

User Guide

Lenovo ThinkBook



Lenovo ThinkBook 16p Gen 5

Read this first

Before using this documentation and the product it supports, ensure that you read and understand the following:

- [Generic Safety and Compliance Notices](#)
- *Safety and Warranty Guide*
- *Setup Guide*

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Contents

About this guide iii

Chapter 1. Meet your computer 1

Top	1
Lenovo Magic Bay Light	1
Pogo pins connector	1
Charging light	2
Antennas	2
Front	3
Ambient light sensor	3
Microphones	3
Infrared LED	3
Camera shutter	4
Camera	4
Camera light	4
Screen	4
Base	5
Power light	5
Power button	5
Keyboard	6
Touchpad	6
Speakers	6
Left	8
Security lock slot	8
USB Standard-A connector	8
Multi-purpose USB Type-C connector	9
Combo audio jack	9
Right	10
SD card slot	10
State light	10
USB Standard-A connector	11
Rear	12
Air vents (outlet)	12
HDMI connector	12
Power connector	12
Bottom	13
Novo button hole	13
Speakers	13
Air vents (intake)	13
Features and specifications	14
Statement on USB transfer rate	16
Operating environment	17

Chapter 2. Get started with your computer 19

Connect to a network	19
Establish a wired connection	19

Connect to a Wi-Fi network	19
Unique Lenovo apps	20
Lenovo Vantage	20
Lenovo Smart Meeting	20
Interact with your computer	22
Hotkeys	22
The Copilot key	23
Dual-function keys without printed icons	24
Numeric keypad	24
Connect to an external display	24
Protect your privacy using the camera shutter	25
Enroll your fingerprints	26

Chapter 3. Explore your computer . . . 27

Intelligent features	27
Eye Care Mode	27
Super Resolution (for selected models)	27
Smart Noise Cancelling	27
Manage power	28
Rechargeable battery pack	28
Using a Power Delivery compliant USB Type-C charger with the computer	29
Set power button behavior	30
A power plan	30
System operation modes	31
Adjustable display refresh rate (for selected models)	31
Change settings in UEFI/BIOS setup utility	31
What is UEFI/BIOS setup utility?	32
Open the UEFI/BIOS setup utility	32
Select boot devices	32
Enable or disable F1-F12 as primary function	32
Enable or disable always-on	32
Set passwords in UEFI/BIOS setup utility	32
Password types	32
Set supervisor password	33
Change or remove supervisor password	33
Set user password	34
Enable power-on password	34
Set hard disk password	34
Change or remove hard disk password	34
Set strong password	35

Chapter 4. Help and support 37

Frequently asked questions	37
How do I partition my storage drive?	37

What should I do if my computer stops responding?	37
What should I do if I spill liquid on the computer?	37
Where can I get the latest device drivers and UEFI/BIOS?	37
Why does my screen brightness change constantly?	37
Why does my computer start automatically when I open the lid?	37
I pressed the Copilot key on my keyboard, but neither Copilot in Windows nor Windows Search opened. What could be the potential cause?	38
Self-help resources	38

What is a CRU?	39
CRUs for your product model	39
Call Lenovo	41
Before you contact Lenovo	41
Lenovo Customer Support Center	41
Purchase additional services.	42

Appendix A. Function descriptions for Lenovo hotkeys 43

Appendix B. Notices and trademarks. 45

About this guide

- This guide applies to Lenovo product models listed below. Illustrations in this guide may look slightly different from your product model.

Model name	Machine type (MT)
ThinkBook 16p G5 IRX	21N5
ThinkBook 16p G5 IRX D1	
ThinkBook 16p G5 IRX D2	

- For further compliance information, refer to the *Generic Safety and Compliance Notices* at https://pcsupport.lenovo.com/docs/generic_notices.
- This guide may contain information about accessories, features, and software that are not available on all models.
- This guide contains instructions that are based on the Windows® operating system. These instructions are not applicable if you install and use other operating systems.
- Microsoft® makes periodic feature changes to the Windows operating system through Windows Update. As a result, the operating system related instructions may become outdated. Refer to Microsoft resources for the latest information.
- The content of the guide is subject to change without notice. To obtain the latest version, go to <https://support.lenovo.com>.

Chapter 1. Meet your computer

Top



No.	Description
1	Lenovo Magic Bay Light*
2	Pogo pins connector*
3	Charging light
4	Antennas

* for selected models

Lenovo Magic Bay Light

The Lenovo Magic Bay Light is a Lenovo Magic Bay extension module used to connect to the PC via pogo pins connector, providing better lighting in dimly lit environments which can hinder image quality during video calls or content creation.

Pogo pins connector

This connector consists of a magnetic strip and a set of metal contacts for magnetically attaching Lenovo Magic Bay extension modules with a set of matching pogo pins.

Charging light

The charging light indicates whether the PC is plugged into an electrical outlet. When the PC is plugged into an electrical outlet, the color of the light indicates whether the battery is fully charged (or will shortly be fully charged).

Table 1. Charging light statuses and descriptions

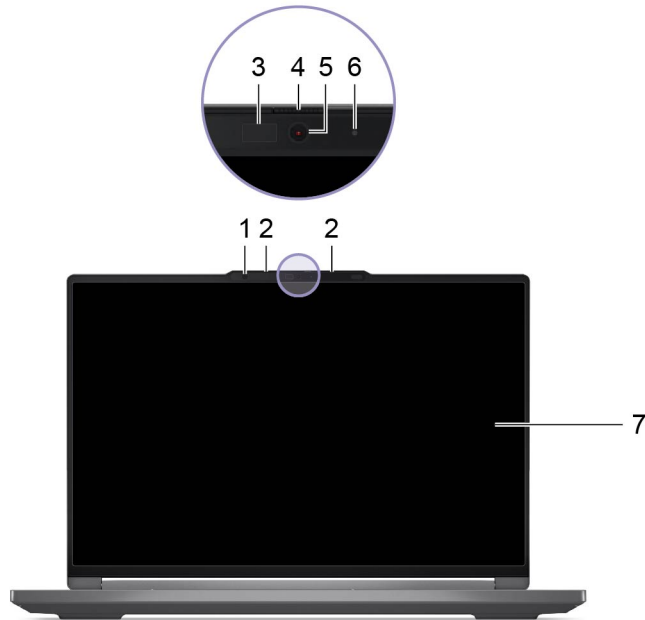
Light status	Plugged in?	Battery charge level
Off	No	/
On, amber	Yes	1%–90%
On, white	Yes	91%–100%

Antennas

The antennas transmit and receive radio waves to allow data to be transferred between your PC and a Wi-Fi network device or a Bluetooth device.

Note: The antennas are hidden inside the PC.

Front



No.	Description
1	Ambient light sensor
2	Microphones
3	Infrared LED
4	Camera shutter
5	Camera
6	Camera light
7	Screen

Ambient light sensor

The ambient light sensor detects and measures the intensity of light in the user's environment. The data collected by this sensor can be used to enable adaptive brightness for the screen backlight and the keyboard backlight.

Microphones

The microphones are the PC's built-in sound input devices. They capture your voice and ambient sound and convert them into digital form. Microphones are essential components when you use your PC for video conferencing or voice recording.

Infrared LED

The infrared LED generates and emits near-infrared waves that are received and used by a camera (or a dedicated infrared camera) for facial recognition.

Camera shutter

The camera shutter is a sliding cap that you can move to block the camera lens.

Note: The camera shutter is designed for privacy protection. When the camera lens is blocked, the camera function is disabled.

Camera

The built-in camera captures visible light and converts it to digital signals. It is used for video recording and video conferencing.

This camera also receives near-infrared waves emitted by an infrared LED and reflected by a human face, so it can also be used for facial recognition.

Camera light

The camera light indicates whether the camera is activated.

Table 2. Camera light status and description

Camera light status	Description
On	The camera is activated.
Off	The camera is not activated.

Screen

The screen of the built-in display is where text, graphics, and videos are displayed.

Base



No.	Description
1	Power light
2	Power button (fingerprint sensor)
3	Keyboard
4	Touchpad
5	Speakers

Power light

The power light indicates the current power state of the PC: whether it is powered on, powered off, in sleep mode, or in hibernation mode.

When the PC is powered on, this light can also indicate low battery by blinking rapidly.

Table 3. Power light status and description

Light status	Power state	Battery charge level
White (solid on)	Powered on	21%–100%
White (blinking rapidly)	Powered on	1%–20%
White (blinking slowly)	In sleep mode	/
Off	Powered off or in hibernation mode	/

If the PC's power button includes an embedded fingerprint sensor, the power light turns solid green to prompt you to enroll or scan your fingerprint.

Power button

Press the power button to turn on your PC.

Note: By default, on a Windows PC, pressing the power button when the PC is turned on will put the PC into sleep mode.

Fingerprint sensor

The fingerprint sensor scans your finger to unlock your PC or verify your identity.

Note: You need to enroll one or more fingerprints before using them for identity verification. On a Windows PC, go to **Settings** → **Accounts** → **Sign-in options** to enroll your fingerprints.

Keyboard

The keyboard is the PC's built-in input device for typing characters. It also includes keys that can make you more productive when interacting with the PC, apps, and the Windows operating system.

Table 4. Productivity keys

Key	Location on the keyboard	Function
Function keys (F1 through F12)	In the top row	Executing predefined commands or functions for selected apps
Hotkeys	In the top row	<ul style="list-style-type: none">• Changing some of the PC's frequently used settings• Opening an app or a Windows gadget
Fn key	In the lower-left corner	<ul style="list-style-type: none">• Toggling the functions of dual-function keys• Used with several letter keys to change some of the PC's frequently used settings
Windows key	In the lower-left corner	Used with certain keys to change some frequently used Windows settings

Hotkeys share keys with function keys. To toggle the functions for these keys, hold down the Fn key or turn on the FnLock switch.

Note: Keyboard layout varies by language and geographical location. The keyboard on your PC may look slightly different from the product illustrations of this publication.

Related topics

“Hotkeys” on page 22

Appendix A “Function descriptions for Lenovo hotkeys” on page 43

Touchpad

The touchpad is the PC's built-in pointing device, which provides the basic functionality of an external mouse. Slide your finger on the touchpad to move the pointer on the screen and tap or double-tap to select or execute a screen item.

The touchpad also supports Windows multi-finger gestures, which provide shortcuts to frequently used apps and functions.

Speakers

The speakers are the PC's built-in sound output devices.

Left



No.	Description
1	Security lock slot
2	USB Standard-A connector (always-on connector)
3	Multi-purpose USB Type-C® connectors (Thunderbolt™ 4 enabled)
4	Combo audio jack

Security lock slot

The security lock slot is used to attach a compatible cable lock. The cable lock typically includes a loop at one end and can be used to secure the PC to a stationary object, preventing theft when the PC is left unattended for a short period of time in cafes, shops, libraries, and other public places.

USB Standard-A connector

The USB Standard-A connector is used to connect storage or peripheral devices that follow the universal serial bus (USB) specification for data transfer and device interconnection.

Always-on connector

A USB connector with a battery icon (🔋) supports the always-on function. The PC can supply power to a USB device connected to this type of connector even when the PC is powered off, in sleep mode, or in hibernation mode.

The always-on function can be turned on and off in:

- The PC's firmware setup utility, or
- Lenovo Vantage or Lenovo PC Manager

Multi-purpose USB Type-C connector

This multi-purpose USB Type-C connector is used to connect:

- Storage or peripheral devices that follow the universal serial bus (USB) specification for data transfer and device interconnection
- Display devices

Note: When connecting display devices, you need to use appropriate cables and adapters (if needed) according to the connection capabilities of the display device.

- Thunderbolt-enabled docks or devices

Combo audio jack

The combo audio jack is used to connect single-plug headsets, headphones, or external speakers.

Right



No.	Description
1	SD card slot
2	State light
3	USB Standard-A connectors

SD card slot

The SD card slot is used to insert an SD, SDHC, or SDXC memory card to transfer data between the memory card and your PC.

State light

The state light indicates the current power state of the PC: whether it is powered on, powered off, in sleep mode, or in hibernation mode.

When the PC is powered on, the color of the state light helps you determine whether the battery is running low.

Note: The status of the state light is synchronized with that of the power light. The state light is usually located on the right or left side of the PC and is visible when the LCD lid is closed.

Table 5. State light status and description

Light status	Power state	Battery charge level
White (solid on)	Powered on	21%–100%
Amber (solid on)	Powered on	1%–20%

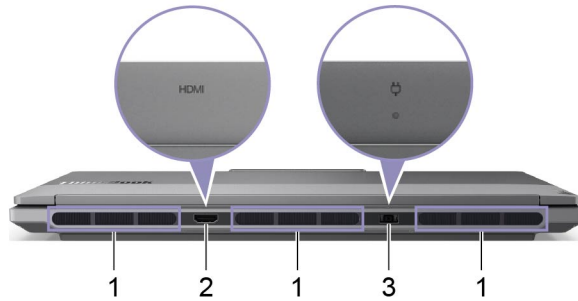
Table 5. State light status and description (continued)

Light status	Power state	Battery charge level
White (blinking slowly)	In sleep mode	/
Off	Powered off or in hibernation mode	/

USB Standard-A connector

The USB Standard-A connector is used to connect storage or peripheral devices that follow the universal serial bus (USB) specification for data transfer and device interconnection.

Rear



No.	Description
1	Air vents (outlet)
2	HDMI™ connector
3	Power connector

Air vents (outlet)

The air vents allow hot air to be discharged out of the PC.

Important: When the PC is operating, do not place it on a bed, sofa, carpet, or other flexible surfaces. Otherwise, the air vents will be blocked and the PC may overheat, reducing performance or causing the PC to be unresponsive or even shut down.

HDMI connector

The HDMI connector is used to connect an external display device, such as a television, a projector, or a monitor.

Power connector

Use this connector and the included ac power adapter to connect your PC to an electrical outlet.

Bottom



No.	Description
1	Novo button hole
2	Speakers
3	Air vents (intake)

Novo button hole

When the PC is powered off, you can press the Novo button to display the Novo button menu. From the menu, you can then choose to:

- Open the firmware setup utility
- Display the boot device selection menu
- Display the Windows advanced startup options page

Note: The Novo button is rarely used during normal PC operations. To prevent users from accidentally pressing it, the Novo button is placed in a recessed hole. You can use a straightened paper clip to press this button.

Speakers

The speakers are the PC's built-in sound output devices.

Air vents (intake)

The air vents allow air to be sucked inside of the PC to cool the internal components.

Important: When the PC is operating, do not place it on a bed, sofa, carpet, or other flexible surfaces. Otherwise, the air vents will be blocked and the PC may overheat, reducing performance or causing the PC to be unresponsive or even shut down.

Features and specifications

Dimensions

Width	354.6 mm (13.96 inches)
Depth	258.2 mm (10.17 inches)
Thickness	<ul style="list-style-type: none">• Thinnest: 19.9 mm (0.78 inches)• Thickest: 21.58 mm (0.85 inches)

ac power adapter

Input	100 V ac-240 V ac, 50 Hz-60 Hz
Output	<ul style="list-style-type: none">• 20 V dc, 11.5 A, or• 20 V dc, 15 A
Power	<ul style="list-style-type: none">• 230 W, or• 300 W

Battery pack

Capacity	80 Wh Note: The battery capacity is the typical or average capacity as measured in a specific test environment. Capacities measured in other environments may differ but are no lower than the rated capacity (see product label).
Number of cells	4

Memory

Type	Double data rate 5 small outline dual in-line memory module (DDR5 SODIMM)
Number of physical slots	2

Mass storage device

Type	Solid-state drive
Form factor	<ul style="list-style-type: none">• M.2 (2242)*• M.2 (2280)
Interface	PCIe 4.0 × 4

Screen

Size	406.4 mm (16.0 inches)
Display resolution	<ul style="list-style-type: none">• 3200 × 2000 pixels, or• 2560 × 1600 pixels
Supported refresh rate	<ul style="list-style-type: none">• 60 Hz, or• 165 Hz

Keyboard

Backlight color	White
Shortcut keys	<ul style="list-style-type: none">• Function keys• Hotkeys
Modifier keys	<ul style="list-style-type: none">• Alt key• Ctrl key• Shift key• Windows key• Fn key
Special keys or key group	Numeric keypad

Connectors and slots

Combo audio jack	<ul style="list-style-type: none">• Diameter: 3.5 mm• Supported plugs:<ul style="list-style-type: none">– 3-pole, TRS– 4-pole, TRRS (CTIA and OMTP)
HDMI connector	<ul style="list-style-type: none">• Supported signaling protocols:<ul style="list-style-type: none">– Fixed rate link (FRL)– Transition minimized differential signaling (TMDS)• Maximum output resolution: 7680 × 4320 @ 60 Hz
Memory card slot	Supported card types: <ul style="list-style-type: none">• SD card• SDHC card• SDXC card
Security lock slot	Kensington Nano Security Slot™
Power connector	Input: <ul style="list-style-type: none">• Direct current• 20 V

USB Standard-A connector	<ul style="list-style-type: none"> • Quantity: 3 • Maximum power output: <ul style="list-style-type: none"> – 5 V, 0.9 A – 5 V, 2 A (for always-on connector) • Supported signaling protocols: <ul style="list-style-type: none"> – USB 2.0 480 Mbps – SuperSpeed USB 5 Gbps – SuperSpeed USB 10 Gbps (for always-on connector)
Multi-purpose USB Type-C connector	<ul style="list-style-type: none"> • Quantity: 2 • Maximum power output: 5 V, 3 A • Maximum power input: 140 W • Supported signaling protocols: <ul style="list-style-type: none"> – USB 2.0 480 Mbps – SuperSpeed USB 5 Gbps – SuperSpeed USB 10 Gbps – Thunderbolt 4 41.25 Gbps – DisplayPort™ Alt Mode (DisplayPort 1.4 compliant) <ul style="list-style-type: none"> – Maximum output resolution: 5120 × 2880 @ 60 Hz – USB Power Delivery <p>Note: Data rates and performance ratings are dependent on connected devices and cables if they are used. For DisplayPort connection through a USB Type-C connector, the listed maximum output capacity is only available on external displays with a DisplayPort, a Mini DisplayPort, or a USB Type-C connector that supports DisplayPort Alternate Mode. For connections using a converter or an adapter, the actual output resolution may be lower.</p>

Security

Fingerprint sensor	Location: Power button
UEFI/BIOS passwords	<ul style="list-style-type: none"> • Supervisor password • User password • Master hard disk password • User hard disk password

Network

Wi-Fi	Wi-Fi 6E
Bluetooth	Bluetooth 5.3

* for selected models

Statement on USB transfer rate

Depending on many factors such as the processing capability of the host and peripheral devices, file attributes, and other factors related to system configuration and operating environments, the actual transfer

rate using the various USB connectors on this device will vary and will be slower than the data rate listed below for each corresponding device.

USB device	Data rate (Gbit/s)
USB 3.2 Gen 1	5
USB 3.2 Gen 2	10

Operating environment

Maximum altitude (without pressurization)

3048 m (10 000 ft)

Temperature

- At altitudes up to 2438 m (8000 ft)
 - Operating: 5°C to 35°C (41°F to 95°F)
 - Storage: 5°C to 43°C (41°F to 109°F)
- At altitudes above 2438 m (8000 ft)
 - Maximum temperature when operating under the unpressurized condition: 31.3°C (88°F)

Note: When you charge the battery, its temperature must be no lower than 10°C (50°F).

Relative humidity

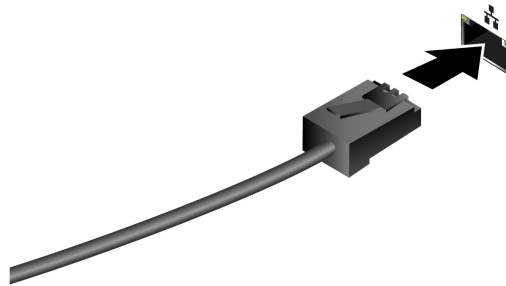
- Operating: 8% to 95% at wet-bulb temperature 23°C (73°F)
- Storage: 5% to 95% at wet-bulb temperature 27°C (81°F)

Chapter 2. Get started with your computer

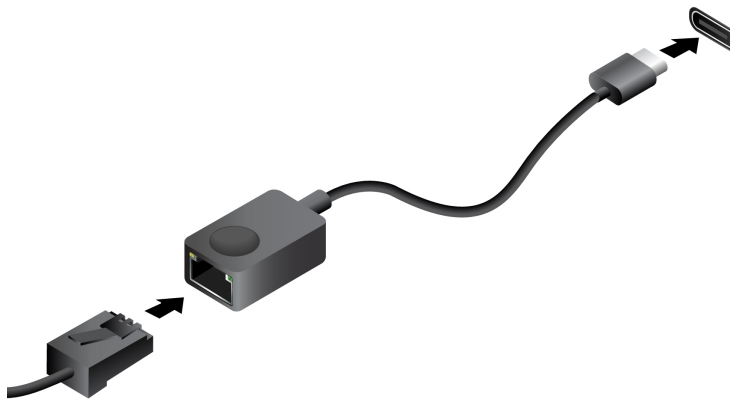
Connect to a network

Establish a wired connection

- Step 1. Plug an Ethernet cable into the Ethernet connector on your computer.
- Step 2. Plug the other end of the Ethernet cable into a network wall jack or a router.




Note: If your computer does not include an Ethernet connector, you can purchase a USB-C to Ethernet adapter from Lenovo at <https://www.lenovo.com/accessories>.



Connect to a Wi-Fi network

Ensure that you have a secure Wi-Fi network account and the required credentials.

- Step 1. Select the network icon  on the bottom right of your display.
- Step 2. Select an available network, and then select **Connect**. If you want to be automatically connected to this Wi-Fi network the next time you start your computer, select **Connect automatically** before selecting **Connect**.
- Step 3. Input your credentials if necessary, and then follow the on-screen instructions to connect to the desired Wi-Fi network.

Unique Lenovo apps

Lenovo Vantage

Lenovo Vantage is a one-stop solution to help you update your computer, configure hardware settings, and access personalized support.

If your computer is pre-installed with Lenovo Vantage, type `Vantage` in the Windows search box to launch this app.

Notes:

- Available features may vary depending on your computer model.
- You can download the latest version of this app from Microsoft Store.

Lenovo Smart Meeting

Lenovo Smart Meeting is a video conferencing app with multiple features for enhancing your professional image, protecting your privacy, and reducing your computer's power consumption.

If you want your settings in this app to also take effect on other mainstream video conferencing apps, such as Microsoft Teams and Zoom, ensure that you select Lenovo Virtual Camera in the app.

Access the app

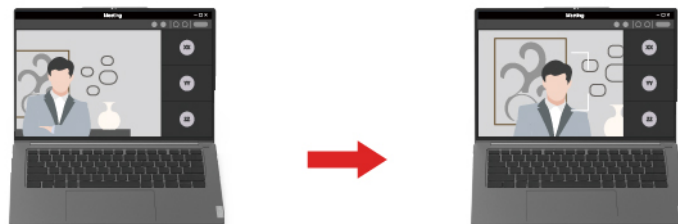
Type `Lenovo Smart Meeting` in the Windows search box and then press `Enter`.

Explore key features

- **Smart appearance**
 - **Video enhancer:** Adjust the brightness automatically for better image quality during the video call.



- **Face framing:** Keep your face centered automatically during the video call when you move around.



- **Customized background:** Blur or customize your background during the video call to protect your privacy.



- **Dual Camera Fusion:** Show the image of any participant that is visible from the front or rear of the camera on the screen when collaborating with a Lenovo Magic Bay 4K Webcam.



Note: You can purchase the Lenovo Magic Bay 4K Webcam from Lenovo at <https://www.lenovo.com/accessories>.

- **Temporary Avatar:** Create and display a temporary portrait of you as if you were still in the video conference when you are temporarily away.



- **Intelligent sensing**

- **Presence detection:** Keep your computer awake when you are facing the screen and lock the computer screen automatically when you leave. You can customize the screen-off time from 10 to 60 seconds.



- **Privacy protection:** Blur your screen and display a warning message when a shoulder surfer is detected.



- **Adaptive dimming:** Track your face movements to recognize your focus of attention. When you are facing away, the display dims to conserve power. You can customize the brightness value and screen dimming timer.



Notes:

- Lenovo does not collect any personal data from this app.
- The available features vary depending on the computer model.
- Lenovo Smart Meeting makes periodic feature updates to keep improving your experience. The description described here might be different from that on your actual user interface.

Interact with your computer

Hotkeys

Look at the top row of the keyboard of your Lenovo computer and you'll find keys with printed icons. These keys are called hotkeys and they provide shortcuts to functions that you'll use frequently. The function that each hotkey provides is denoted by the icon printed on the key.

Hotkeys share keys with function keys (F1–F12) and other keys. Depending on the FnLock setting, you use hotkey functions by pressing the key directly or in combination with the Fn key.

Note: The FnLock switch does not apply to hotkeys not found in the first row of the keyboard. To use these hotkeys, always hold down the Fn key while pressing the key.

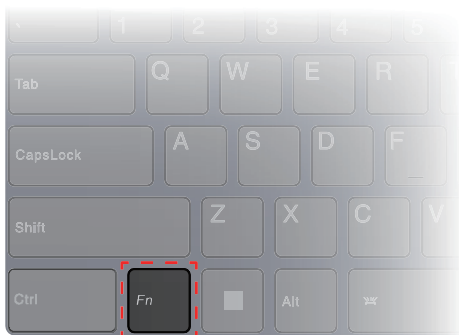


Figure 1. Location of the Fn key

Related topics

Appendix A “Function descriptions for Lenovo hotkeys” on page 43

The FnLock switch

The FnLock is an electronic switch that affects how you use hotkey functions. To turn it on and off, press Fn + Esc.

Note: The Esc key is in the upper left corner of the keyboard. It has an LED that indicates the status of the FnLock switch.



Figure 2. Locations of the FnLock key and the Fn key

A Lenovo keyboard usually contains hotkeys in the top row. These hotkeys share keys with the function keys (F1–F12) and other keys. For these dual-function keys, the icons or characters denoting the primary functions are printed on top of the icons and characters denoting the secondary functions.

- A: an icon or character denoting the primary function
- B: an icon or character denoting the secondary function

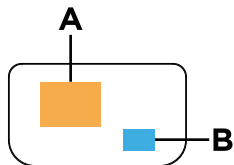



Figure 3. The layout of a dual-function key

Table 6. FnLock and dual-function keys

FnLock (Esc) LED	FnLock status	Pressing the hotkey alone	Pressing the hotkey while holding down the Fn key
Off	Disabled	Primary function	Secondary function
On	Enabled	Secondary function	Primary function

The Copilot key

The era of AI has arrived, and many Lenovo PCs now include a Copilot key on the keyboard. It is located either in the bottom or the top row of the keyboard and is marked with .

For Windows PCs with Copilot in Windows available and enabled, pressing the Copilot key opens Copilot in Windows. Otherwise, pressing the Copilot key opens Windows Search.

Note: Copilot in Windows may not be available in all geographical locations. In regions where Copilot in Windows is available, you may need to update your Windows operating system to version 23H2 or later through Windows Update for Copilot in Windows to become available.

Related topics

“I pressed the Copilot key on my keyboard, but neither Copilot in Windows nor Windows Search opened. What could be the potential cause?” on page 38

Dual-function keys without printed icons

Some dual-function keys share keys with letter keys and numeric keys. Such keys do not have a dedicated printed icon. The following table lists the hidden functions of these keys.

Key combination	Hidden function
Fn + M	Enables/Disables the touchpad.
Fn + N	Shows device information.
Fn + Q	Switches among different operation modes.
Fn + R*	Changes the display refresh rate.

* for selected models

Numeric keypad

Some Lenovo computers include a dedicated numeric keypad on the far right of the keyboard. The keypad is used for entering numbers and operators quickly.

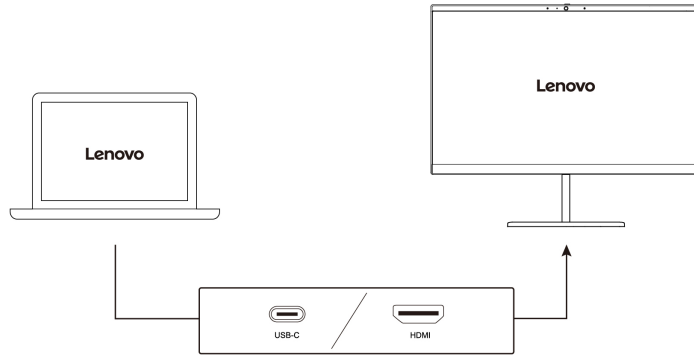
Press the **NumLock** key to enable or disable the numeric keypad.

Connect to an external display

Connect to a wired display

Connect your computer to the desired display with an appropriate cable.

- Step 1. Connect one end of the display cable to the HDMI connector or a multi-purpose USB Type-C connector on your computer.
- Step 2. Connect the other end of the cable to the display.



Connect to a wireless display

Ensure that:

- Both your computer and the display support Miracast® technology.
- The display is connected to the same Wi-Fi network as your computer and is discoverable.

- Step 1. Press Windows key + K.
The computer searches for wireless display devices and audio devices and lists the results.
- Step 2. Select the display you want to connect to, and then follow the on-screen instructions.

Change display settings

- Step 1. Right-click on a blank area on the desktop, and then select **Display settings**.
Your computer shows the **Display** window.
- Step 2. Select the display for which you want to change the settings.
- Step 3. Change the display settings as necessary.

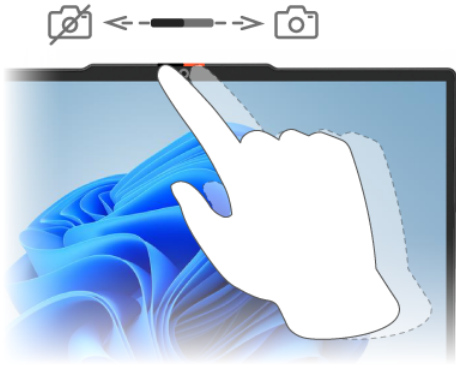
Set the display mode

- Step 1. Press or Fn + .
- Step 2. Select a display mode from the list.

Protect your privacy using the camera shutter

The camera shutter is a mechanical component that prevents any attempt from capturing your image, thus protecting your privacy. To cover the camera lens, slide the camera shutter to the left. When you want to use the camera, slide the camera shutter to the right.

If you slide the camera shutter to the left during a video call, people on the video call will not be able to see you. If you slide the camera shutter back to the right, they will be able to see you again.



Enroll your fingerprints

You can use the biometric fingerprint option to sign in to Windows quickly if your computer includes a fingerprint sensor. This sign-in option provides a reliable and secure way of identity verification.

- Step 1. Select **Start → Settings → Accounts → Sign-in options**.
- Step 2. Under **Ways to sign in**, select **Fingerprint recognition (Windows Hello™)** to set up sign-in with a fingerprint sensor.
- Step 3. Follow the on-screen instructions to enroll your fingerprints.

Notes:

- You need to set up a PIN code before you are allowed to use this sign-in option.
- It is recommended that you enroll multiple fingerprints in case of any injuries to your fingers.

Chapter 3. Explore your computer

Intelligent features

Your computer may be pre-installed with one of Lenovo Vantage or Lenovo PC Manager but not both. Most features described here can be enabled or disabled in one of these apps. Other features may be enabled in a standalone app.

Notes:

- Software features are subject to change. Please refer to your actual product.
- You may need to complete online updates to the apps for the features to take effect.

Eye Care Mode

Eye Care Mode intelligently adjusts the color temperature of the screen and can reduce the chances of developing eye fatigue or eye strain.

Super Resolution (for selected models)

By utilizing the capabilities and potentials of Intel processors, Super Resolution helps you play videos with a higher resolution than the original. It works especially well in cases where the source video has poor resolution.

For most players, Super Resolution can be enabled or disabled in Lenovo Vantage or Lenovo PC Manager, but for some specific players, you might need to enable this feature manually.

Smart Noise Cancelling

Smart Noise Cancelling is a noise reduction feature available on some Lenovo product models. By filtering out input and output noises, Smart Noise Cancelling enhances your audio experience.



Function	Description	Remarks
Microphone noise cancelling	Voice Recognition: Your computer captures multiple voices in a way that reflects their original spatial positions.	<ul style="list-style-type: none">• This function takes effect only when built-in microphones/arrays or 3.5 mm jack wired microphones are used as the input media.• To disable this function, select Off.
	Only My Voice: This option requires you to record your voice so that your computer captures this voice only and tries to eliminate other voices. Note: To remove your voice record, select REMOVE MY VOICE .	

Function	Description	Remarks
	Normal: Your computer focuses on the voice of the person facing it and reduces ambient sounds.	
	Multiple Voices: Your computer captures multiple voices from an expanded range in front of the computer.	
Speaker noise cancelling	Your computer filters out other sounds to play only human voices.	These functions are not applicable to scenarios like listening to music and watching videos.
Meeting noise cancelling	When this function is selected, your computer uses special algorithms for noise reduction when you are using conferencing applications.	

Notes:

- Depending on its hardware, your computer may not support all the functions and options described above.
- You can view and customize this feature under **Device Settings** in Lenovo Vantage or Lenovo PC Manager.

Manage power

Use the information in this section to achieve the best balance between performance and power efficiency.

Rechargeable battery pack

Your computer includes a built-in, rechargeable battery pack that makes mobile computing a reality. When the computer is plugged into an electrical outlet, the battery charges. If you use the computer when you don't have access to an electrical outlet, the battery discharges to supply electricity that the computer system requires for operation.

You can charge the battery any time you want. The battery packs of Lenovo computers support multiple charging modes that are suitable for different power usage habits. You can switch the battery's active charging mode in Lenovo Vantage or Lenovo PC Manager.

Battery charging is also affected by its temperature. The recommended temperature range for charging the battery is between 10°C (50°F) and 35°C (95°F).

Note:

You can check the battery temperature in Lenovo Vantage.

To maximize the life of the battery, once the battery is fully charged, it must discharge to 94% or lower before it will be allowed to recharge again.

Normal mode

Normal mode is the most basic charging mode. In normal mode, it typically takes 2 to 4 hours for the battery to charge from 0% to 100%.

Rapid charge mode

If you want the battery to be charged faster than in normal mode, switch the battery charging to rapid charge mode. The following table lists the typical time needed for batteries in rapid charge mode to be charged to 80% and 100% respectively.

Table 7. Reference charge time for batteries in rapid charge mode

Mode	Time needed to charge from 0% to 80%	Time needed to charge from 0% to 100%
Rapid charge	Less than 1 hour	Less than 2 hours

Conservation mode

If your computer is constantly plugged into an electrical outlet, consider switching the battery charging to conservation mode. In conservation mode, the battery will not be fully charged. Instead, the battery's charge will be kept within 75%–80%. This is beneficial to the long-term health of the battery.

Note: If you want the battery to be fully charged before bringing the computer to work, disable conservation mode by switching the battery charging to normal or rapid charge mode.

Overnight charge optimization

Some people follow a regular pattern when using their computers. They finish their workday with the computer at a low battery charge level. They plug in their computers at night and need the battery to be fully charged the next morning so they can unplug the computer and bring it to work. These activities happen at approximately the same time each day. If this sounds like you, consider enabling overnight charge optimization for the battery.

Overnight charge optimization affects battery charging during the night hours, the time when you're usually asleep. When it is enabled, the computer regularly adapts its charging behavior based on observation of when you plug in the computer at night and unplug it in the morning. During the nighttime, the battery is charged to a particular range and is kept within that range for an extended period, before being further charged to 100%. Overnight charge optimization ensures safe charging during the night and is beneficial to the long-term health of the battery.

Note: With overnight charge optimization enabled, if you break your routine one day by unplugging the computer much earlier than usual in the morning, you may find that the battery is not fully charged.

If the battery pack of your computer supports overnight charge optimization, it can be enabled in Lenovo Vantage or Lenovo PC Manager.

Recover full battery capacity

If your computer is constantly plugged in to an electrical outlet and the battery rarely discharges, the battery may not be charged to its full capacity even if the battery meter reports 100% charge. You can recover the battery's full charging potential simply by discharging and re-charging the battery.

Step 1. Unplug the computer and use it until the battery charge drops below 20%.

Step 2. Plug in the computer and charge the battery to 100%.

Using a Power Delivery compliant USB Type-C charger with the computer

The USB Type-C connectors on the left side of the computer conform to *USB Power Delivery Specification*. If you did not carry the included ac power adapter with your computer, you have the option of using a qualified USB Type-C charger (purchased separately) that is also Power Delivery compliant to charge the computer. Lenovo branded USB Type-C chargers with the following listed maximum ratings are tested to work with the computer. Chargers of other brands with the same ratings should also work but are not thoroughly tested.

- 20 V, 4.75 A
- 20 V, 5 A
- 20 V, 6.75 A

- 20 V, 7 A

The USB Type-C connectors on the left side are not designed as the primary power input connector. When the computer is operating, the power supplied by the USB Type-C charger may be insufficient. As a result, the computer may not operate at its full capacity and the battery charging may stop or is very slow. Use the included ac power adapter whenever possible.

CAUTION:

When purchasing third-party USB Type-C chargers for use with the computer, choose a product that is safety approved or certified. A disqualified charger may cause damage to your computer or pose an electrical hazard. In many countries and regions, manufacturers or importers of electric chargers can submit their products to a certification authority or approved and recognized testing laboratories. Such a product usually carries a mark if it was tested to pass relevant quality and safety standards. For some countries and regions, this certification process is even mandatory. If you live in mainland China, choose a charger with the “CCC” mark; for users in many European countries, choose one with the “CE” mark; for users in the United States and Canada, choose a Listed charger that carries a mark by one of the Nationally Recognized Testing Laboratories. (For example, the “UL Listed” mark). For people living in other countries and regions, consult a qualified electrical engineer for how to select a safety approved electric charger.

Set power button behavior

By default, pressing the power button puts the computer to sleep mode. However, you can change the power button behavior in Windows Control Panel.

- Step 1. Type Control Panel in the Windows search box and then press Enter. Open the control panel and view by large or small icons.
- Step 2. Select the power options and then click to choose what the power button does.

A power plan

A power plan is a collection of power-saving settings made available by an operating system. With a power plan, you can set idle time-outs for different hardware components to enter a low-power state. The default power plan and some of its idle time-out settings are listed below for computer models pre-installed with Windows.

The listed settings are active when the computer is connected to an electrical outlet. If your computer includes a built-in battery pack, a different collection of time-out settings is set to take effect when the computer is operating on battery power.

- Default power plan: Balanced
- Turn off the display: after 5 minutes
- Put the computer to sleep: after 5 minutes

Note: To wake the computer from the sleep state, press the power button or any key on the keyboard.

Change or customize a power plan

This operation is applicable to computers with pre-installed Windows.

- Step 1. Type power plan in the Windows search box and then press Enter.
- Step 2. Customize a power plan of your preference.

System operation modes

Lenovo has preset several modes in which your computer can operate. The maximum attainable performance, power consumption, and speed limit for the heat sink fan vary among the different operation modes. Consider the following conditions when you want to switch operation modes.

- The environment where you use your computer, and
- The tasks running on your computer

You can switch the operation mode in the pre-installed app Lenovo Vantage or Lenovo PC Manager. As a shortcut, you can also use the key combination Fn + Q. Three modes are usually available for most Lenovo computers. The following table lists the operation modes and the recommended conditions for each mode.

Note: The operation modes listed in the table are descriptive and may not be the same as those displayed by the app.

Table 8. Operation modes and their recommended usage conditions

Operation mode	Recommended conditions
High Performance	<ul style="list-style-type: none">• Your computer is plugged into an electrical outlet.• You want the best performance, and• You don't care if the fan makes a little noise.
Auto (Balance)	You plan to frequently switch between different computer tasks over a period of time.
Power Saving (Quiet)	<ul style="list-style-type: none">• Your computer is operating on battery power, or• You want the computer to be as quiet as possible.

Note: In Auto (Balance) mode, the computer dynamically switches between High Performance mode and Power Saving (Quiet) mode depending on the tasks running on the computer.

Adjustable display refresh rate (for selected models)

Your eyes might not notice it but the content displayed on the computer screen refreshes constantly. Display refresh rate refers to the number of times per second the screen content refreshes itself and is measured in hertz (Hz).

A refresh rate of 60 Hz is adequate for most situations and is energy efficient. However, when viewing videos or playing video games, a higher refresh rate usually provides a smoother viewing experience.

The displays of some Lenovo computers support dual refresh rates. For such a computer, you can manually switch its display to work at either the higher or lower refresh rate. For Windows operation systems, the manual settings are usually found in **Settings** → **System** → **Display**. As a shortcut, you can also use the key combination Fn + R to switch the display refresh rate.

Note: Not all displays support dual refresh rates. If you cannot find settings to change the display refresh rate, the refresh rate of the display might be fixed or cannot be manually changed.

Change settings in UEFI/BIOS setup utility

This section introduces what UEFI/BIOS is and the operations you can perform in its setup utility.

What is UEFI/BIOS setup utility?

UEFI/BIOS is the first program that runs when a computer starts. UEFI/BIOS initializes hardware components and loads the operating system and other programs. Your computer may include a setup program (setup utility) with which you can change certain UEFI/BIOS settings.

Open the UEFI/BIOS setup utility

- Step 1. Turn on or restart the computer.
- Step 2. When the Lenovo logo appears on the screen, press F1 repeatedly. Or enter **Novo Button** menu.
- Step 3. Select UEFI/BIOS Setup.

Select boot devices

Normally, the computer starts with a boot manager loaded from the secondary storage device of the computer. Occasionally, you may need to start the computer with a program or boot manager loaded from another device or a network location. After the system firmware initializes all devices, you can press an interruption key to display the boot menu and select a desired boot device.

- Step 1. Turn on or restart the computer.
- Step 2. Press F12.
- Step 3. From the boot device menu, select a boot device to start the computer.

You can make a permanent change on boot devices in the UEFI/BIOS setup utility. Select the **Boot** menu; in the **EFI** section, select the desired boot device and move it to the top of the device list. Save changes and exit the setup utility for the change to take effect.

Enable or disable F1-F12 as primary function

- Step 1. Open the UEFI/BIOS setup utility.
- Step 2. Select **Config** → **Keyboard** → **F1-F12 as Primary Function** and press Enter.
- Step 3. Change the setting to **Disabled** or **Enabled**.
- Step 4. Select **Restart** → **Exit Saving Changes**.

Enable or disable always-on

For some Lenovo computers with always-on connectors, the always-on function can be enabled or disabled in the UEFI/BIOS setup utility.

- Step 1. Open the UEFI/BIOS setup utility.
- Step 2. Select **Config** → **USB** → **Always On USB** and press Enter.
- Step 3. Change the setting to **Disabled** or **Enabled**.
- Step 4. Select **Restart** → **Exit Saving Changes**.

Set passwords in UEFI/BIOS setup utility

This section introduces the types of passwords that you can set in the UEFI (Unified Extensible Firmware Interface) or BIOS (Basic Input/Output System) setup utility.

Password types

You can set various types of passwords in the UEFI/BIOS setup utility.

Password type	Pre-requisite	Usage
Supervisor password	No	You must enter it to start the setup utility.
User password	The supervisor password must be set.	You can use the user password to start the setup utility.
Master hard disk password	No	You must enter it to start the operating system.
User hard disk password	The master hard disk password must be set.	You can use the user hard disk password to start the operating system.

Notes:

- All passwords set in the setup utility consist of alphanumeric characters only.
- If you start the setup utility using the user password, you can only change a few settings.

Set supervisor password

You set the supervisor password to prevent unauthorized access to the UEFI/BIOS setup utility.

Attention: If you forget the supervisor password, a Lenovo authorized service personnel cannot reset your password. You must take your computer to a Lenovo authorized service personnel to have the system board replaced. Proof of purchase is required and a fee will be charged for parts and service.

- Step 1. Open the UEFI/BIOS setup utility.
- Step 2. Select **Security → Password → Set Supervisor Password** and press Enter.
- Step 3. Enter a password string that contains only letters and numbers and then press Enter.
- Step 4. Enter the password again and press Enter.
- Step 5. Select **Restart → Exit Saving Changes**.

Next time you start the computer, you must enter the supervisor password to open the setup utility. If **Power on Password** is enabled, you must enter the supervisor password or the user password to start the computer.

Change or remove supervisor password

Only the administrator can change or remove the supervisor password.

- Step 1. Open the UEFI/BIOS setup utility using the supervisor password.
- Step 2. Select **Security → Password → Set Supervisor Password** and press Enter.
- Step 3. Enter the current password.
- Step 4. In the **Enter New Password** text box, enter the new password.
- Step 5. In the **Confirm New Password** text box, enter the new password again.

Note: If you want to remove the password, press Enter in both text boxes without entering any character.

- Step 6. Select **Restart → Exit Saving Changes**.

If you remove the supervisor password, the user password is also removed.

Set user password

You must set the supervisor password before you can set the user password.

The administrator of the setup utility might need to set a user password for use by others.

- Step 1. Open the UEFI/BIOS setup utility using the supervisor password.
- Step 2. Select **Security → Password → Set User Password** and press Enter.
- Step 3. Enter a password string that contains only letters and numbers and then press Enter.
The user password must be different from the supervisor password.
- Step 4. Enter the password again and press Enter.
- Step 5. Select **Restart → Exit Saving Changes**.

Enable power-on password

If the supervisor password has been set, you can enable the power-on password to enforce greater security.

- Step 1. Open the UEFI/BIOS setup utility.
- Step 2. Select **Security → Password → Power on Password** and press Enter.
Note: The supervisor password must be set in advance.
- Step 3. Change the setting to **Enabled**.
- Step 4. Select **Restart → Exit Saving Changes**.

If the power-on password is enabled, a prompt appears on the screen every time you turn on the computer. You must enter the supervisor or user password to start the computer.

Set hard disk password

You can set a hard disk password in the setup utility to prevent unauthorized access to your data.

Attention: Be extremely careful when setting a hard disk password. If you forget the hard disk password, a Lenovo authorized service personnel cannot reset your password or recover data from the hard disk. You must take your computer to a Lenovo authorized service personnel to have the hard disk drive replaced. Proof of purchase is required and a fee will be charged for parts and service.

- Step 1. Open the UEFI/BIOS setup utility using the supervisor password.
- Step 2. Select **Security → Password → Set Hard Disk Password** and press Enter.
Note: If you start the setup utility using the user password, you cannot set the hard disk password.
- Step 3. Follow on-screen instructions to set both master and user hard disk passwords.
Note: The master and user hard disk passwords must be set at the same time.
- Step 4. Select **Restart → Exit Saving Changes**.

If the hard disk password is set, you must provide the correct password to start the operating system.

Change or remove hard disk password

- Step 1. Open the UEFI/BIOS setup utility.
- Step 2. Select **Security → Password**.
- Step 3. Change or remove the hard disk password.

To change or remove the master password, select **Change Master Password** and press Enter.

Note: If you remove the master hard disk password, the user hard disk password is also removed.

To change the user hard disk password, select **Change User Password** and press Enter.

Note: The user hard disk password cannot be removed separately.

Step 4. Select **Restart → Exit Saving Changes**.

Set strong password

You can set a strong password to strengthen the password security.

Step 1. Open the UEFI/BIOS setup utility.

Step 2. Select **Security → Password → Set Strong Password** and press Enter.

Step 3. Change the setting to **Disabled** or **Enabled**.

Step 4. Select **Restart → Exit Saving Changes**.

If the strong password is enabled, supervisor password, user password, and hard disk password lengths must range between eight and 128 characters. Each password must include at least one uppercase character, one lowercase character, and one number.

Chapter 4. Help and support

Frequently asked questions

How do I partition my storage drive?

Refer to <https://support.lenovo.com/solutions/ht503851>.

What should I do if my computer stops responding?

Press and hold the power button until the computer turns off. Then restart the computer.

What should I do if I spill liquid on the computer?

1. Carefully unplug the ac power adapter and turn off the computer immediately. The more quickly you stop the current from passing through the computer the more likely you will reduce damage from short circuits.

Attention: Although you might lose some data or work by turning off the computer immediately, leaving the computer on might make your computer unusable.

2. Wait until you are certain that all the liquid is dry before turning on your computer.

CAUTION:

Do not try to drain out the liquid by turning over the computer. If your computer has keyboard drainage holes on the bottom, the liquid will be drained out through the holes.

Where can I get the latest device drivers and UEFI/BIOS?

- Lenovo Vantage or Lenovo PC Manager
- Lenovo Support Web site at <https://support.lenovo.com>.

Why does my screen brightness change constantly?

Your computer may include an ambient light sensor and the adaptive brightness feature is enabled. The light sensor can detect the intensity of the surrounding light. Using data provided by the sensor, the operating system can dynamically adjust the screen brightness.

The adaptive brightness feature of the operating system can be disabled. For Windows operating systems, adaptive brightness settings are usually found in **Settings → System → Display**.

Why does my computer start automatically when I open the lid?

Your computer may have Flip to Start enabled. Many Lenovo notebook computers include a sensor that can detect the angle at which the lid is opened. When you open the lid, the sensor can detect this behavior. If Flip to Start is enabled, the computer will respond by starting up automatically.

If you don't like this feature, you can disable it. Flip to Start can be enabled and disabled in:

- Lenovo Vantage or Lenovo PC Manager
- Firmware Setup Utility

I pressed the Copilot key on my keyboard, but neither Copilot in Windows nor Windows Search opened. What could be the potential cause?

Your Windows operating system version is not up to date and does not include the necessary software components. Update your Windows operating system to version 23H2 or later using Windows Update and then try again.

Note: The Version 23H2 update may not be immediately available for your PC. You may need to periodically open Windows Update and manually check for updates to install the 23H2 update when it becomes available for your PC.

Self-help resources

Use the following self-help resources to learn more about the computer and troubleshoot problems.

Resources	How to access?
Troubleshooting and frequently asked questions	<ul style="list-style-type: none">• https://www.lenovo.com/tips• https://forums.lenovo.com
Accessibility information	https://www.lenovo.com/accessibility
Reset or restore Windows	<ul style="list-style-type: none">• Use Lenovo recovery options.<ol style="list-style-type: none">1. Go to https://support.lenovo.com/HowToCreateLenovoRecovery.2. Follow the on-screen instructions.• Use Windows recovery options.<ol style="list-style-type: none">1. Go to https://pcsupport.lenovo.com.2. Detect your computer or manually select your computer model.3. Click Troubleshoot & Diagnose → Custom Troubleshooting → Operating System Diagnostics and then follow the on-screen instructions.
Use Lenovo Vantage or Lenovo PC Manager to: <ul style="list-style-type: none">• Download and install the latest drivers and firmware.• Configure hardware settings.• Diagnose computer hardware problems.• Check the computer warranty status.	Use Windows Search.
Product documentation: <ul style="list-style-type: none">• Generic Safety and Compliance Notices• <i>Safety and Warranty Guide</i>• <i>Setup Guide</i>• <i>This User Guide</i>• <i>Regulatory Notice</i>	<ol style="list-style-type: none">1. Go to https://support.lenovo.com.2. Detect your computer or select your computer model manually.3. Select Documentation and filter out the documentation you want.

Resources	How to access?
<p>Lenovo Support Web site with the latest support information on the following:</p> <ul style="list-style-type: none"> • Drivers and software • Diagnostic solutions • Product and service warranty • Product and parts details • Knowledge base and frequently asked questions 	<p>Visit https://support.lenovo.com.</p>
<p>Windows help information</p>	<ul style="list-style-type: none"> • Use Get Help or Tips. • Use Windows Search. • Microsoft Support Web site: https://support.microsoft.com

What is a CRU?

Customer replaceable units (CRUs) are parts that can be replaced by the customer. A Lenovo computer may contain the following types of CRUs:

Self-service CRU	Parts that can be replaced easily by customers themselves or by trained service technicians at an additional cost.
Optional-service CRU	Parts that can be replaced by customers with a greater skill level. Trained service technicians can also provide service to replace the parts under the type of warranty designated for the customer's machine.

If you intend to install a CRU, Lenovo will ship the CRU to you. You might be required to return the defective part that is replaced by the CRU. When a return is required: (1) return instructions, a prepaid shipping label, and a container will be included with the replacement CRU; and (2) you might be charged for the replacement CRU if Lenovo does not receive the defective CRU within thirty (30) days of your receipt of the replacement CRU. For full details, see the *Lenovo Limited Warranty* at https://www.lenovo.com/warranty/llw_02.

CRUs for your product model

The table below lists the CRUs and CRU types that are defined for your product model.

Part	Self-service CRU	Optional-service CRU
Power cord	X	
ac power adapter	X	
Lenovo Magic Bay Light*	X	

* for selected models

Notes:

- CRU replacement instruction is provided in one or more of the following publications and is available from Lenovo at any time upon your request.

the product *User Guide*

the printed publications that come with the product

- Replacement of any parts not listed above, including the built-in rechargeable battery, must be done by a Lenovo-authorized repair facility or technician. Go to <https://support.lenovo.com/partnerlocation> for more information.

Call Lenovo

If you have tried to correct the problem yourself and still need help, you can call Lenovo Customer Support Center.

Before you contact Lenovo

Record product information and problem details before you contact Lenovo.

Product information	Problem symptoms and details
<ul style="list-style-type: none">• Product name• Machine type and serial number	<ul style="list-style-type: none">• What is the problem? Is it continuous or intermittent?• Any error message or error code?• What operating system are you using? Which version?• Which software applications were running at the time of the problem?• Can the problem be reproduced? If so, how?

Note: The product name and serial number can usually be found on the bottom of the computer, either printed on a label or etched on the cover.

Lenovo Customer Support Center

During the warranty period, you can call Lenovo Customer Support Center for help.

Telephone numbers

For a list of the Lenovo Support phone numbers for your country or region, go to <https://pcsupport.lenovo.com/supportphonenumber>.

Note: Phone numbers are subject to change without notice. If the number for your country or region is not provided, contact your Lenovo reseller or Lenovo marketing representative.

Services available during the warranty period

- Problem determination - Trained personnel are available to assist you with determining if you have a hardware problem and deciding what action is necessary to fix the problem.
- Lenovo hardware repair - If the problem is determined to be caused by Lenovo hardware under warranty, trained service personnel are available to provide the applicable level of service.
- Engineering change management - Occasionally, there might be changes that are required after a product has been sold. Lenovo or your reseller, if authorized by Lenovo, will make selected Engineering Changes (ECs) that apply to your hardware available.

Services not covered

- Replacement or use of parts not manufactured for or by Lenovo or non-warranted parts
- Identification of software problem sources
- Configuration of UEFI/BIOS as part of an installation or upgrade
- Changes, modifications, or upgrades to device drivers
- Installation and maintenance of network operating systems (NOS)
- Installation and maintenance of programs

For the terms and conditions of the Lenovo Limited Warranty that apply to your Lenovo hardware product, see “Warranty information” in the *Safety and Warranty Guide* that comes with your computer.

Purchase additional services

During and after the warranty period, you can purchase additional services from Lenovo at <https://pcsupport.lenovo.com/warrantyupgrade>.

Service availability and service name might vary by country or region.

Appendix A. Function descriptions for Lenovo hotkeys

Hotkey functions are denoted by the icons printed on the keys. The following table describes the functions for all Lenovo hotkeys. The keyboard of your Lenovo computer should only support a subset of the listed hotkeys.

Table 9. Hotkey icons and denoted functions




































Hotkey icon	Function description
	Mutes/Unmutes sound.
	Increases volume.
	Decreases volume.
	Enables/Disables the microphone.
	Increases screen brightness.
	Decreases screen brightness.
	Selects and sets up display devices.
	Enables/Disables airplane mode. (Windows operating systems)
	Displays the Lenovo Smart Key quick launch panel.
	Enables/Disables the touchpad.
	Displays all open apps as thumbnails. (Windows operating systems)
	Opens the Calculator app. (Windows operating systems)
	Opens the Snipping tool. (Windows operating systems)
	Opens the Settings app. (Windows operating systems)
	Locks the screen. (Windows operating systems)
	Opens the clipboard history. (Windows operating systems)
	Puts the computer to sleep.
	Opens the context menu of the current active app.
	Opens an associated voice app or voice service.
	Adjusts the keyboard backlight.
	Increases the brightness of the keyboard backlight.
	Decreases the brightness of the keyboard backlight.
	Answers an incoming Microsoft Teams call.
	Rejects an incoming Microsoft Teams call.
	Accesses Lenovo Support resources.
	Starts/Pauses audio or video playback.
	Stops audio or video playback.
	Plays the previous audio or video in the playlist.

Table 9. Hotkey icons and denoted functions (continued)

Hotkey icon	Function description
	Plays the next audio or video in the playlist.
	Switches the computer's active operation mode.
	Blurs the background for videoconferencing.
	Switches the computer's active audio mode.
	Turns on/off night light mode. (Windows operating systems)
	Turns on/off the Eye Care mode.
	Opens a custom (user-defined) app. Note: To reset the target app, double-press this key.

Note: Hotkey functions may change if the associated app or the Windows operating system is updated.

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