ThinkCentre M600t User Manual V3.0 (E-version)

Contents

ThinkCentre M600t User Manual V3.0 (E-version)

Important Information Before Use

This guide aims to help you use this product correctly. Before installing and using this product for the first time, please be sure to carefully read all the materials included with the product, especially the precautions mentioned in the safety Information Section and Other terms in this guide. This will help you better use this product.

Computer Usage Precautions

- When the computer is running, do not use a dust shield or dust cloth to cover the heat dissipation vents on the top of the product to prevent hardware damage.

- Never open the housing of non-repairable parts, such as the optical drive and power adapter.

⚠️DANGER

> **Opening the optical drive or power adapter housing can cause electric shock, laser radiation, or even explosion.**

- Do not drop, bump, scratch, twist, hit, vibrate, or push your computer unit, monitor, or external devices.

- If the computer you purchased has a wireless network card, this card may be incompatible with outdated routers, causing connection failures. To solve this problem, we recommend you contact your router manufacturer and request a firmware update.

- Lenovo is not responsible for third-party software and antivirus programs that use your computer's camera, microphone, or other multimedia devices to obtain private information (including images or audio) through Wi-Fi, Bluetooth, Ethernet, and other methods of communication.

Optical Mouse Usage Precautions

An optical mouse functions by emitting a strong red light through its LED, which is reflected by the desktop surface and enters the sensor. The sensor senses micro texture changes in the desktop surface to calculate the direction and displacement of the mouse movement. Therefore, the reflective conditions of the desktop have a significant influence on the performance of the optical mouse. The performance of the optical mouse is degraded when used on the following types of surfaces causing jitter, jumps, difficult movement, or even complete lack of function:

- Surfaces that cannot reflect light diffusely: such as glass table tops, transparent table mats, and mirrors.

- Overly shiny surfaces: such as metal surfaces and laminated magazine covers.

- Surfaces with strong directional textures: such as brushed metal surfaces, wood surfaces with straight grain, and tatami mats.

- Surfaces that are uniform at the micron level: such as marble tabletops and artificial marble tabletops.

- Surfaces with pixel-level specifications and patterns: such as coordinate paper, screen-printed patterns, and boards with artificial wood grain.

- Surfaces that are too dark or close to red: such as black or red desktops.

If your desk has one of the above surfaces, we recommend you take one of the following measures to improve your optical mouse performance:

- Place a piece of ordinary white paper that is not too smooth (and is not too shiny, like coated paper) on your desktop to use as a mousepad.

- Use a mousepad designed for an optical mouse.

Storage Media and Driver Usage Precautions

1. If your computer comes with an optical drive, do not touch the surface of the disc or the lens on the tray.
2. Wait until you hear the CD or DVD click into the center pivot of the optical drive before closing the tray.
3. When installing a hard drive, apply pressure on the device only where needed.

System Usage Precautions

- Lenovo recommends you use the preinstalled Windows operating system. Because Microsoft no longer provides support for older Windows operating systems, some software and hardware may be incompatible with these operating systems.
- To improve the security and stability of your computer system, please promptly upgrade and update your system.
- You can choose to install another operating system on this product. However, because other operating systems have not passed rigorous testing on this product, Lenovo cannot guarantee that an operating system other than the preinstalled system will be stable, reliable, and secure when used on this computer. Other operating systems may not be able to obtain the normal performance, stability, reliability, and security of this product. Furthermore, Lenovo does not guarantee that it provides the drivers for other operating systems.
- Operating systems and application software (such as word processing and database software) should come with their own instructions. If you encounter any problems when using these programs, please refer to the relevant instructions manual.
- The functions of the preinstalled operating system and any preinstalled application software are distinct from the functions of this product itself, and such functions shall not be construed as functions of this product.
- Lenovo does not provide any commitments or services related to the usability or reliability of hardware and software provided by a third party.
- The onboard integrated graphics card shares some resources with the physical memory. Therefore, the memory value displayed in the system may be less than the physical value of the memory hardware.
- Generally, users can change the DVD region code five times. Go to "Device Manager" → "DVD/CD-ROM Drivers" and click the relevant driver on the "DVD Region" page to view the number of times you can change the setting. If you have reached the limit, you can only play DVDs compatible with the currently set region. In addition, some DVDs may not have regional retractions, which is indicated by a region of 0.

Chapter 1. Install the Computer

Notes:

- Before installing the computer, check the packing list to make sure all the parts are provided.
- Before installing and using the computer, carefully read this user guide.

Connect to Power

Connect the computer to a power as shown in the figure below:
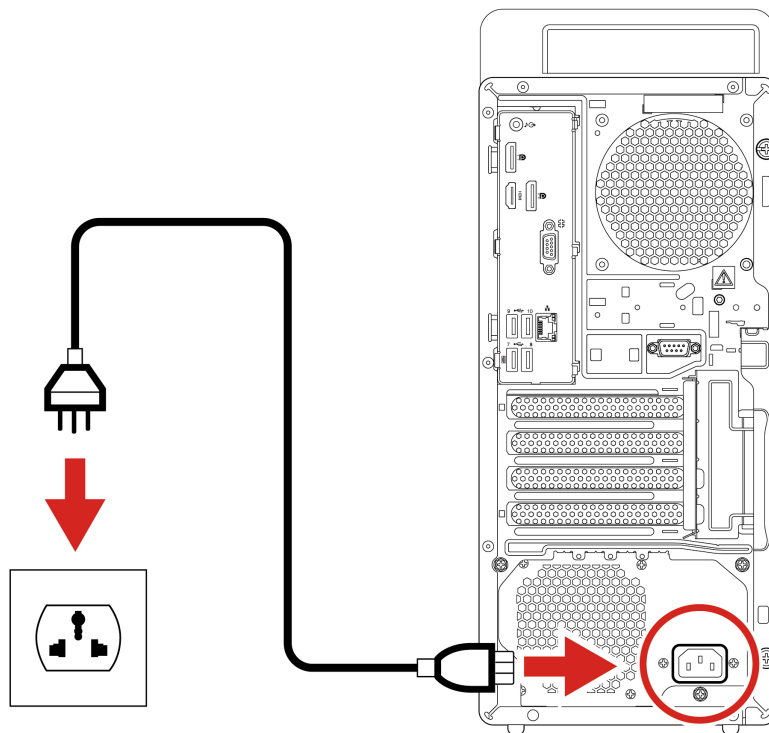

1. Connect one end of the power cable to the power connector on the back of the device.
2. Plug the other end of the power cable into an electrical outlet.

Notes:

- If your computer has a wireless keyboard and mouse, connect them following the relevant instructions.
- You must use the power adapter provided by Lenovo. The use of another power adapter may cause combustion or explosion.

Chapter 2. How to Use Your Computer

Front View
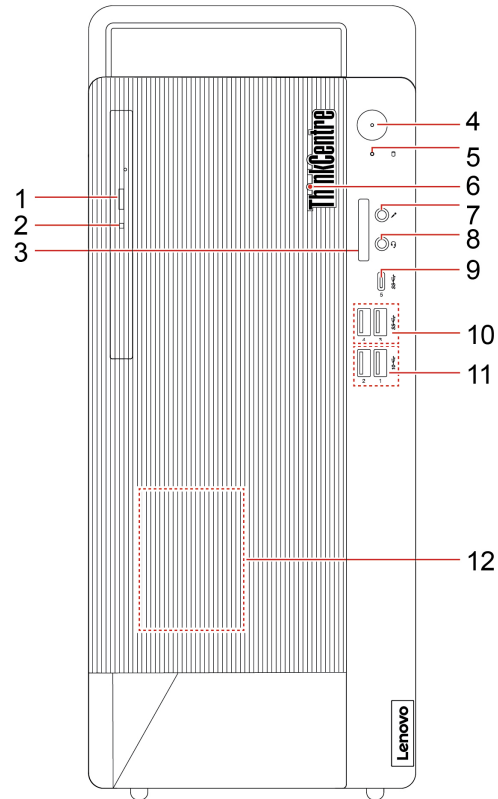
1. Optical drive eject/close button (optional)	2. Optical drive activity indicator (optional)
3. SD card slot (optional)	4. Power button
5. Storage drive activity indicator	6. ThinkCentre® LED
7. Microphone connector	8. Headset connector
9. USB-C® (3.2 Gen 1) connector	10. USB 3.2 connectors Gen 1 (2)
11. USB 3.2 connectors Gen 2 (2)	12. Built-in speaker (optional)

Rear View
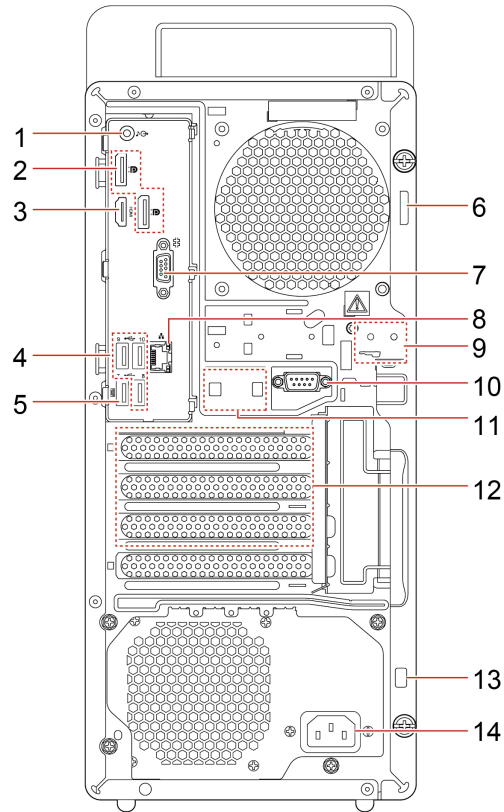
1. Audio line-out connector	2. DisplayPort™ out connectors (2)
3. HDMI™ out connector	4. USB 2.0 connectors (3)
5. USB 2.0 connector (with smart power on)	6. Padlock loop
7. Serial connector	8. Ethernet connector
9. E-lock slots	10. Serial connector (optional)
11. Smart cable clip slots	12. PCI Express card area
13. Security-lock slot	14. Power connector

Start Up the Computer

Press and hold the power button on the case to start up the computer.
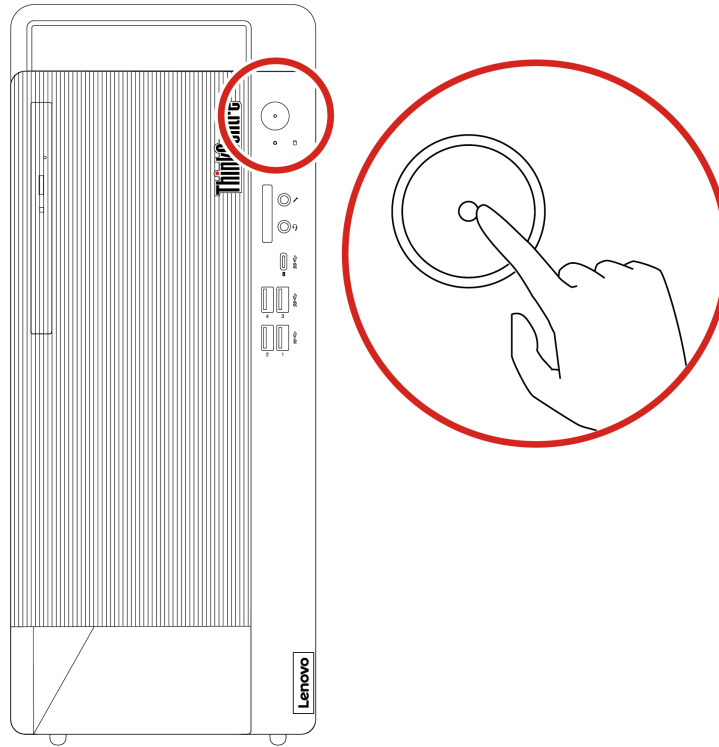
Shut Down the Computer

To prevent damage to hardware/software systems or loss of data, do not arbitrarily use the power button to shut down the computer. Instead, shut down the computer as follows.

1. Click **Start** → ⏻ **Power** → **Shut down**.

2. Wait for the computer to shut down and then turn off the monitor and other peripheral devices.

Note: After you turn off the system, please wait at least 20 seconds before turning the computer back on to avoid hardware faults.

Connect to Wi-Fi Networks

Note: If the computer you purchased is not a Wi-Fi device, please skip this section.

A Wi-Fi connection provides mobile Internet access within the coverage area of the Wi-Fi signal. This method allows you to connect to the Internet wirelessly.

Wi-Fi LAN networks cover a small area, such as a house, office, or a campus with several buildings. You must connect to an access point (such as a wireless router) to connect to the Wi-Fi network.

Connect to Bluetooth Devices

Note: If the computer you purchased does not have a Bluetooth function, please skip this section.

If your computer is equipped with a Bluetooth adapter card, you can connect it to other Bluetooth devices, such as laptops, PDAs, and mobile phones, to transmit data wirelessly.

In an open space, Bluetooth devices can transmit data within a range of 10 meters.

Notes:

- The actual maximum connection distance will vary due to interference and obstacles between devices. To obtain the optimal transmission speed, bring the other device as close to the computer as possible.
- Before transmitting data, you must pair the Bluetooth device with your computer.

Smart Driver Installation

In order to let you quickly, conveniently, and correctly install drivers for the components in your computer, we designed an exclusive smart driver installation system. By using the smart installation system, you do not need to spend a lot of time looking for diver paths in the driver disc. Instead, the smart installation system helps you automatically detect the PCI and PCI-E settings that can be installed. You just need to insert the provided driver disc and it will automatically install the necessary drivers.

Note: During driver installation, follow the system prompts to complete the process.

The smart driver installation program provides full installation and selective installation options:

- Full installation: When this option is enabled, the smart driver installation program will automatically detect the computer hardware information and display a hardware information dialog box. After you confirm the displayed information, the program will automatically install the drivers in the set sequence. To ensure the stability of your computer during the installation process, the smart installation system will restart the computer when its operating status permits.
- Selective installation: In the hardware information dialog box provided by the smart installation system, you can manually install drivers one by one or install only the selected drivers.

Notes:

- The smart driver installation program only supports the built-in PCI and PCI-E bus plug-and-play devices provided by Lenovo. It does not support devices connected to serial ports, parallel ports, or USB ports.
- If you cannot use this program to install drivers for additional expansion cards and external devices, please install them manually.
- If you discover that some drivers have not been installed after running the automatic install program, please install them manually.
- You must manually install function keyboard drivers. For more information, see the "Function Keyboard Instructions for Use" section.
- The hardware information in the installation list shown in this guide is for reference only. The actual information displayed on your computer is the correct information.

Chapter 3. Set Up Your Computer

Set Up Sleep Mode

Note: The interface images in this chapter are for reference only.

1. In the search box, enter `power supply` and then press Enter.
2. In the pop-up box that appears, select the sleep setting and set the sleep time to 30 minutes.
3. Then, click **Start → Power → Sleep** to enter power-saving mode.

Note: In power-saving mode, the computer sleep time cannot be set to more than 30 minutes.

Set Up BIOS Boot Order

To set the BIOS boot order for UEFI BIOS, follow the instructions below:

1. Turn on the computer and repeatedly press F1 on the keyboard to go to the "Startup" interface.
2. Select "Boot Priority Order" and press Enter.
3. In the boot priority order, follow the on-screen prompts and use the "+" or "-" buttons to select the boot device order.
4. Press F10 and the screen will display a prompt. Select "Yes" and press Enter to save your changes and exit.

Note: If you need to use expansion devices, turn off the computer and then connect the devices.

Change the ITS performance mode

You can adjust the acoustic and thermal performance of your computer by changing the ITS performance mode. Three choices are available:

- **Balance mode**: The computer works at the balance mode with balanced noise and better performance.
- **Performance mode** (default setting): The computer works at high performance with normal acoustic level.
- **Full Speed**: All fans in the computer will run at full speed.

To change the ITS performance mode:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Power → Intelligent Cooling** and press Enter.
3. Select **Performance Mode** and press Enter.
4. Set the performance mode as desired.
5. Press F10 or Fn+F10 to save the changes and exit.

Graphics Card Setup

Notes:

- This section only applies to graphics cards with a multi-display output function. If the computer you purchased does not come with a graphics card that supports this function, you can skip this section.

- This section only introduces some common graphics card functions. For information about other functions, see the electronic help information that comes with the graphics card driver.
- If you need to use dual-screen mode or expanded display mode, please connect another function display device to the computer's output port.

Set Up NVIDIA Graphics Cards

Display settings

Input `Display Settings` in the search box and press Enter to go to the Display interface. In the "Display resolution" option, you can adjust the resolution.

You can set the resolution to duplication mode or extended mode as required (this function can only be used when two display devices are connected). In advanced display settings, you can adjust the screen refresh rate.

Multiple display output settings

If your graphics card hard two or more output ports, it can output to multiple displays. This function supports single display mode, copy mode, and dual-screen display mode.

Before setup, connect the two displays for output.

Input `Display Settings` in the search box and press Enter to go to the Display interface. Set the multiple display mode as needed. In the drop-down menu, select "Duplicate these displays", "Extend these displays", "Only display on 1", or "Only display on 2".

Note: If the TV display interface is not clear, try adjusting the screen resolution to 800 x 600 pixels.

Set Up AMD Graphics Cards

Display settings

Input `Display Settings` in the search box and press Enter to go to the Display interface. In the "Display resolution" option, you can adjust the resolution.

You can set the resolution to duplication mode or extended mode as required (this function can only be used when two display devices are connected). In advanced display settings, you can adjust the screen refresh rate.

Multiple display output settings

If your graphics card hard two or more output ports, it can output to multiple displays.

Before setup, connect the two displays for output.

Input `Display Settings` in the search box and press Enter to go to the Display interface. Set the multiple display mode as needed. In the drop-down menu, select "Duplicate these displays", "Extend these displays", "Only display on 1", or "Only display on 2".

HDMI audio output

Notes:

- If your graphics card comes with an HDMI connector, it supports devices with HDMI audio output.
- Before setup, connect the HDMI display that supports audio output.

Input `Control Panel` in the search box and press Enter. In the control panel window, go to "Hardware and Sound" → "Sound" to open the Sound interface. In the "Playback" tab, right-click the HDMI device to test it and set up HDMI device audio output.

Other Precautions

- The BIOS of this graphics card is designed and produced exclusively for Lenovo computers. Do not use a graphics card BIOS not obtained from Lenovo to refresh or upgrade the existing BIOS. Otherwise, the graphics card may not work properly, causing you a lot of unnecessary hassle.

- Before adjusting the display mode, read the instructions for the display device to confirm that it can support the new refresh rate and resolution. If you cannot confirm that your display supports the desired display mode, you can consult the technical support department of Lenovo.

- In a DOS environment, this graphics card does not support simultaneous output to two display devices.

- In expanded display mode, if you use certain playback software to play DVDs, the video will only be output on the main display. Therefore, to avoid inconvenience, adjust the primary/secondary attributes of the displays before playing a DVD.

- The settings interface of the multi-display output function may differ slightly with different driver versions and operating systems.

- After you install the graphics card driver and restart the computer, an ASP.NET Machine A... user may appear. This does not affect system use, and you can delete the user manually.

Chapter 4.   Problem Diagnostics and Troubleshooting

Computer System Unable to Start-up Normally

Computer System Unable to Operate Normally

Check...	Solution
Whether the power cord or the Adapter of the computer is connected appropriately and securely.	Plug the power cord into corresponding connector at the back of the computer and into a power socket in normal operation status appropriately and securely. At the same time, ensure the power socket supplies the power normally.
Whether hardware devices have been changed or added since the last normal use.	Correctly and reliably connect or install the modified or new hardware with the computer system. If the hardware configuration is changed, the instructions information about the configuration error may be displayed when the computer starts up, and press F1 key to enter BIOS and save it to exit by following the onscreen instructions.
Whether the computer is turned on and running within the operating temperature (10℃-35℃).	Ensure the computer is turned on within the operating temperature and avoid to be turned on immediately after it is moved into from outdoor environment with large difference of temperature. The computer should be placed in the normal temperature for more than 2 hours.

Monitor Does Not Work Normally (traditional desktop or minicomputer)

Check...	Solution
Whether the power switch of the monitor is pressed.	Press the power switch of the monitor.
Whether the power cords of the computer and the monitor are connected appropriately and securely.	Plug the power cord into corresponding connector at the back of the computer and into a power socket in normal operation status appropriately and securely. At the same time, ensure the power socket supplies the power normally.
Whether the signal cable of the monitor is connected appropriately. Whether any pin of the signal cable is bent or snapped.	Connect the signal cable of the monitor to corresponding video signal output (VGA) connector on the computer securely.
Whether brightness and contrast of the monitor is normal.	Check and adjust the setting by using the control buttons of the monitor correspondingly.
Whether the setting of the system display property is compatible with your monitor.	Adjust properties such as resolution and refresh rate in the display property.

Monitor Unable to Operate Normally (All-in-one models)

Check...	Solution
When you turn on the computer, the screen does not show anything.	• If the screen is black, check that: The power cable or power adapter is connected to the computer and the other end is connected to a functioning electrical outlet. The computer power is on.(Press the power button again to make sure.) • If the above items are correct and the computer screen is still black, send it in for repairs.
When you turn on the computer, the screen is black and only displays the white cursor.	Use one-key recovery to restore the backup file to the Windows environment, or restore all the contents of the system partition (C partition) to the original factory state. If you still see only the cursor on the screen, send the computer in for repairs.
A black screen appears when the computer is on.	Check if a screensaver or power management has been enabled. Do one of the following to exit from the screensaver or recover from sleep or hibernation mode: • Press any key on the keyboard. • Press the power button. • If the computer you purchased supports mode conversion, when the screen is turned on but a black screen appears, you can check the mode indicator. Check if the **Monitor Mode** indicator is on. If the light is on, indicating the system is in **Monitor Mode**, press the mode selection button to switch from **Monitor Mode** to **Computer Mode**.

Internal Components of System Unable to Operate Normally

FAX/MODEM Unable to Operate Normally

Check...	Solution
What modem cables and ports are used and confirm whether modem cables operate normally.	Use phone ports which can communicate normally and modem cables with fine circuit.
Whether the modem cable is connected with the computer Modem card appropriately.	Connect the lines by following the identification on the Modem card appropriately.
Whether the driver for the Modem card is installed correctly and set appropriately.	Install the driver for the Modemand set the Internet account and phone property correctly.

No Audio Output or Single Track after Audio Card is Installed

Check...	Solution
Whether the connectors of the speaker or microphone are connected appropriately and the speaker is powered on and the volume knob is in an appropriate place.	Connect the input connector of the speaker with the output connector of the mainframe appropriately, turn on the power button of the speaker and adjust the volume knob to an appropriate place.
Whether the audio card driver is installed correctly, properties of the audio card and player software are set correctly.	Install the driver and set the property of the audio card appropriately.
Whether the options for digital audio are checked in the operating system.	In Windows XP, check the Enable Digital Audio for this CD-ROM Device option under CD-ROM property in Device Manager, or select the player software that supports digital audio.

Discontinuous Audio or Video when VCD/CD is Played

Check...	Solution
Quality of CD	The CD with poor quality makes it harder for the computer read information for it may cause discontinuous audio or video. Replace the CD and retry it.
Whether too many programs are opened	It may cause discontinuous audio or video if too many programs are opened, for the computer has to process several tasks at the same time. Close other programs or restart the computer and retry it.
The setting of transmission mode for the optical drive	Follow the steps below if the setting of optical drive is changed: 1. Open the Device Manager; 2. Click the "+" sign in front of the IDE ATA/ATAPI controller and double click the Slave IDE Channel to enter the Slave IDE Channel Property setting window; 3. Click the Advanced Setting page and set the Transmission Mode to the DMA (if available) in the setting option for Device 0, and then click OK. The transmission mode for the data of the optical drive is set correctly after it is restarted.

Network Connection Unable to Communicate Online Normally

Check...	Solution
Whether the network and cables operate normally.	Use the network that can communicate normally and cables which comply with the specification.
Whether the driver is installed appropriately and relevant protocols are added correspondingly.	Install the driver and add the relevant protocols correctly.
Whether the network is set with the parameters provided by your Internet Service Provider.	Consult your Internet Service Provider for solution.

External Devices Unable to Operate Normally

Keyboard Unable to Operate Normally

Check...	Solution
Whether the keyboard cable is connected appropriately and securely.	Plug the keyboard cable into the keyboard connector at the back of the computer after the computer is turned off (USB devices can be plugged/unplugged when the computer is powered on). Corresponding connector can be found readily according to the color.
Whether the keyboard is clean and any key is clamped.	Cleanse the keyboard with brush or inflator and restore the clamped keys.

Mouse Unable to Operate Normally

Check...	Solution
Whether the mouse cable is connected appropriately and securely.	Plug the mouse cable into the mouse connector at the back of the computer after the computer is turned off (USB devices can be plugged/unplugged when the computer is powered on). Corresponding connector can be found readily according to the color.
Whether the bottom or inside of mouse is clean.	You may wipe the bottom or cleanse the ball inside if they are dirty.
Whether sluggish movement, dullness and offset occur for the mouse pointer on the screen.	• Ensure the desktop and the mouse pad is flat and clean for the mouse. • Try to replace the desktop or mouse pad of the optical mouse for their effect will vary by factors such as material and color of the desktop or mouse pad (glass or other medium with special colors may lead to mouse malfunction).

Devices Connected to System Serial, Parallel Connectors Unable to Operate Normally

Check...	Solution
Whether the peripheral cable is connected appropriately and securely.	Plug the peripheral cable into corresponding connector at the back of the computer after the computer is turned off (USB devices can be plugged/unplugged when the computer is powered on).
Whether the device drivers are loaded into the operating system appropriately.	Check the device property and drivers status, or re-install drivers.
Whether the peripheral is in good condition and operate normally.	Replace it with known perfect device or connect it to other computers that operate normally to verify.

Hard Disk Unable to Be Accessed

Check...	Solution
Whether the hard disk is formatted appropriately.	Format the hard disk according to the actual condition of the system appropriately.
Whether the hard disk is infected by viruses.	Scan and remove viruses by using common, anti-virus software with license.

Check...	Solution
Whether the options related to the hard disk drive in BIOS setup are correct.	Reset the information of the hard disk in BIOS appropriately.
Whether the hard disk is damaged physically.	If it is the case, contact After-Sales Service of Lenovo.

Other Problems

Symptoms	Solution
Your computer does not respond.	To turn off your computer, press and hold the power button for at least 4 seconds. The computer enters sleep mode and may be locked during communication operations. Disable the sleep timer when you are using the network.
The computer does not start from the device you want.	Ensure that the BIOS boot order (boot device priority) is set in the BIOS Setup Utility so that the computer starts from the desired device. Also, make sure that the device from which the computer starts is on. In the Boot menu of the BIOS Setup Utility, make sure the desired device is included in the Boot Device Priority list.
The connected external device does not work.	Do not connect or disconnect devices to non-USB ports when the computer is turned on as this may damage the computer. When using a high-power external device (such as a USB optical drive), use the external device power adapter. Otherwise, the device may not be recognized or the system may shut down.

Chapter 5. Obtain Product Information and Help

This chapter provides an index of information resources related to Lenovo products. If you need help, services, tech support, or detailed information on Lenovo products, you can use this chapter to find it. This chapter includes the following information:

1. How to quickly learn to use the distinctive functions of the Lenovo computer you purchased.
2. How to install the drivers for various components.
3. How to obtain more information about Lenovo products.
4. The measures you should take to address problems you may encounter when using Lenovo computer products.
5. Who to contact when you need services or tech support.

Product Information Resources

Resources	Contents	Usage Method
Factory code	This code can be obtained in two ways: • The factory code is provided in the packing list (this code shall prevail). • The factory code is provided on the label affixed on the case.	The factory code is a unique identification code for Lenovo computer products. The code must be used to download the necessary drivers and access services provided by Lenovo.
Instructions manual	Quick reference	You can find help information and functional descriptions for different components in the instructions manual.
https://www.lenovo.com.cn	Company website information	• Go to https://www.lenovo.com.cn and complete one-time registration, using the factory code (case serial number) to verify your user ID. • We invite you to frequently check the service support page on the Lenovo website to find the latest information and software. You can find more information in the Security and Warranty Guide. • Go to the https://www.lenovo.com.cn service support page to find the smart chatbot. Or, you can submit questions through the Lenovo questions board, technical forum, or by email and our engineers will reply as soon as possible. • You can also access the online repair function through the service support page on the Lenovo website. Our engineers will quickly contact you and respond to your repair request.

Notes:

• **Data backup:** You are responsible for the security of your data. During routine use and before you accept services, you must promptly back up your important information to prevent data loss. Lenovo and its authorized service providers shall not assume responsibility for loss or damage of any data, programs, or removable storage media.

- **Ownership of replaced machine and parts:** After Lenovo, a Lenovo products dealer, or authorized Lenovo service provider replaces your product or a faulty part, the original machine or part will become the property of Lenovo, the dealer, or the service provider.
- **User registration information:** To protect your rights, we request that you register using your information after purchasing a product. You can register by going to the Lenovo company website (https://www.lenovo.com.cn) or calling the major customer service hotline at 400-810-6666 (in areas where 400 calls are not available, please call 010-58859506).

Get Help and Service

You can contact the following Lenovo service and support systems to obtain service information from Lenovo:

- **Yangtian Consumer Models:** Lenovo service hotline: 400-990-8888 (by mobile phone or landline). In areas where 400 calls are not available, please call 010-82879425, though you will have to pay the phone charges.

- **ThinkCentre M Series or Qitian Models:** Call the customer service hotline or log in to the Lenovo company website and look up the relevant service policies for your product.

  Major customer service hotline: 400-810-6666 (In areas where 400 calls are not available, please call 010-58859506).

  Lenovo company website: https://www.lenovo.com.cn

  Lenovo service website: https://newsupport.lenovo.com.cn/

  Correspondence address: 1st Floor, Building 1, No. 6, Shangdi West Road, Haidian District, Beijing

  Postal code: 100085

- **ThinkCentre E Series Models:** Lenovo service hotline: 400-100-6000 (by mobile phone or landline). In areas where 400 calls are not available, please call 010-58851110.

  Lenovo company website: https://www.lenovo.com.cn

  Lenovo service website: https://newsupport.lenovo.com.cn/

  Correspondence address: Beijing 8688 Mailbox, Lenovo (Beijing) Co., Ltd. Think Series Product Customer Service Department

  Postal code: 100085

Note: The telephone numbers published in this warranty clause may be changed due to changes in the telecommunication network or other objective factors. Please refer to the latest telephone numbers published by Lenovo.

Chapter 6. Additional Information

Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area. Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service.

Lenovo may have patents or pending patent programs covering subject matter described in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to:

Lenovo (United States), Inc.
8001 Development Drive
Morrisville, NC 27560
U.S.A.
Attention: Lenovo Director of Licensing

LENOVO PROVIDES THIS PUBLICATION "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. Some jurisdictions do not allow disclaimer of express or implied warranties in certain transactions, therefore, this statement may not apply to you.

Changes are made periodically to the information herein; these changes will be incorporated in new editions of the publication. To provide better service, Lenovo reserves the right to improve and/or modify the products and software programs described in the manuals included with your computer, and the content of the manual, at any time without additional notice.

The software interface and function and hardware configuration described in the manuals included with your computer might not match exactly the actual configuration of the computer that you purchase. For the configuration of the product, refer to the related contract (if any) or product packing list, or consult the distributor for the product sales. Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

The products described in this document are not intended for use in implantation or other life support applications where malfunction may result in injury or death to persons. The information contained in this document does not affect or change Lenovo product specifications or warranties. Nothing in this document shall operate as an express or implied license or indemnity under the intellectual property rights of Lenovo or third parties. All information contained in this document was obtained in specific environments and is presented as an illustration. The result obtained in other operating environments may vary.

Lenovo may use or distribute any of the information you supply in any way it believes appropriate without incurring any obligation to you.

Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk.

Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

All mentions in this document with respect to the best, longest, maximum or other similar expression are only for describing the specific status of the same product under different settings, no intention to make any comparison to products of other brands.

This document is copyrighted by Lenovo and is not covered by any open source license, including any Linux agreement(s) which may accompany software included with this product. Lenovo may update this document at any time without notice.

For the latest information or any questions or comments, contact or visit the Lenovo Web site:
https://pcsupport.lenovo.com

Lenovo License Agreement

This Lenovo License Agreement (the "Agreement") applies to each Lenovo Software Product that You acquire, whether it is preinstalled on or included with a Lenovo hardware product, acquired separately, or downloaded by You from a Lenovo Web site or a third-party Web site approved by Lenovo. It also applies to any updates or patches to these Software Products. This license agreement does not apply to non-Lenovo software that's either preloaded on or downloaded to your product. Also, certain Software Products developed by or for Lenovo in conjunction with a third party may be governed under separate terms. Therefore, for more information on non-Lenovo or co-developed Software Products, please review the license agreements or terms associated with those products. This Lenovo License Agreement is available in other languages at www.lenovo.com/license.

Lenovo will license the Software Product to You only if You accept this Agreement. You agree to the terms of this Agreement by clicking to accept it or by installing, downloading, or using the Software Product.

If You do not agree to these terms, do not install, download, or use the Software Product(s).

- **If You acquired the Software Product(s) and paid a license fee, return the Software Product to the party from whom You acquired it to obtain a refund or a credit of the amount You paid.**
- **If You acquired the Software Product(s) preinstalled on or provided with a Lenovo hardware product, You may continue to use the hardware product, but not the Software Product(s) covered under this Agreement.**

"Software Product" includes Lenovo computer software programs (whether preinstalled or provided separately) and related licensed materials such as documentation.

"You" and **"Your"** refer either to an individual person or to a single legal entity.

1. Entitlement

You must maintain Your original dated sales transaction document, such as a receipt, invoice or similar document, as Your proof of Your right to use the Software Product. The transaction document specifies the usage level acquired. If no usage level is specified, You may install and use a single copy of the Software Product on a single hardware product. Your transaction document also provides evidence of Your eligibility for future upgrades, if any. For Software Products preinstalled on, included with, or distributed at no charge

for use on a Lenovo hardware product, Your hardware product sales transaction document is also the proof of Your right to use the Software Product.

2. License

The Software Product is owned by Lenovo or a Lenovo supplier, and is copyrighted and licensed, not sold. Lenovo grants You a nonexclusive license to use the Software Product when You lawfully acquire it.

You may a) use the Software Product up to the level of use specified in Your transaction document and b) make and install copies, including a backup copy, to support such use. The terms of this Agreement apply to each copy You make. You may not remove or alter any copyright notices or legends of ownership.

If You acquire the Software Product as a program upgrade, after You install the upgrade You may not use the Software Product from which You upgraded or transfer it to another party.

You will ensure that anyone who uses the Software Product (accessed either locally or remotely) does so only for Your authorized use and complies with the terms of this Agreement.

You may not a) use, copy, modify, or distribute the Software Product except as provided in this Agreement or in any way that violates any applicable laws including but not limited to copyright laws; b) reverse assemble, reverse compile, or otherwise translate the Software Product except as specifically permitted by law without the possibility of contractual waiver; or c) sublicense, rent, or lease the Software Product.

Lenovo may terminate Your license if You fail to comply with the terms of this Agreement. If Lenovo does so, You must destroy all copies of the Software Product.

Lenovo uses the System Update program to update Software Products on Your computer. By default, critical updates are downloaded and installed automatically. Updates are classified as critical when they are needed for the computer to function properly. Failure to install critical updates could result in data corruption or loss, a major system malfunction, or a hardware failure. For example, critical updates could include an update to the hard-disk-drive firmware, a BIOS upgrade, a device-driver fix, or a fix for the operating system or other preinstalled software. You can disable this automatic feature by changing the settings of the System Update program at any time.

3. Transferability

You may not transfer or assign the Software Product to any other party, except as permitted in this section.

Preinstalled Software Products are licensed for use only on the Lenovo hardware product on which they are preinstalled or included with and may be transferred only with that Lenovo hardware product. They may not be transferred independent of the Lenovo hardware product.

4. Third Party Software Components and Products

Some Lenovo Software Products and future updates and patches may contain third party components, which may include Microsoft Windows Preinstallation Environment. These third party components are provided to You under separate terms and conditions different from this Agreement, typically found in a separate license agreement or in a README (or similarly titled) file. The third party's license terms and use restrictions will solely govern the use of such components.

Third Party Software Products provided by Lenovo may be governed by the terms of this Agreement but are usually licensed by the Third Party under its own terms and conditions. Third Party Software Products that are not licensed by Lenovo are subject solely to the terms of their accompanying license agreements.

5. Software Product Specifications

The Software Product specifications and specified operating environment information may be found in documentation accompanying the Software Product, if available, such as a README or similarly titled file, or otherwise published by Lenovo.

6. Privacy

Please review the Lenovo privacy policy statement (http://www.lenovo.com/privacy/us/en/) that's associated with Your product. Depending on Your particular Lenovo device or software product, the Lenovo privacy statement (http://www.lenovo.com/privacy/software/) is located at the point of activation and set-up and/or via "Settings".

7. Charges

Charges for the Software Product are based on the level of use acquired.

If You wish to increase the level of use, contact Lenovo or the party from whom You acquired the Software Product. Additional charges may apply.

If any authority imposes a duty, tax, levy or fee, excluding those based on Lenovo's net income, upon the Software Product, then You agree to pay the amount specified or supply exemption documentation. You are responsible for any personal property taxes for the Software Product from the date that You acquire it.

8. No Warranty

The Software Product(s) is provided to You "AS IS."

SUBJECT TO ANY STATUTORY WARRANTIES WHICH CANNOT BE EXCLUDED, LENOVO MAKES NO WARRANTIES OR CONDITIONS, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT, REGARDING THE SOFTWARE PRODUCT OR TECHNICAL SUPPORT, IF ANY.

The exclusion also applies to any of Lenovo's developers and suppliers.

Suppliers or publishers of non-Lenovo Software Products may provide their own warranties.

Lenovo does not provide technical support, unless Lenovo specifies otherwise in writing.

9. Limitation of Liability

Circumstances may arise where, because of a default on Lenovo's part or other liability, You may be entitled to recover damages from Lenovo. In each such instance, regardless of the basis on which You are entitled to claim damages from Lenovo (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), except and to the extent that liability cannot be waived or limited by applicable laws, Lenovo is liable for no more than the amount of actual direct damages suffered by You, up to the amount You paid for the Software Product. This limit does not apply to damages for bodily injury (including death) and damage to real property and tangible personal property for which Lenovo is required by law to be liable.

This limit also applies to Lenovo's suppliers and resellers. It is the maximum for which Lenovo, its suppliers and resellers are collectively responsible.

UNDER NO CIRCUMSTANCES IS LENOVO, ITS SUPPLIERS OR RESELLERS LIABLE FOR ANY OF THE FOLLOWING EVEN IF INFORMED OF THEIR POSSIBILITY: 1) THIRD PARTY CLAIMS AGAINST YOU FOR DAMAGES; 2) LOSS OF, OR DAMAGE TO, YOUR DATA; OR 3) SPECIAL, INCIDENTAL, OR INDIRECT DAMAGES OR FOR ANY ECONOMIC CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, BUSINESS REVENUE, GOODWILL, OR ANTICIPATED SAVINGS. SOME STATES OR

JURISDICTIONS DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

10. Consumer Rights

Nothing in this Agreement affects any statutory rights of consumers that cannot be waived or limited by contract. You may have additional consumer rights under applicable local laws, which this Agreement cannot change.

11. General

a) In the event that any provision of this Agreement is held to be invalid or unenforceable, the remaining provisions of this Agreement remain in full force and effect.

b) You agree to comply with all applicable export and import laws and regulations.

c) Neither You nor Lenovo will bring a legal action under this Agreement more than two (2) years after the cause of action arose unless otherwise provided by local law without the possibility of contractual waiver or limitation.

12. Dispute Resolution

If You acquired the Software Product in **Cambodia, Indonesia, Philippines, Vietnam or Sri Lanka**, disputes arising out of or in connection with this Software Product shall be finally settled by arbitration held in Singapore and this Agreement shall be governed, construed and enforced in accordance with the laws of Singapore, without regard to conflict of laws. If You acquired the Software Product in **India**, disputes arising out of or in connection with this Software Product shall be finally settled by arbitration held in Bangalore, India. Arbitration in Singapore shall be held in accordance with the Arbitration Rules of Singapore International Arbitration Center ("SIAC Rules") then in effect. Arbitration in India shall be held in accordance with the laws of India then in effect. The arbitration award shall be final and binding for the parties without appeal and shall be in writing and set forth the findings of fact and the conclusions of law. All arbitration proceedings shall be conducted, including all documents presented in such proceedings, in the English language, and the English language version of this Agreement prevails over any other language version in such proceedings.

Appendix Glossary

Term	Definition
PC	Personal Computer. Generally refers to IBM-compatible computers to distinguish from Apple Macintosh computers.
CPU	Central Processing Unit. The computer chip uses to interpret and execute program instructionsand is referred to as the microprocessor.
PCI	A type of expansion card standard. The PCI is a local bus that supports 32-bit and 64-bit data channels and can provide high-speed data channel between the microprocessor and device such as the video, drive and network, etc.
USB	Universal Serial Bus. Used for connectors of devices such as keyboard, mouse, removable storage or printers; it enables devices to insert into the 4-pin connector on the computer directly. The USB supports hot plug.
PS/2	A type of small DIN connector on computer which is usually used to connect the keyboard or mouse.
BIOS	Basic Input & Output System. It is composed of the software and data stored in ROM chips. New hardware and addition/removal of BIOS options can be supported by updating BIOS. It is not necessary to reset the BIOS for normal use since all Lenovo computers have been pre-set with the BIOS before shipment.

Term	Definition
bps	Bits/second. It is the measurement unit of data transmission rate.
Bps	Bytes/second. It is the measurement unit of data transmission rate.
CD-R	It is a type of CD that can record data. But the data can be recorded only once in the CD-R. The data cannot be deleted or overwritten.
CD-RW	It is a kind of rewritable CD. The data can be written to CD-RW and then deleted or overwritten (rewritten).
GB	It is the measurement unit of the data or drive storage space. 1 GB is equal to 1024 MB (1,073,741,824 bytes).
GHz	It is the measurement unit of frequency (1 GHz is equal to 1 billion Hz or 1000 MHz).
Hz	Hertz. It is the measurement unit of frequency (1 Hz is equal to one cycle persecond). Computer and electronic equipment usually takes kHz, MHz and GHz as measurement units.
I/O	Input/Output. It is the operation or device used to input the data to or extract the data from computer. For example, the keyboard is an input device while the printer is an output device.
Kb	Kilobyte. It is the measurement unit of data (1 Kb is equal to 1024 bits). It is also the measurement unit of integrated circuit memory space. Refer to KB.
KB	Kilobyte. It is the measurement unit of data (1 KB is equal to 1,024 bytes). 1024 KB is equal to 1 MB.
KHz	Kilohertz. It is the measurement unit of frequency (1 KHz is equal to 1,000 Hz).
Mb	Megabit. It is the measurement unit of memory chip capacity (1 Mb is equal to 1024 Kb).
MB	Megabyte. It is the measurement unit of data (1 MB is equal to 1,048,576 bytes). 1MB is equal to 1024 KB. When referred to hard disk drive storage, this term is usually rounded off to 1M bytes.
MBps	Megabits per second. It is a unit of measurement for data transmission, equivalent to 1,048,576 bits per second.
WOL	Wake on LAN. This technology can be used to remotely turn on the computer in the network or wake it up from the hibernation mode. WOL is an aspect of WfM technology.
TCP/IP	It is the abbreviation for the Transmission Control Protocol (TCP)/Internet Protocol (IP)and is basic communication protocol for Internet as well as private network. TCP/IP is a two-layer system. As the higher layer, TCP wraps the files into smaller packages which will be transmitted from one computer via Internet and received by the TCP layer of another computer. The TCP layer of the receiving computer then restores information within the package. As the lower layer, IP determines the address for each package to ensure it arrives at appropriate destination.
IP Address	Each computer on the Internet has at least one IP address which is used as its unique ID to distinguish it from all other computers on the Internet. When the data is sent or received on the Internet, sender or receiver address is included in the data.
CMOS	It is the Complementary Metal-Oxide-Semiconductorand the storage chips commonly used in NVRAM storage.
COM Port	It usually refers to the serial port connection with Modem or other serial devices. Most computers support one or two serial ports specified as COM1 and COM2.
L1 Cache	It is the Level 1 Cache, namely the small, main cache stored in microprocessor. It's faster than L2 Cache.
L2 Cache	It is the Level 2 Cache, namely the secondary cache with larger capacity and lower speed that is used together with L1 Cache. In early microprocessors, L2 Cache is usually located outside of processor and installed on chips or add-in cards. L2 Cache is normally integrated in the processor in latest processors.

Term	Definition
Heat Sink	The heat conducting sheet metal can be connected to the top of chips to absorb heat such as microprocessor; by which to make chips work under lower temperature.
Modem	Abbreviated for modulator and demodulator. The Modem converts the analog data into the digital data or vice versa to enable computers communicate via the modem cable.
P&P	It is usually known as Plug & Play or PNP. Which is a kind of technology that automatically configures the device at startup to use or share certain IRQs. For this technology to work normally, both BIOS and Operating System of the computer must support PNP, and all devices to be configured should be compatible with PNP. PCI devices are compatible with PNP.

Trademarks

The following terms are trademarks of Lenovo:

LENOVO
LENOVO logo
THINKCENTRE
THINKCENTRE logo

DisplayPort are trademarks of the Video Electronics Standards Association.

Microsoft, Windows, and Windows Media are trademarks of the Microsoft group of companies.

The terms HDMI and HDMI High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

USB-C is a registered trademark of USB Implementers Forum.

All other trademarks are the property of their respective owners.