly.

   NOTE: The RS232/RJ-45 bezel that is removed from the faulty display-panel assembly must be replaced in the replacement display-panel assembly.

3. For models shipped with a Mini-serial RS232 port, remove the four hexagonal Mini-serial RS232 FPC standoff nuts from the display-panel assembly.

   NOTE: The four hexagonal Mini-serial RS232 FPC standoff nuts that are removed from the faulty display-panel assembly must be replaced in the replacement display-panel assembly.

4. After performing the above mentioned steps, we are left with the display-panel assembly.

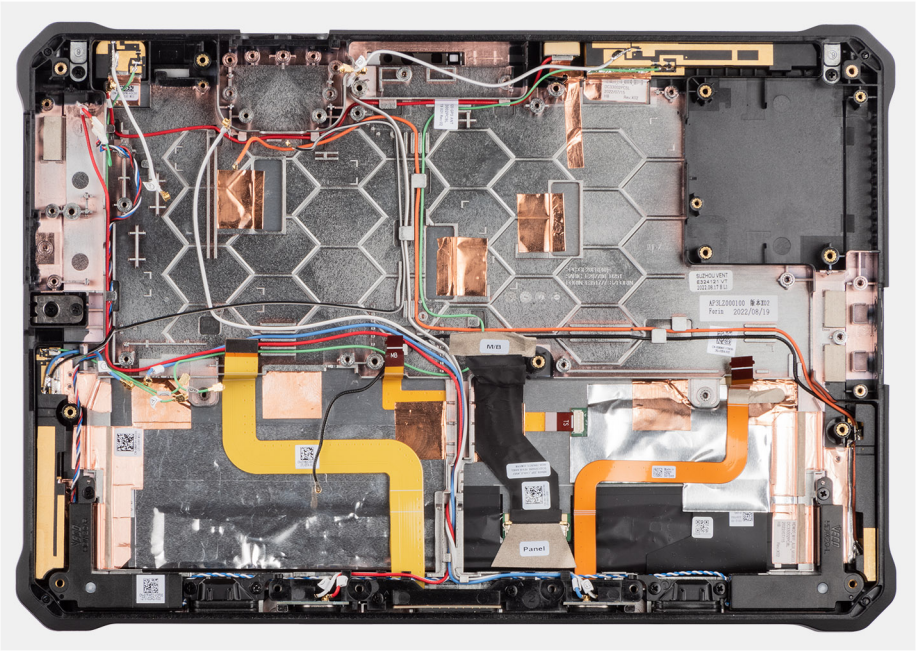
Installing the display-panel assembly

Prerequisites

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

About this task

The figure indicates the location of the display-panel assembly and provides a visual representation of the installation procedure.



Steps

1. Place the tablet on a flat and clean surface.
2. For models shipped with a Mini-serial RS232 port, replace the four hexagonal Mini-serial RS232 FPC standoff nuts on the display-panel assembly.

   NOTE: The four hexagonal Mini-serial RS232 FPC standoff nuts that are removed from the faulty display-panel assembly must be replaced in the replacement display-panel assembly.

3. For models shipped with a Mini-serial RS232 port or RJ45 port, align the screw hole on the Mini-serial RS232/RJ45 bezel with the screw on the display-panel assembly.
4. Replace the single screw (M2x2) to secure the Mini-serial RS232/RJ45 bezel to the display-panel assembly.

Next steps

1. Install the system board.
2. Install the fan with SSD heat-sink assembly.
3. Install the front camera and microphone assembly.
4. Install the scanner assembly.
5. Install the heat sink.
6. Install the world-facing camera.
7. Install the USB daughter-board, Mini-serial RS232 daughter-board, RJ45 daughter-board, and decoder daughter-board.
8. Install the USB-port assembly, Mini-serial RS232 port assembly, RJ45-port assembly, or blank top-cover.
9. Install the USB/HDMI port.
10. Install the I/O daughter-board.
11. Install the WWAN card (for models shipped WWAN card).
12. Install the wireless card.
13. Install the M.2 2230 solid-state drive.
14. Install the back-cover assembly.
15. Install the SIM card (for models shipped with WWAN antennas).
16. Install the batteries.
17. Install the handle (for the models shipped with a handle).
18. Install the stylus.
19. Follow the procedure in after working inside your tablet.

3

Drivers and downloads

When troubleshooting, downloading or installing drivers it is recommended that you read the Dell Knowledge Based article, Drivers and Downloads FAQ 000123347.

4

BIOS setup

CAUTION: Unless you are an expert computer user, do not change the settings in the BIOS Setup program. Certain changes can make your computer work incorrectly.

NOTE: Depending on the computer and its installed devices, the items listed in this section may or may not be displayed.

NOTE: Before you change BIOS Setup program, it is recommended that you write down the BIOS Setup program screen information for future reference.

Use the BIOS Setup program for the following purposes:

- Get information about the hardware installed in your computer, such as the amount of RAM and the size of the hard drive.
- Change the system configuration information.
- Set or change a user-selectable option, such as the user password, type of hard drive installed, and enabling or disabling base devices.

Entering BIOS setup program

About this task

Turn on (or restart) your computer and press F2 immediately.

NOTE: If you have not installed the optional keyboard, press **-** button (volume down) instead of F2.

Navigation keys

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

Table 4. 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 follow the link in the field.
Spacebar	Expands or collapses a drop-down list, if applicable.
Tab	Moves to the next focus area. **NOTE:** For the standard graphics browser only.
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 restarts the system.

One time boot menu

To enter **one time boot menu**, turn on your computer, and then press F12 immediately.

NOTE: If you have not installed the optional keyboard, press **+** button (volume up) instead of F12.

NOTE: It is recommended to shutdown the computer if it is on.

The one-time boot menu displays the devices that you can boot from including the diagnostic option. 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 boot sequence screen also displays the option to access the System Setup screen.

System setup options

NOTE: Depending on your system and its installed devices, the items that are listed in this section may or may not appear.

Table 5. System setup options—System information menu

Overview	
Lattitude 7230 Rugged Extreme Tablet	
BIOS Version	Displays the BIOS version number.
Service Tag	Displays the Service Tag of the system.
Asset Tag	Displays the Asset Tag of the system.
Manufacture Date	Displays the manufacture date of the system.
Ownership Date	Displays the ownership date of the system.
Express Service Code	Displays the express service code of the system.
Ownership Tag	Displays the Ownership Tag of the system.
Signed Firmware Update	Displays whether the Signed Firmware Update is enabled on your system.
Battery Information	
Battery 1 Type	Displays that battery 1 is primary.
Battery 1 Level	Displays the battery 1 level of the system.
Battery 1 State	Displays the battery 1 state of the system.
Battery 1 Health	Displays the battery 1 health of the system.
Battery 2 Type	Displays that battery 2 is primary.
Battery 2 Level	Displays the battery 2 level of the system.
Battery 2 State	Displays the battery 2 state of the system.
Battery 2 Health	Displays the battery 2 health of the system.
AC Adapter	Displays whether the AC adapter is connected or not.
Processor Information	
Processor Type	Displays the processor type.
Maximum Clock Speed	Displays the maximum processor clock speed.
Minimum Clock Speed	Displays the minimum processor clock speed.
Current Clock Speed	Displays the current processor clock speed.

Table 5. System setup options—System information menu (continued)

Overview	
Core Count	Displays the number of cores on the processor.
Processor ID	Displays the processor identification code.
Processor L2 Cache	Displays the processor L2 Cache size.
Processor L3 Cache	Displays the processor L3 Cache size.
Microcode Version	Displays the microcode version.
Intel Hyper-Threading Capable	Displays whether the processor is Hyper-Threading (HT) capable.
64-Bit Technology	Displays whether 64-bit technology is used.
Memory Information	
Memory Installed	Displays the total system memory installed.
Memory Available	Displays the total system memory available.
Memory Speed	Displays the memory speed.
Memory Channel Mode	Displays single or dual channel mode.
Memory Technology	Displays the technology that is used for the memory.
Devices Information	
Panel Type	Displays the Panel Type of the system.
Video Controller	Displays the video controller type of the system.
Video Memory	Displays the video memory information of the system.
Wi-Fi Device	Displays the wireless device information of the system.
Native Resolution	Displays the native resolution of the system.
Video BIOS Version	Displays the video BIOS version of the system.
Audio Controller	Displays the audio controller information of the system.
Bluetooth Device	Displays the Bluetooth device information of the system.
Pass Through MAC Address	Displays the pass through MAC address of the system.
Cellular Device	Displays the cellular device information of the system.

Table 6. System setup options—Boot Configuration menu

Boot Configuration	
Boot Sequence	
Boot mode	Displays the boot mode.
Boot Sequence	Displays the boot sequence.
Secure Digital (SD) Card Boot	Enable or disable the SD card read-only boot. By default, the **Secure Digital (SD) Card Boot** option is not enabled.
Secure Boot	
Enable Secure Boot	Enable or disable the secure boot feature. By default, the option is not enabled.
Enable Microsoft UEFI CA	Enable or disable the Microsoft UEFI CA feature. By default, the option is enabled.
Secure Boot Mode	Enable or disable to change the secure boot mode options. By default, the **Deployed Mode** is enabled.

Table 6. System setup options—Boot Configuration menu (continued)

Boot Configuration	
Expert Key Management	
Enable Custom Mode	Enable or disable custom mode. By default, the **custom mode** option is not enabled.
Custom Mode Key Management	Select the custom values for expert key management.

Table 7. System setup options—Integrated Devices menu

Integrated Devices	
Date/Time	Displays the current date in MM/DD/YYYY format and current time in HH:MM:SS AM/PM format.
Programmable Buttons	Allows configuration of the P1, P2, and P3 programmable buttons. By default, these buttons are conifgured by the Rugged Control Center (RCC)n program. By default, the **Configure by RCC** option is selected.
Camera	Enables or disable the camera. By default, the **Enable User-Facing Camera** and **Enable World-Facing Camera** options are selected.
Audio	
Enable Audio	Enable or disable the integrated audio controller. By default, all the options are enabled.
USB/Thunderbolt Configuration	• Enable or disable booting from USB mass storage devices that are connected to external USB ports. By default, the **Enable External USB Ports** option is enabled. • Enable or disable booting from USB mass storage devices such as external hard drive, optical drive, and USB drive. By default, the **Enable USB Boot Support** option is enabled.
Enable Thunderbolt Technology Support	Enable or disable the associated ports and adapters. By default, the **Enable Thunderbolt Technology Support** option is selected.
Enable Thunderbolt Boot Support	Enable or disable the Thunderbolt adapter peripheral device and USB devices that are connected to the Thunderbolt adapter to be used during BIOS Pre-boot. By default, the **Enable Thunderbolt Boot Support** option is disabled.
Enable Thunderbolt (and PCIe behind TBT) pre-boot modules	Enable or disable the PCIe devices that are connected through a Thunderbolt adapter to execute the PCIe devices UEFI Option ROM (if present) during pre-boot. By default, the **Enable Thunderbolt (and PCIe behind TBT) pre-boot modules** option is disabled.
Disable USB4 PCIE Tunneling	Disable the USB4 PCIE Tunneling option. By default, the option is disabled.
Video/Power only on Type-C Ports	Enable or disable the Type-C port functionality to video or only power. By default, the **Video/Power only on Type-C Ports** option is disabled.
Type-C Dock Override	Enables to use connected Type-C Dell Dock to provide data stream with external USB ports disabled. When Type-C Dock override is enabled, the Video/Audio/Lan submenu is activated. By default, the **Type-C Dock Override** option is enabled.

Table 7. System setup options—Integrated Devices menu (continued)

Integrated Devices	
Type-C Dock Audio	Enable or disable the usage of audio on Dell Dock external ports. By default, the **Audio** option is enabled.
Type-C Dock Lan	Enable or disable the usage of LAN on Dell Dock external ports. By default, the **Lan** option is enabled.
Miscellaneous Devices	Enable or disable ExpressCard and Fingerprint Reader device. By default, the **ExpressCard** and **Enable Fingerprint Reader Device** options are enabled.
Tablet Buttons Illumination	This controls the LED brightness for the following tablet buttons: Power, Rotation Lock, LCD Brightness Down, LCD Brightness Up, Volume Down, Volume Up, P1, P2, and P3. The options are: ● Off ● Level is 25% ● Level is 50% ● Level is 75% ● **Level is 100%**-enabled by default
Tablet Buttons Timeout on AC	This feature defines illumination timeout value for the tablet buttons when an AC adapter is plugged into the system. The options are: ● 5 sec ● **10 sec**-enabled by default ● 15 sec ● 30 sec ● 1 min ● 5 min ● 15 min ● Never
Tablet Buttons Timeout on Battery	This feature defines the illumination timeout value for the tablet buttons when the system is running on battery power. The options are: ● 5 sec ● **10 sec**-enabled by default ● 15 sec ● 30 sec ● 1 min ● 5 min ● 15 min ● Never
Stealth Mode Control	This option configures the Dell Stealth Mode feature: Checking 'Enable Stealth Mode' enables this feature. Default is **enabled**: ● Disable onboard LEDs ● Disable onboard LCD screen ● Disable onboard speaker ● Disable onboard fans ● Disable Bluetooth radio ● Disable GPS receiver ● Disable WLAN radio ● Disable WWAN radio

Table 8. System setup options—Storage menu

Storage	
SATA/NVMe Operation	
SATA/NVMe Operation	Set the operating mode of the integrated storage device controller. By default, the **RAID On** option is enabled.
Storage interface	
Port Enablement	This page allows you to enable the onboard drives. By default, the **M.2 PCIe SSD-0** option is enabled.
SMART Reporting	
Enable SMART Reporting	Enable or disable Self-Monitoring, Analysis, and Reporting Technology (SMART) during system startup. By default, the **Enable SMART Reporting** option is not enabled.
Drive Information	
M.2 PCIe SSD-0	
Type	Displays the M.2 PCIe SSD-0 type information of the system.
Device	Displays the M.2 PCIe SSD-0 device information of the system.
Enable MediaCard	
Secure Digital (SD) Card	Enable or disable the SD card. By default, the **Secure Digital (SD) Card** option is enabled.
Secure Digital (SD) Card Read-Only Mode	Enable or disable the SD card read-only mode. By default, the **Secure Digital (SD) Card Read-Only Mode** option is not enabled.

Table 9. System setup options—Display menu

Display	
Display Brightness	
Brightness on battery power	Enable to set screen brightness when the system is running on battery power.
Brightness on AC power	Enable to set screen brightness when the system is running on AC power.
Touchscreen	
Touchscreen	Enable or disable the touchscreen for the OS. By default, the option is enabled.
Full Screen Logo	Enable or disable full screen logo. By default, the option is not enabled.
Limit Panel Brightness to 50%	Enable or disable the panel brightness limit to 50%. By default, the option is not enabled.

Table 10. System setup options—Connection menu

Connection	
Wireless Device Enable	
WWAN/GPS	Enable or disable the internal WWAN/GPS device By default, the option enabled.
WWAN Bus Mode	Set the interface type of the Wireless Wan (WWAN) card.

Table 10. System setup options—Connection menu (continued)

Connection	
	By default, the **Bus Mode PCIe** option is enabled.
WLAN	Enable or disable the internal WLAN device. By default, the option enabled.
Bluetooth	Enable or disable the internal Bluetooth device By default, the option enabled.
Contactless smartcard/NFC	Enable or disable the internal Contactless smartcard/NFC device By default, the option enabled.
Enable UEFI Network Stack	Enable or disable UEFI Network Stack and controls the on-board LAN Controller. By default, the **Auto Enabled** option is selected.
Wireless Radio Control	
Control WLAN radio	Sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WLAN). By default, the option is disabled.
Control WWAN radio	Sense the connection of the system to a wired network and subsequently disable the selected wireless radios (WWAN). By default, the option is disabled.
HTTPs Boot Feature	
HTTPs Boot	Enable or disable the HTTPs Boot feature. By default, the **Auto Mode** option is enabled.
HTTPs Boot Mode	With Auto Mode, the HTTPs Boot extracts Boot URL from the DHCP. With Manual Mode, the HTTPs Boot reads Boot URL from the user-provided data. By default, the **Auto Mode** option is enabled.
Antenna Switch	
WLAN Antenna	Enable or disable the Dock Antenna or System Antenna option. By default, the **Dock Antenna** option is enabled.
WWAN Antenna	Enable or disable the Dock Antenna or System Antenna option. By default, the **Dock Antenna** option is enabled.
GPS Antenna	Enable or disable the Dock Antenna or System Antenna option. By default, the **Dock Antenna** option is enabled.

Table 11. System setup options—Power menu

Power	
Battery 1 configuration	Enables the system to run on battery during peak power usage hours. Use the table **Custom Charge Start** and **Custom Charge Stop**, to prevent AC power usage between certain times of each day. By default, the **Adaptive** option is enabled.
Battery 2 configuration	Enables the system to run on battery during peak power usage hours. Use the table **Custom Charge Start** and **Custom Charge Stop**, to prevent AC power usage between certain times of each day. By default, the **Adaptive** option is enabled.

Table 11. System setup options—Power menu (continued)

Power	
Advanced Configuration	
Enable Advanced Battery Charge Configuration	Enable or disable the advanced battery charge configuration. By default, the **Enable Advanced Battery Charge Configuration** option is disabled.
Peak Shift	Enables the system to run on battery during peak power usage hours.
Enable Peak Shift	By default, the **Enable Peak Shift** option is disabled.
USB PowerShare	
Enable USB PowerShare	Enable or disable the USB PowerShare. By default, the **Enable USB PowerShare** option is disabled
Thermal Management	Enables to cool the fan and processor heat management to adjust the system performance, noise, and temperature. By default, the **Optimized** option is enabled.
USB Wake Support	
Wake on Dell USB-C Dock	When enabled, connecting a Dell USB-C Dock will wake the system from Standby, Hibernate, and Power Off. By default, the **Wake on Dell USB-C Dock** option is enabled.
Block Sleep	Enables to block entering sleep (S3) mode in the operating system. By default, the **Block Sleep** option is disabled.
Lid Switch	
Enabled Lid Switch	Enable or disable the lid switch. By default, the **Enable Lid Switch** option is enabled.
Intel Speed Shift Technology	Enable or disable the Intel speed shift technology support. By default, the **Intel Speed Shift Technology** option is enabled.

Table 12. System setup options—Security menu

Security	
TPM 2.0 Security	
TPM 2.0 Security On	Allows you to enable or disable TPM visibility to operating system. By default, the **TPM 2.0 Security On** option is enabled.
Attestation Enable	Enables to control whether the Trusted Platform Module (TPM) Endorsement Hierarchy is available to the operating system. By default, the **Attestation Enable** option is enabled.
Key Storage Enable	Enables to control whether the Trusted Platform Module (TPM) Storage Hierarchy is available to the operating system. By default, the **Key Storage Enable** option is enabled.
SHA-256	When enabled, the BIOS and TPM will use the SHA-256 hash algorithm to extend measurements into the TPM PCRs during BIOS boot. By default, the **SHA-256** option is enabled.
Clear	Enables to clear the TPM owner information and returns the TPM to the default state. By default, the **Clear** option is disabled.

Table 12. System setup options—Security menu (continued)

Security	
PPI Bypass for Clear Commands	Controls the TPM Physical Presence Interface (PPI). By default, the **PPI ByPass for clear Commands** option is disabled.
Chassis intrusion	Controls the chassis intrusion feature. By default, the **On-Silent** option is enabled.
Clear Intrusion Warning	By default, the option is disabled.
SMM Security Mitigation	Enable or disable additional UEFI SMM Security Mitigation protections. By default, the option is enabled.
Data Wipe on Next Boot	
Start Data Wipe	Enable or disable the data wipe on next boot. By default, the **Start Data Wipe** option is disabled.
Absolute	Enable or disable or permanently disable the BIOS module interface of the optional Absolute Persistence Module service from Absolute software. By default, the option is enabled. **WARNING: The 'Permanently Disabled' option can only be selected once. When 'Permanently Disabled' is selected, Absolute Persistence cannot be re-enabled. No further changes to the Enable/Disable states are allowed.** **NOTE:** The Enable/Disable options will be unavailable while Computrace is in the activated state.
UEFI Boot Path Security	Controls whether the system will prompt the user to enter the admin 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.
Authenticated BIOS Interface	
Enable Authenticated BIOS Interface	By default, the option is disabled.
Legacy Manageability Interface Access	By default, the option is disabled.
Firmware Device Tamper Detection	
Firmware Device Tamper Detection	By default, the option **Silent** is enabled.
Clear Firmware Device Tamper Detection	By default, the option is disabled.

Table 13. System setup options—Passwords menu

Passwords	
Admin Password	Set, change, or delete the administrator password.
System Password	Set, change, or delete the system password.
M.2 PCIe SSD-0	Set, change, or delete the M.2 PCIe SSD-0 password.
Password Configuration	
Upper Case Letter	Reinforces password must have at least one upper case letter. By default, the option is disabled.
Lower Case Letter	Reinforces password must have at least one lower case letter. By default, the option is disabled.

Table 13. System setup options—Passwords menu (continued)

Passwords	
Digit	Reinforces password must have at least one digit number. By default, the option is disabled.
Special Character	Reinforces password must have at least one special character. By default, the option is disabled.
Minimum Characters	Set the minimum characters allowed for password.
Password Bypass	When enabled, this always prompts for system and internal hard drive passwords when powered on from the off state. By default, the **Disabled** option is selected.
Password Changes	
Enable Non-Admin Password Changes	Enable or disable to change system and hard drive password without the need for admin password. By default, the option is enabled.
Admin Setup Lockout	
Enable Admin Setup Lockout	Enables administrators control over how their users can or cannot access BIOS setup. By default, the option is disabled.
Master Password Lockout	
Enable Master Password Lockout	When enabled, this disables the master password support. By default, the option is disabled.
Allow Non-Admin PSID Revert	
Enable Allow Non-Admin PSID Revert	Controls access to the Physical Security ID (PSID) revert of NVMe hard-drives from the Dell Security Manager prompt. By default, the option is disabled.

Table 14. System setup options—Update, Recovery menu

Update, Recovery	
UEFI Capsule Firmware Updates	Enable or disable BIOS updates through UEFI capsule update packages. **NOTE:** Disabling this option will block BIOS updates from services such as Microsoft Windows Update and Linux Vendor Firmware Service (LVFS). By default, the option is enabled.
BIOS Recovery from Hard Drive	Enables the user to recover from certain corrupted BIOS conditions from a recovery file on the user primary hard drive or an external USB key. By default, the option is enabled. **NOTE:** BIOS Recovery from Hard Drive is not available for self-encrypting drives (SED).
BIOS Downgrade	
Allow BIOS Downgrade	This field controls the flashing of the system firmware to previous revisions. By default, the option is enabled.
SupportAssist OS Recovery	Enable or disable the boot flow for SupportAssist OS Recovery tool in the event of certain system errors. By default, the option is enabled.

Table 14. System setup options—Update, Recovery menu (continued)

Update, Recovery	
BIOSConnect	Enable or disable cloud Service operating system recovery if the main operating system fails to boot with the number of failures equal to or greater than the value specified by the Auto operating system Recovery Threshold setup option and local Service operating system does not boot or is not installed. By default, the option is enabled.
Dell Auto operating system Recovery Threshold	Controls the automatic boot flow for SupportAssist System Resolution Console and for Dell operating system Recovery Tool. By default, the threshold value is set to 2.

Table 15. System setup options—System Management menu

System Management	
Service Tag	Displays the Service Tag of the system.
Asset Tag	Create a system Asset Tag.
AC Behavior	
Wake on AC	Enable or disable the wake on AC option. By default, the option is disabled.
Wake on LAN	
Wake on LAN	Enable or disable the system to power on by special LAN signals when it receives a wakeup signal from the WLAN. By default, the **Disabled** option is selected.
Auto on Time	Enable to set the system 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 option is disabled.
Diagnostics	When enabled, Dell Operating System Agents will be capable of scheduling onboard diagnostics on a subsequent boot which can help assist in the prevention and resolution of hardware related issues. By default, the option is enabled.
Power-on-Self-Test Automatic Recovery	When enabled, if the computer should become unresponsive before completing the BIOSPower-On-Self-Test (POST), the BIOS will attempt to automatically recover the computer. By default, the option is enabled.

Table 16. System setup options—Keyboard menu

Keyboard	
Fn Lock Options	By default, the Fn lock option is enabled.
Lock Mode	By default, the **Lock Mode Secondary** option is enabled. With this option, the F1-F2 keys scan the code for their secondary functions.
Keyboard Illumination	Enables to change the keyboard illumination settings. By default, the **Level is 100%** option is enabled.
Keyboard Backlight Timeout on AC	Set the timeout value for the keyboard backlight when an AC adapter is connected to the system. By default, the **10 seconds** option is enabled.

Table 16. System setup options—Keyboard menu (continued)

Keyboard	
Keyboard Backlight Timeout on Battery	Set the timeout value for the keyboard backlight when the is running only on battery power. By default, the **10 seconds** option is enabled.
Device Configuration Hotkey Access	Manages whether you can access device configuration screens through hotkeys during system startup. By default, the option is enabled.
RGB Keyboard Backlight	Configures the RGB keyboard backlight feature. By default, the **White**, **Red**, **Green**, **Blue** are enabled.

Table 17. System setup options—Pre-boot Behavior menu

Pre-boot Behavior	
Adapter Warnings	
Enable Adapter Warnings	Enable or disable the warning messages during boot when the adapters with less power capacity are detected. By default, the option is enabled.
Warning and Errors	Enable or disable the action to be done when a warning or error is encountered. By default, the **Prompt on Warnings and Errors** option is enabled.
USB-C Warnings	
Enable Dock Warning Messages	By default, the option is enabled.
Fastboot	Allows you to configure the speed of the UEFI boot process. By default, the **Minimal** option is enabled.
Extend BIOS POST Time	Set the BIOS POST load time. By default, the **0 seconds** option is enabled.
MAC Address Pass-Through	Replaces the external NIC MAC address with the selected MAC address from the system. By default, the **Passthrough MAC Address** option is enabled.

Table 18. System setup options—Virtualization menu

Virtualization	
Intel Virtualization Technology	
Enable Intel Virtualization Technology (VT)	When enabled, the system will be able to run a Virtual Machine Monitor (VMM). By default, the option is enabled.
VT for Direct I/O	When enabled, the system will be able to perform Virtualization Technology for Direct I/O (VT-d). By default, the option is enabled.
DMA Protection	
Enable Pre-Boot DMA Support	This setting controls Pre-boot DMA protection for both Internal and External ports. By default, the option is enabled.

Table 18. System setup options—Virtualization menu (continued)

Virtualization	
Enable OS Kernel DMA Support	This setting controls Kernel DMA protection for both Internal and External ports. This setting does not directly enable DMA protection in the operating system. By default, the option is enabled.

Table 19. System setup options—Performance menu

Performance	
Multi Core Support	
Active Cores	Enables to change the number of CPU cores available to the operating system. By default, the **All Cores** option is enabled.
Intel SpeedStep	
Enable Intel SpeedStep Technology	Enables the system to dynamically adjust processor voltage and core frequency, decreasing average power consumption and heat production. By default, the option is enabled.
C-States Control	
Enable C-State Control	Enable the ability of the CPU to enter and exit low power state. When disabled, it disabled all C-states. When enabled, it enabled all C-states that the chipset or platform allows. By default, the option is enabled.
Intel Turbo Boost Technology	
Enable Intel Turbo Boost Technology	Enable or disable the Intel TurboBoost mode of the processor. By default, the option is enabled.
Intel Hyper-Threading Technology	
Enable Intel Hyper-Threading Technology	Enable or disable Hyper-Threading in the processor. By default, the option is enabled.
Dynamic Tuning:Machine Learning	
Enable Dynamic Tuning:Machine Learning	Enables the operating system capability to enhance dynamic power tuning capabilities based on detected workloads. By default, the option is disabled.

Table 20. System setup options—System Logs menu

System Logs	
BIOS Event Log	
Clear Bios Event Log	Displays BIOS events. By default, the **Keep Log** option is enabled.
Thermal Event Log	
Clear Thermal Event Log	Displays Thermal events. By default, the **Keep Log** option is enabled.
Power Event Log	
Clear Power Event Log	Displays power events. By default, the **Keep Log** option is enabled.

Table 20. System setup options—System Logs menu (continued)

System Logs	
License Information	Displays the license information of the system.

Updating the BIOS

Updating the BIOS in Windows

About this task

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, search in the Knowledge Base Resource at www.dell.com/support.

Steps

1. Go to www.dell.com/support.
2. Click **Product support**. In the **Search support** box, enter the Service Tag of your computer, and then click **Search**.

   NOTE: If you do not have the Service Tag, use the SupportAssist feature to automatically identify your computer. You can also use the product ID or manually browse for your computer model.
3. Click **Drivers & Downloads**. Expand **Find drivers**.
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, browse the folder where you saved the BIOS update file.
8. Double-click the BIOS update file icon and follow the on-screen instructions.
   For more information, search in the Knowledge Base Resource at www.dell.com/support.

Updating the BIOS using the USB drive in Windows

About this task

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, search in the Knowledge Base Resource at www.dell.com/support.

Steps

1. Follow the procedure from step 1 to step 6 in Updating the BIOS in Windows to download the latest BIOS setup program file.
2. Create a bootable USB drive. For more information, search in the Knowledge Base Resource at www.dell.com/support.
3. Copy the BIOS setup program file to the bootable USB drive.
4. Connect the bootable USB drive to the computer that needs the BIOS update.
5. Restart the computer and press **F12** .

   NOTE: If you have not installed the optional keyboard, press **+** button (volume up) instead of F12.
6. Select the USB drive from the **One Time Boot Menu**.
7. Type the BIOS setup program filename and press **Enter**.

The **BIOS Update Utility** appears.

8. Follow the on-screen instructions to complete the BIOS update.

Updating the BIOS from the F12 One-Time boot menu

Update your computer BIOS using the BIOS update.exe file that is copied to a FAT32 USB drive and booting from the F12 One-Time boot menu.

About this task

CAUTION: If BitLocker is not suspended before updating the BIOS, the next time you reboot the system it will not recognize the BitLocker key. You will then be prompted to enter the recovery key to progress and the system will ask for this on each reboot. If the recovery key is not known this can result in data loss or an unnecessary operating system re-install. For more information on this subject, search in the Knowledge Base Resource at www.dell.com/support.

BIOS Update

You can run the BIOS update file from Windows using a bootable USB drive or you can also update the BIOS from the F12 One-Time boot menu on the computer.

Most of the Dell computers built after 2012 have this capability, and you can confirm by booting your computer to the F12 One-Time Boot Menu to see if BIOS FLASH UPDATE is listed as a boot option for your computer. If the option is listed, then the BIOS supports this BIOS update option.

NOTE: Only computers with BIOS Flash Update option in the F12 One-Time boot menu can use this function.

Updating from the One-Time boot menu

To update your BIOS from the F12 One-Time boot menu, you need the following:

- USB drive formatted to the FAT32 file system (key does not have to be bootable)
- BIOS executable file that you downloaded from the Dell Support website and copied to the root of the USB drive
- AC power adapter that is connected to the computer
- Functional computer battery to flash the BIOS

Perform the following steps to perform the BIOS update flash process from the F12 menu:

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

Steps

1. From a turn off state, insert the USB drive where you copied the flash into a USB port of the computer.
2. Turn on the computer and press F12 to access the One-Time Boot Menu, select BIOS Update using the mouse or arrow keys then press Enter.

   NOTE: If you have not installed the optional keyboard, press **+** button (volume up) instead of F12.

   The flash BIOS menu is displayed.
3. Click **Flash from file**.
4. Select external USB device.
5. Select the file and double-click the flash target file, and then click **Submit**.
6. Click **Update BIOS**. The computer restarts to flash the BIOS.
7. The computer will restart after the BIOS update is completed.

System and setup password

Table 21. System and setup password

Password type	Description
System password	Password that you must enter to log in to your system.
Setup password	Password that you must enter to access and make changes to the BIOS settings of your computer.

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

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

CAUTION: Anyone can access the data that is stored on your computer if it is not locked and left unattended.

NOTE: System and setup password feature is disabled.

Assigning a system setup password

Prerequisites

You can assign a new **System or Admin Password** only when the status is in **Not Set**.

About this task

To enter the system setup, press F12 immediately after a power-on or reboot.

NOTE: If you have not installed the optional keyboard, press **+** button (volume up) instead of F12.

Steps

1. In the **System BIOS** or **System Setup** screen, select **Security** and press Enter.
   The **Security** screen is displayed.
2. Select **System/Admin Password** and create a password in the **Enter the new password** field.
   Use the following guidelines to assign the system password:
   - A password can have up to 32 characters.
   - At least one special character: ! " # $ % & ' ( ) * + , - . / : ; < = > ? @ [\ ] ^ _ ` { | }
   - Numbers 0 through 9.
   - Upper case letters from A to Z.
   - Lower case letters from a to z.
3. Type the system password that you entered earlier in the **Confirm new password** field and click **OK**.
4. Press Esc and save the changes as prompted by the pop-up message.
5. Press Y to save the changes.
   The computer restarts.

Deleting or changing an existing system setup password

Prerequisites

Ensure that the **Password Status** is Unlocked (in the System Setup) before attempting to delete or change the existing System and/or Setup password. You cannot delete or change an existing System or Setup password, if the **Password Status** is Locked.

About this task

To enter the System Setup, press F12 immediately after a power-on or reboot.

NOTE: If you have not installed the optional keyboard, press **+** button (volume up) instead of F12.

Steps

1. In the **System BIOS** or **System Setup** screen, select **System Security** and press Enter.
   The **System Security** screen is displayed.
2. In the **System Security** screen, verify that **Password Status** is **Unlocked**.
3. Select **System Password**, update, or delete the existing system password, and press Enter or Tab.
4. Select **Setup Password**, update, or delete the existing setup password, and press Enter or Tab.

   NOTE: If you change the System and/or Setup password, reenter the new password when prompted. If you delete the System and/or Setup password, confirm the deletion when prompted.

5. Press Esc and a message prompts you to save the changes.
6. Press Y to save the changes and exit from System Setup.
   The computer restarts.

Clearing CMOS settings

About this task

CAUTION: Clearing CMOS settings will reset the BIOS settings on your computer.

Steps

1. Remove the back-cover assembly.
2. Remove the coin-cell battery.
3. Wait for one minute.
4. Replace the coin-cell battery.
5. Connect the battery cable to the system board.
6. Replace the back-cover assembly.

Clearing BIOS (System Setup) and System passwords

About this task

To clear the system or BIOS passwords, contact Dell technical support as described at www.dell.com/contactdell.

NOTE: For information on how to reset Windows or application passwords, refer to the documentation accompanying Windows or your application.

5

Troubleshooting

Handling swollen Lithium-ion batteries

Like most laptops, Dell laptops use lithium-ion batteries. One type of lithium-ion battery is the lithium-ion polymer battery. Lithium-ion polymer batteries have increased in popularity in recent years and have become standard in the electronics industry due to customer preferences for a slim form factor (especially with newer ultra-thin laptops) and long battery life. Inherent to lithium-ion polymer battery technology is the potential for swelling of the battery cells.

Swollen battery may impact the performance of the laptop. To prevent possible further damage to the device enclosure or internal components leading to malfunction, discontinue the use of the laptop and discharge it by disconnecting the AC adapter and letting the battery drain.

Swollen batteries should not be used and should be replaced and disposed of properly. We recommend contacting Dell product support for options to replace a swollen battery under the terms of the applicable warranty or service contract, including options for replacement by a Dell authorized service technician.

The guidelines for handling and replacing Lithium-ion batteries are as follows:

- Exercise caution when handling Lithium-ion batteries.
- Discharge the battery before removing it from the system. To discharge the battery, unplug the AC adapter from the system and operate the system only on battery power. When the system will no longer power on when the power button is pressed, the battery is fully discharged.
- Do not crush, drop, mutilate, or penetrate the battery with foreign objects.
- Do not expose the battery to high temperatures, or disassemble battery packs and cells.
- Do not apply pressure to the surface of the battery.
- Do not bend the battery.
- Do not use tools of any type to pry on or against the battery.
- If a battery gets stuck in a device as a result of swelling, do not try to free it as puncturing, bending, or crushing a battery can be dangerous.
- Do not attempt to reassemble a damaged or swollen battery into a laptop.
- Swollen batteries that are covered under warranty should be returned to Dell in an approved shipping container (provided by Dell)—this is to comply with transportation regulations. Swollen batteries that are not covered under warranty should be disposed of at an approved recycling center. Contact Dell product support at https://www.dell.com/support for assistance and further instructions.
- Using a non-Dell or incompatible battery may increase the risk of fire or explosion. Replace the battery only with a compatible battery purchased from Dell that is designed to work with your Dell computer. Do not use a battery from other computers with your computer. Always purchase genuine batteries from https://www.dell.com or otherwise directly from Dell.

Lithium-ion batteries can swell for various reasons such as age, number of charge cycles, or exposure to high heat. For more information on how to improve the performance and lifespan of the laptop battery and to minimize the possibility of occurrence of the issue, search Dell Laptop Battery in the Knowledge Base Resource at www.dell.com/support.

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 with the BIOS and is launched by the BIOS internally. The embedded system diagnostics provides a set of options for particular devices or device groups allowing you to:

- Run tests automatically or in an interactive mode
- Repeat tests
- Display or save test results

- Run thorough tests to introduce additional test options to provide extra information about the failed device(s)
- View status messages that inform you if 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 terminal when the diagnostic tests are performed.

For more information, see https://www.dell.com/support/kbdoc/000180971.

Running the SupportAssist Pre-Boot System Performance Check

Steps

1. Turn on your computer.
2. As the computer boots, press the F12 key as the Dell logo appears.
3. On the boot menu screen, select the **Diagnostics** option.
4. Click the arrow at the bottom left corner.
   Diagnostics front page is displayed.
5. Click the arrow in the lower-right corner to go to the page listing.
   The items detected are listed.
6. To run a diagnostic test on a specific device, press Esc and click **Yes** to stop the diagnostic test.
7. Select the device from the left pane and click **Run Tests**.
8. If there are any issues, error codes are displayed.
   Note the error code and validation number and contact Dell.

Built-in self-test (BIST)

M-BIST

M-BIST (Built In Self-Test) is the system board's built-in self-test diagnostics tool that improves the diagnostics accuracy of system board embedded controller (EC) failures.

NOTE: M-BIST can be manually initiated before POST (Power On Self Test).

How to run M-BIST

NOTE: M-BIST must be initiated on the system from a power-off state either connected to AC power or with battery only.

1. Press and hold both the **M** key on the keyboard and the **power button** to initiate M-BIST.
2. With both the **M** key and the **power button** held down, the battery indicator LED may exhibit two states:
   a. OFF: No fault detected with the system board
   b. AMBER: Indicates a problem with the system board
3. If there is a failure with the system board, the battery status LED will flash one of the following error codes for 30 seconds:

Table 22. LED error codes

Blinking Pattern		Possible Problem
Amber	**White**	
2	1	CPU Failure
2	8	LCD Power Rail Failure
1	1	TPM Detection Failure
2	4	Unrecoverable SPI Failure

4. If there is no failure with the system board, the LCD will cycle through the solid color screens described in the LCD-BIST section for 30 seconds and then power off.

LCD Power rail test (L-BIST)

L-BIST is an enhancement to the single LED error code diagnostics and is automatically initiated during POST. L-BIST will check the LCD power rail. If there is no power being supplied to the LCD (i.e., the L-BIST circuit fails), the battery status LED will flash either an error code [2,8] or an error code [2,7].

NOTE: If L-BIST fails, LCD-BIST cannot function as no power will be supplied to the LCD.

How to invoke L-BIST Test:

1. Press the power button to start the system.
2. If the system does not start up normally, look at the battery status LED:
   - If the battery status LED flashes an error code [2,7], the display cable may not be connected properly.
   - If the battery status LED flashes an error code [2,8], there is a failure on the LCD power rail of the system board, hence there is no power supplied to the LCD.
3. For cases, when a [2,7] error code is shown, check to see if the display cable is properly connected.
4. For cases when a [2,8] error code is shown, replace the system board.

LCD Built-in Self Test (BIST)

Dell laptops have a built-in diagnostic tool that helps you determine if the screen abnormality you are experiencing is an inherent problem with the LCD (screen) of the Dell laptop or with the video card (GPU) and PC settings.

When you notice screen abnormalities like flickering, distortion, clarity issues, fuzzy or blurry image, horizontal or vertical lines, color fade etc., it is always a good practice to isolate the LCD (screen) by running the Built-In Self Test (BIST).

How to invoke LCD BIST Test

1. Power off the Dell laptop.
2. Disconnect any peripherals that are connected to the laptop. Connect only the AC adapter (charger) to the laptop.
3. Ensure that the LCD (screen) is clean (no dust particles on the surface of the screen).
4. Press and hold **D** key and **Power on** the laptop to enter LCD built-in self test (BIST) mode. Continue to hold the D key, until the system boots up.
5. The screen will display solid colors and change colors on the entire screen to white, black, red, green, and blue twice.
6. Then it will display the colors white, black and red.
7. Carefully inspect the screen for abnormalities (any lines, fuzzy color or distortion on the screen).
8. At the end of the last solid color (red), the system will shut down.

NOTE: Dell SupportAssist Pre-boot diagnostics upon launch, initiates an LCD BIST first, expecting a user intervention confirm functionality of the LCD.

System-diagnostic lights

This section lists the system-diagnostic lights of your Latitude 7230 Rugged Extreme Tablet.

Table 23. System-diagnostic lights

Blinking pattern		Problem description	Suggested resolution
Amber	Green		
1	1	TPM detection failure	Replace the system board.
1	2	Unrecoverable SPI Flash Failure	Replace the system board.
1	5	EC unable to program i-Fuse	Replace the system board.

Table 23. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	**Green**		
1	6	Generic catch-all for ungraceful EC code flow errors	Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down power button for 3~5 seconds.
1	7	Non-RPMC Flash on Boot Guard fused system	
2	1	CPU failure	• Run the Dell Support Assist/Dell Diagnostics tool. • If problem persists, replace the system board.
2	2	System board failure (included BIOS corruption or ROM error)	• Flash latest BIOS version • If problem persists, replace the system board.
2	3	No memory/RAM detected	• Confirm that the memory module is installed properly. • If problem persists, replace the memory module.
2	4	Memory/RAM failure	• Reset and swap memory modules among the slots. • If problem persists, replace the memory module.
2	5	Invalid memory installed	• Reset and swap memory modules among the slots. • If problem persists, replace the memory module.
2	6	System board/Chipset Error	Replace the system board.
2	7	LCD failure (SBIOS message)	Replace the LCD module.
2	8	LCD failure (EC detection of power rail failure)	Replace the system board.
3	1	CMOS battery failure	• Reset the main battery connection. • If problem persists, replace the main battery.
3	2	PCI or Video card/chip failure	Replace the system board.
3	3	BIOS Recovery image not found	• Flash latest BIOS version • If problem persists, replace the system board.
3	4	BIOS Recovery image found but invalid	• Flash latest BIOS version • If problem persists, replace the system board.
3	5	Power rail failure	Replace the system board.

Table 23. System-diagnostic lights (continued)

Blinking pattern		Problem description	Suggested resolution
Amber	Green		
3	6	Flash corruption detected by SBIOS.	• Press power button for over 25 seconds to do RTC reset. If problem persists, replace the system board. • Disconnect all power source (AC, battery, coin cell) and drain flea power by pressing and holding down power button 3~5 seconds to ensure all power are drained. • Run "BIOS recovery from USB", and the instructions are in the website Dell support. • If problem persists, replace the system board.
3	7	Timeout waiting on ME to reply to HECI message.	Replace the system board.
4	1	Memory DIMM power rail failure	
4	2	CPU Power Cable Connection Issue	

NOTE: Blinking 3-3-3 LEDs on Lock LED (Caps-Lock or Nums-Lock), Power button LED (without Fingerprint reader), and Diagnostic LED indicates failure to provide input during LCD panel test on Dell SupportAssist Pre-boot System Performance Check diagnostics.

RJ45 LEDs

The Latitude 7230 Rugged Extreme Tablet RJ45 port has double-LEDs on the either side.

- 10 Mbps—Green
- 100 Mbps—Orange
- 1 Gbps—Green + Orange
- Ethernet activity indicator = Yellow flashing

Real-Time Clock (RTC Reset)

The Real Time Clock (RTC) reset function allows you or the service technician to recover Dell systems from No POST/No Power/No Boot situations. The legacy jumper enabled RTC reset has been retired on these models.

Start the RTC reset with the system powered off and connected to AC power. Press and hold the power button for

thirty (30) seconds

. The system RTC Reset occurs after you release the power button.

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 in all Dell computers installed with 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, or 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 their 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 www.dell.com/serviceabilitytools. Click **SupportAssist** and then, click **SupportAssist OS Recovery**.

Backup media and recovery options

It is recommended to create a recovery drive to troubleshoot and fix problems that may occur with Windows. Dell proposes multiple options for recovering Windows operating system on your Dell PC. For more information. see Dell Windows Backup Media and Recovery Options.

WiFi power cycle

About this task

If your computer is unable to access the internet due to WiFi connectivity issues a WiFi power cycle procedure may be performed. The following procedure provides the instructions on how to conduct a WiFi power cycle:

NOTE: Some ISPs (Internet Service Providers) provide a modem/router combo device.

Steps

1. Turn off your computer.
2. Turn off the modem.
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 your computer.

Drain residual flea power (perform hard reset)

About this task

Flea power is the residual static electricity that remains in the computer even after it has been powered off and the battery is removed.

For your safety, and to protect the sensitive electronic components in your computer, you are requested to drain residual flea power before removing or replacing any components in your computer.

Draining residual flea power, also known as a performing a "hard reset", is also a common troubleshooting step if your computer does not power on or boot into the operating system.

To drain residual flea power (perform a hard reset)

Steps

1. Turn off your computer.
2. Disconnect the power adapter from your computer.
3. Remove the base cover.
4. Remove the battery.
5. Press and hold the power button for 20 seconds to drain the flea power.
6. Install the battery.

7. Install the base cover.
8. Connect the power adapter to your computer.
9. Turn on your computer.

NOTE: For more information about performing a hard reset, search in the Knowledge Base Resource at www.dell.com/support.

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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 24. Self-help resources

Self-help resources	Resource location
Information about Dell products and services	www.dell.com
Tips	
Contact Support	In Windows search, type `Contact Support`, and press Enter.
Online help for operating system	www.dell.com/support/windows www.dell.com/support/linux
Access top solutions, diagnostics, drivers and downloads, and learn more about your computer through videos, manuals and documents.	Your Dell computer is uniquely identified by 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 www.dell.com/support. For more information on how to find the Service Tag for your computer, see Locate the Service Tag on your computer.
Dell knowledge base articles for a variety of computer concerns	1. Go to www.dell.com/support. 2. On the menu bar at the top of the Support page, select **Support** > **Knowledge Base**. 3. In the Search field on the Knowledge Base 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 www.dell.com/contactdell.

NOTE: Availability varies by country/region and product, and some services may not be available in your country/region.

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