Linux User Guide

Lenovo
ThinkEdge

ThinkEdge SE50

Read this first

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

- *Safety and Warranty Guide*
- *Generic Safety and Compliance Notices*
- *Setup Guide*
- The latest compliance information is available at:
  https://www.lenovo.com/us/en/compliance

Restricted access location statement

"Equipment intended for Restricted Access Location" or equivalent. (instruction)

Attention: This product is used in restricted access location. During operation, the temperature of the computer surface might become very high and burn the skin. Avoid keeping your hands or any other part of your body in contact with the computer.

Contents

About this documentation

- Illustrations in this documentation might look different from your product.

- Depending on the model, some optional accessories, features, and software programs might not be available on your computer.

- Depending on the version of operating systems and programs, some user interface instructions might not be applicable to your computer.

- Documentation content is subject to change without notice. Lenovo makes constant improvements on the documentation of your computer, including this *User Guide*. To get the latest documentation, go to: https://pcsupport.lenovo.com

- Canonical® makes periodic feature changes to the Ubuntu® operating system through Software Updates. As a result, some information in this documentation might become outdated. Refer to Ubuntu resources for the latest information.

Chapter 1. Meet your computer

Front

1. Serial connectors* (2)	Used to connect an external modem, a serial printer, or other devices that use a serial connector.
2. Power button	Press to turn on the computer. To turn off the computer, open the system menu, click the power icon $\bigcirc$, and then select **Power Off**. The indicator in the power button shows the system status of your computer. • **On:** The computer is on. • **Off:** The computer is off or in hibernation mode. • **Blinking:** The computer is in sleep mode.
3. Storage drive activity indicator	This indicator is on when the storage drive is in use.
4. Microphone connector	Connect a microphone.
5. Headset connector	Connect a headset or headphones to your computer.
6. SIM card slot	Insert an SIM card.
7. USB 3.1 connectors Gen 1 (2)	Connect USB-compatible devices, such as a USB keyboard, USB mouse, USB storage device, or USB printer.
8. DC Power cord connector	Connect the power cord to your computer for power supply. **Notes:** • Connections made to this connector must use the cable (24 AWG-14 AWG / 105°C). • Torque the screws at 0.4N.m.
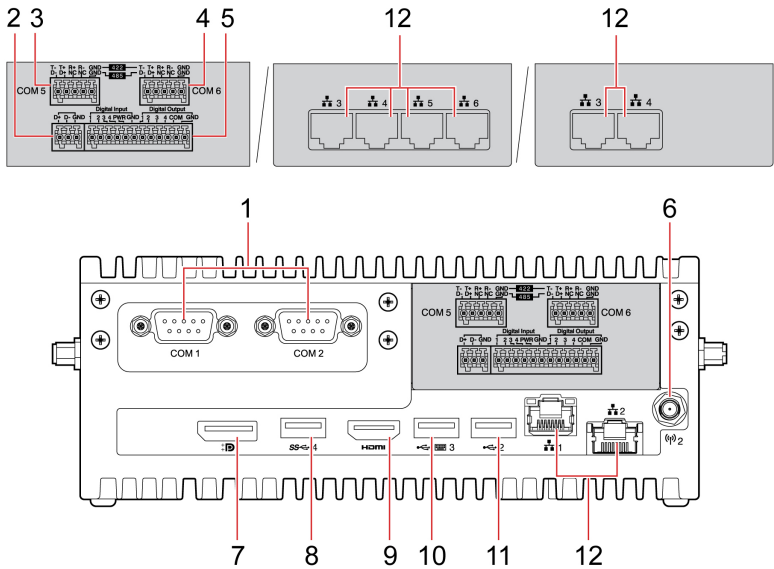
* for selected models

RS232 Pin definition mapping table

Pin number	Pin definition
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

Rear
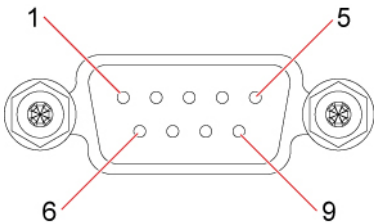

1. Serial connectors (2)	Used to connect an external modem, a serial printer, or other devices that use a serial connector.
2. CANbus*	Used to connect to a CANbus enabled device or dongle. **Note:** Connections made to this connector must use the cable (26 AWG-18 AWG / 105°C).

|	
3. RS422 or RS485 connector*	Used to connect an RS422 or RS485 device. **Note:** Connections made to this connector must use the cable (26 AWG-18 AWG / 105°C).
4. RS422 or RS485 connector*	Used to connect an RS422 or RS485 device. **Note:** Connections made to this connector must use the cable (26 AWG-18 AWG / 105°C).
5. Digital Input and Digital Output*	Used to connect an external modem, a serial printer, or other devices that use a serial connector. • Output Voltage Range: 3.5 V to 30 V • Normal Output Current: 500 mA / Channel **Note:** Connections made to this connector must use the cable (26 AWG-18 AWG / 105°C).
6. Antenna slot*	Used to install the antenna that is available only on some models.
7. DisplayPort® out connector	Send audio and video signals from the computer to another audio or video device, such as a high-performance monitor.
8. USB 3.1 connector Gen 1	Connect USB-compatible devices, such as a USB keyboard, USB mouse, USB storage device, or USB printer.
9. HDMI™ connector	Send audio and video signals from the computer to another audio or video device, such as a high-performance monitor.
10. USB 2.0 connector	Connect USB-compatible devices, such as a USB keyboard, USB mouse, USB storage device, or USB printer. This connector supports the smart power-on feature.
11. USB 2.0 connector	Connect USB-compatible devices, such as a USB keyboard, USB mouse, USB storage device, or USB printer.
12. Ethernet connectors*	Connect to a local area network (LAN). When the yellow indicator is on, the computer is connected to a LAN. When the yellow indicator blinks, data is being transmitted.

* for selected models

RS232 Pin definition mapping table
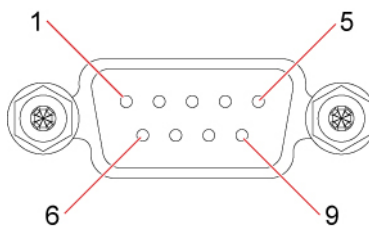
Pin number	Pin definition
1	DCD
2	RXD
3	TXD
4	DTR
5	GND

Pin number	Pin definition
6	DSR
7	RTS
8	CTS
9	RI

RS422 Pin definition mapping table
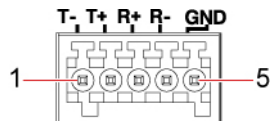
Pin number	Pin definition
1	TX-
2	TX+
3	RX+
4	RX-
5	GND

RS485 Pin definition mapping table
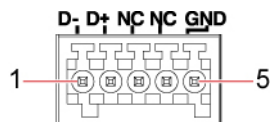
Pin number	Pin definition
1	D-
2	D+
3	NC
4	NC
5	GND

CANbus Pin definition mapping table
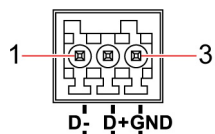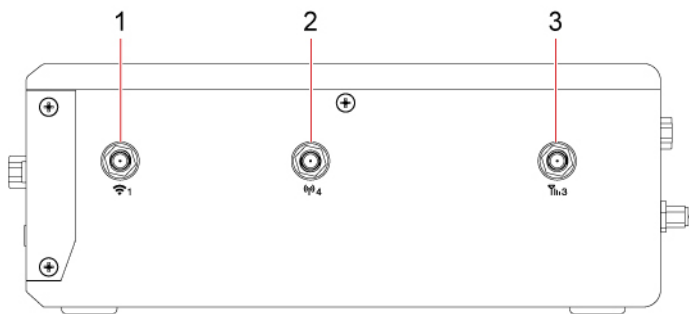
Pin number	Pin definition
1	D-
2	D+
3	GND

Digital Input and Digital Output Pin definition mapping table
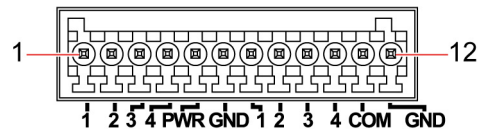
Pin number	Pin definition
1	Digital Output-1
2	Digital Output-2
3	Digital Output-3
4	Digital Output-4
5	Power
6	GND
7	Digital Input-1
8	Digital Input-2
9	Digital Input-3
10	Digital Input-4
11	COM
12	GND

Left

1. Antenna slot*	Used to install the Wi-Fi® antenna that is available only on some models.
2. Antenna slot*	Used to install the antenna that is available only on some models.
3. Antenna slot*	Used to install the antenna that is available only on some models.

* for selected models

Right
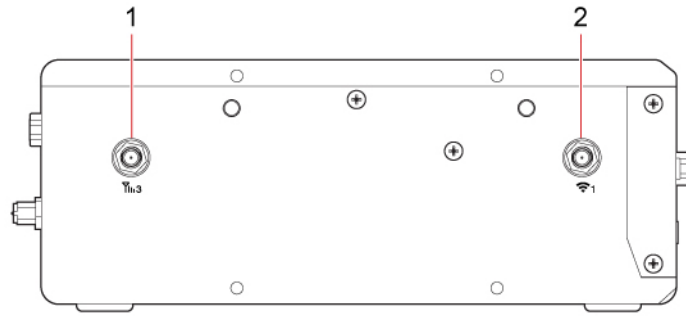
1. Antenna slot*	Used to install the antenna that is available only on some models.
2. Antenna slot*	Used to install the Wi-Fi antenna that is available only on some models.
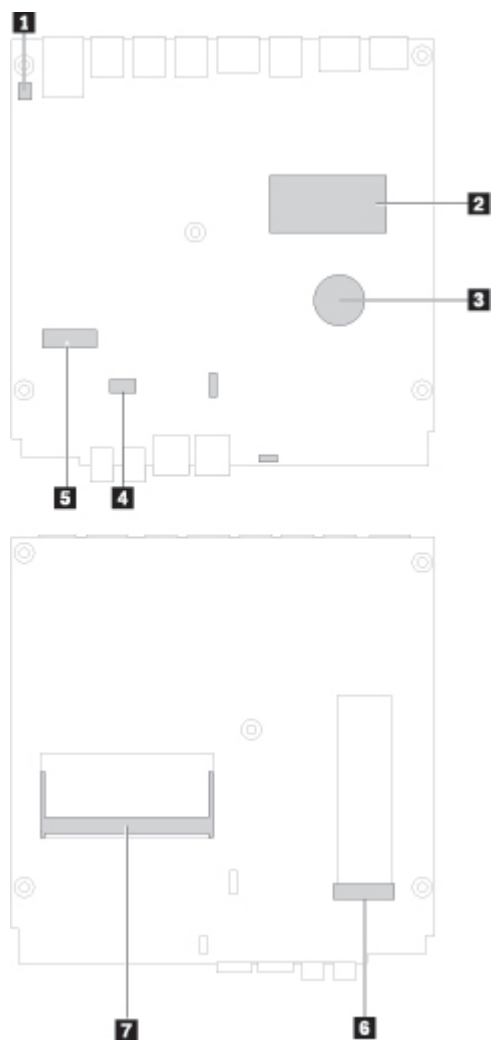
* for selected models

Bottom
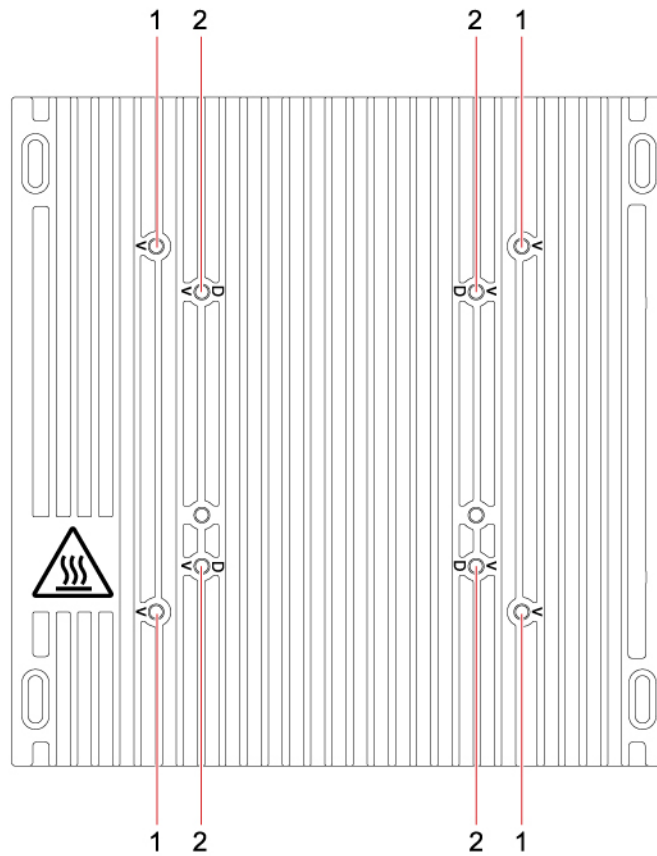
1. VESA® threaded holes (screws: M4 x 8mm x 4 pcs)	Connect the matched VESA mount with the matched screws when you install the computer on a wall. **Note:** Torque the screws at 5±0.5 cm-kg
2. VESA threaded or Din rail holes (screws: M4 x 8mm x 4 pcs)	Connect the matched VESA mount or Din rail with the matched screws when you install the computer on a wall. **Note:** Torque the screws at 5±0.5 cm-kg

System board

1 Clear CMOS (Complementary Metal Oxide Semiconductor) / Recovery jumper	**2** Microprocessor
3 Coin-cell battery	**4** Storage drive connector
5 Wi-Fi card slot	**6** M.2 solid-state drive slot
7 Memory slot	

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)
3.2 Gen 1	5
3.2 Gen 2	10
3.2 Gen 2 × 2	20
Thunderbolt 3	40
Thunderbolt 4	40

Chapter 2.   Get started with your computer

Get started with Ubuntu Server

Learn the basics of Ubuntu and start working with it right away. For more information about Ubuntu, see the Ubuntu documentation site at: https://ubuntu.com/server/docs.

Ubuntu server does not come with a desktop GUI installed by default so the unit can run headless and be managed using ssh. Configuration is expected to be done from the command line.

By default the system is configured with a default account "ubuntu" with password "ubuntu". The first time you login you will be prompted to update the password to something unique.

You will likely want to create your own user account using the **adduser <username>** command and follow the instructions. If you want to give that account supervisor privileges, use the **usermod -aG sudo <username>** command.

Connect to networks

Your computer helps you connect to the world through a wired or wireless network.

To identify the interfaces available, use the **ip a** command. For example:

```
banther@nano1:~$ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
       valid_lft forever preferred_lft forever
2: enp2s0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
    link/ether 98:fa:9b:a1:b4:72 brd ff:ff:ff:ff:ff:ff
    inet 192.168.2.141/24 brd 192.168.2.255 scope global dynamic enp2s0
       valid_lft 212639sec preferred_lft 212639sec
    inet6 fe80::9afa:9bff:fea1:b472/64 scope link
       valid_lft forever preferred_lft forever
3: enp4s0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc fq_codel state DOWN group default qlen 1000
    link/ether 98:fa:9b:a1:b4:73 brd ff:ff:ff:ff:ff:ff
    inet6 fe80::9afa:9bff:fea1:b473/64 scope link
       valid_lft forever preferred_lft forever
4: wwan0: <BROADCAST,MULTICAST,NOARP> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 92:6d:fc:d6:d1:17 brd ff:ff:ff:ff:ff:ff
5: wlo1: <BROADCAST,MULTICAST> mtu 1500 qdisc noop state DOWN group default qlen 1000
    link/ether 7c:b2:7d:9a:13:de brd ff:ff:ff:ff:ff:ff
banther@nano1:~$
```

Connect to the wired Ethernet

Connect your computer to a local network through the Ethernet connector on your computer with an Ethernet cable.

By default the installer will configure the interface to use DHCP. If you want to configure a static IP, create a netplan configuration in the file /etc/netplan/99_config.yaml. The example below assumes you are configuring your first Ethernet interface identified as enp2s0. Change the addresses, gateway4, and nameservers values to meet the requirements of your network.

```
network:
  version: 2
```

```
  renderer: networkd
ethernets:
  enp2s0:
    addresses:
      - 10.10.10.2/24
    gateway4: 10.10.10.1
    nameservers:
        search: [mydomain, otherdomain]
        addresses: [10.10.10.1, 1.1.1.1]
```

The configuration can then be applied using the netplan command **sudo netplan apply**.

Connect to Wi-Fi networks (for selected models)

If your computer includes a wireless LAN module, you can connect your computer to Wi-Fi networks. The wireless LAN module on your computer may support different standards. For some countries or regions, use of 802.11ax may be disabled according to local regulations.

The easiest way to connect to Wi-Fi is using nmcli, but steps may vary depending on your wireless access point. The below commands will list devices available and configure the Wi-Fi port.

```
nmcli dev
nmcli dev wifi connect <SSID name> password <WIFI password>
```

Once the Wi-Fi has been configured the below command can be used to bring up the connection.

```
nmcli con up <SSID name>
```

Use the software development kit (SDK)

Lenovo provides a software development kit (SDK) for your computer. You can use the SDK to develop functions based on your needs. For example, you can collect signals and transfer data with sensors and relay modules connected to the serial connectors and CANbus/DI/DO connectors.

To download the software development kit (SDK):
1. Go to https://support.lenovo.com/docs/thinkedge_sdk.
2. Follow the on-screen instructions to select the correct software development kit for your computer.

Purchase accessories

Lenovo has a number of hardware accessories and upgrades to help expand the capabilities of your computer. Options include memory modules, storage devices, network cards, power adapters, keyboards, mice, and more.

To shop at Lenovo, go to https://www.lenovo.com/accessories.

Chapter 3. Secure your computer information

Use passwords

Password types

You can set the following passwords in UEFI (Unified Extensible Firmware Interface) BIOS (Basic Input/
Output System) to prevent unauthorized access to your computer. However, you are not prompted to enter
any UEFI BIOS password when your computer resumes from sleep mode.

- Power-on password

  When a power-on password is set, you are prompted to enter a valid password each time the computer is
  turned on. The computer cannot be used until the valid password is entered.

- Supervisor password

  Setting a supervisor password deters unauthorized users from changing configuration settings. If you are
  responsible for maintaining the configuration settings of several computers, you might want to set a
  supervisor password.

  When a supervisor password is set, you are prompted to enter a valid password each time you try to enter
  the BIOS menu.

  If both the power-on password and supervisor password are set, you can enter either password.
  However, you must use your supervisor password to change any configuration settings.

- Hard disk password

  Setting a hard disk password prevents unauthorized access to the data on the storage drive. When a hard
  disk password is set, you are prompted to enter a valid password each time you try to access the storage
  drive.

  Note: After you set a hard disk password, your data on the storage drive is protected even if the storage
  drive is removed from one computer and installed in another.

Set, change, and remove a password

Before you start, print these instructions.

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security**.
3. Depending on the password type, select **Set Supervisor Password**, **Set Power-On Password**, or **Hard Disk Password** and press Enter.
4. Follow the on-screen instructions to set, change, or remove a password.
5. Press F10 or Fn+F10 to save the changes and exit.

You should record your passwords and store them in a safe place. If you forget the passwords, contact a
Lenovo-authorized service provider to have the passwords removed.

Notes:

- If the supervisor password is forgotten, it might not be removed by clearing CMOS depending on your
  BIOS settings.
- If the hard disk password is forgotten, Lenovo cannot remove the password or recover data from the
  storage drive.

Use BIOS security solutions

This section provides BIOS solutions to secure your computer and information.

Erase all storage drive data

It is recommended that you erase all storage drive data before recycling a storage drive or the computer.

To erase all storage drive data:
1. Set a hard disk password for the storage drive you will recycle. See "Use passwords" on page 13.
2. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
3. Select **Security ➙ Hard Disk Password ➙ Security Erase HDD Data** and press Enter.
4. Select the storage drive you will recycle and press Enter.
5. A message is displayed, prompting you to confirm the operation. Select **Yes** and press Enter. The erasing process begins.

   Note: During the erasing process, the power button and the keyboard are disabled.
6. After the erasing process is completed, a message is displayed, prompting you to reset the system. Select **Continue**.

   Note: Depending on the storage drive capacity, the erasing process will take half an hour to three hours.
7. After the resetting process is completed, one of the following will happen:
   - If the data on the system storage drive is erased, you will be prompted that no operating system is available.
   - If the data on the non-system storage drive is erased, the computer restarts automatically.

Use Smart USB Protection

The Smart USB Protection function is a security function that helps prevent data from being copied from the computer to USB storage devices connected to the computer. You can set the Smart USB Protection function to one of the following modes:

- **Disabled** (default setting): You can use the USB storage devices without limitation.
- **Read Only**: You cannot copy data from the computer to the USB storage devices. However, you can access or modify data on the USB storage devices.
- **No Access**: You cannot access the USB storage devices from the computer.

To configure the Smart USB Protection function:
1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Security ➙ Smart USB Protection** and press Enter.
3. Select the desired setting and press Enter.
4. Press F10 or Fn+F10 to save the changes and exit.

Chapter 4. UEFI BIOS

This chapter provides information about configuring and updating UEFI BIOS, and clearing CMOS.

What is UEFI BIOS

Note: The operating system settings might override any similar settings in UEFI BIOS.

UEFI BIOS is the first program that the computer runs when the computer is turned on. UEFI BIOS initializes the hardware components and loads the operating system and other programs. Your computer comes with a setup program with which you can change UEFI BIOS settings.

Enter the BIOS menu

Restart the computer. When the logo screen is displayed, press F1 or Fn+F1 to enter the BIOS menu.

Note: If you have set BIOS passwords, enter the correct passwords when prompted. You also can select **No** or press Esc to skip the password prompt and enter the BIOS menu. However, you cannot change the system configurations that are protected by passwords.

Navigate in the BIOS interface

Attention: The default configurations are already optimized for you in **boldface**. Improper change of the configurations might cause unexpected results.

Depending on your keyboard, you can navigate in the BIOS interface by pressing the following keys, or combinations of Fn and the following keys:

Keys	Description
F1 or Fn+F1	Display the General Help screen.
Esc or Fn+Esc	Exit the submenu and return to the parent menu.
↑↓ or Fn+↑↓	Locate an item.
← → or Fn+← →	Select a tab.
+/– or Fn++/–	Change to a higher or lower value.
Enter	Enter the selected tab or submenu.
F9 or Fn+F9	Restore to the default settings.
F10 or Fn+F10	Save your configuration and exit.

Change the display language of UEFI BIOS

UEFI BIOS supports three or four display languages: English, French, simplified Chinese, and Russian (for selected models).

To change the display language of UEFI BIOS:
1. Select **Main ➙ Language** and press Enter.
2. Set the display language as desired.

Change the display mode of UEFI BIOS

You can use UEFI BIOS in the graphic mode or the text mode according to your needs.

To change the display mode of UEFI BIOS:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Main** → **Setup Mode Select** and press Enter.
3. Set the display mode as desired.

Set the system date and time

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. Select **Main** → **System Time & Date** and press Enter.
3. Set the system date and time as desired.
4. Press F10 or Fn+F10 to save the changes and exit.

Change the startup sequence

If the computer does not start up from a device as expected, you can change the startup device sequence permanently or select a temporary startup device.

Change the startup device sequence permanently

1. Depending on the type of the storage device, do one of the following:
   - If the storage device is internal, go to step 2.
   - If the storage device is a disc, ensure that the computer is on or turn on the computer. Then, insert the disc into the optical drive.
   - If the storage device is an external device other than a disc, connect the storage device to the computer.
2. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
3. Select **Startup**, and then follow the on-screen instructions to change the startup sequence.
4. Press F10 or Fn+F10 to save the changes and exit.

Select a temporary startup device

Note: Not all discs and storage drives are bootable.

1. Depending on the type of the storage device, do one of the following:
   - If the storage device is internal, go to step 2.
   - If the storage device is a disc, ensure that the computer is on or turn on the computer. Then, insert the disc into the optical drive.
   - If the storage device is an external device other than a disc, connect the storage device to the computer.
2. Restart the computer. When the logo screen is displayed, press F12 or Fn+F12.
3. Select the storage device as desired and press Enter.

If you want to change the startup device sequence permanently, select **Enter Setup** on Startup Device Menu and press Enter to enter the BIOS menu.

Change BIOS settings before installing a new operating system

BIOS settings vary by operating system. Change the BIOS settings before installing a new operating system.

To change the BIOS settings:

1. Restart the computer. When the logo screen is displayed, press F1 or Fn+F1.
2. From the main interface, select **Security ➙ Secure Boot** and press Enter.
3. Depending on the operating system to be installed, do one of the following:
   - To install the Windows® 10 (64-bit) operating system or Linux systems that support secure boot, select **Enabled** for **Secure Boot**.
   - To install an operating system that does not support secure boot, such as some Linux operating systems, select **Disabled** for **Secure Boot**.
4. Press F10 or Fn+F10 to save the changes and exit.

Update UEFI BIOS

When you install a new program, device driver, or hardware component, you might need to update UEFI BIOS. You can update the BIOS from your operating system or a flash update disc (supported only on selected models).

Download and install the latest UEFI BIOS update package by one of the following methods:

- Using the built-in software update service:

  Ubuntu software update will check the LVFS site for any firmware updates and notify you when updates are available.
- From the Lenovo Support Web site:
  1. Go to https://pcsupport.lenovo.com.
  2. Download the flash BIOS update driver for the operating system version or the ISO image version (used to create a flash update disc). Then, download the installation instructions for the flash BIOS update driver you have downloaded.
  3. Print the installation instructions and follow the instructions to update the BIOS.

Chapter 5. CRU replacement

What are CRUs

Customer Replaceable Units (CRUs) are parts that can be upgraded or replaced by the customer. Lenovo computers contain the following types of CRUs:

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

If you intend on installing the CRU, Lenovo will ship the CRU to you. CRU information and replacement instructions are shipped with your product and are available from Lenovo at any time upon request. You might be required to return the defective part that is replaced by the CRU. When 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 documentation at:
https://www.lenovo.com/warranty/llw_02

Refer to the following CRU list for your computer.

Self-service CRUs

- Power terminal*
- Keyboard*
- Mouse*

* for selected models

Replace a CRU

Follow the replacement procedure to replace a CRU.

Power terminal

Prerequisite

Before you start, read *Generic Safety and Compliance Notices*, and print the following instructions.

⚠️

Avoid contact with the hot computer. During operation, the computer becomes hot enough to burn the skin. Before you touch the computer, turn off the computer, disconnect power, and wait approximately 30 minutes for the computer to cool.

Replacement procedure

1. Remove any media from the drives and turn off all connected devices and the computer.

2. Disconnect the power cord from the electrical outlet and disconnect all cables from the computer.
3. Disconnect the power terminal from the computer.
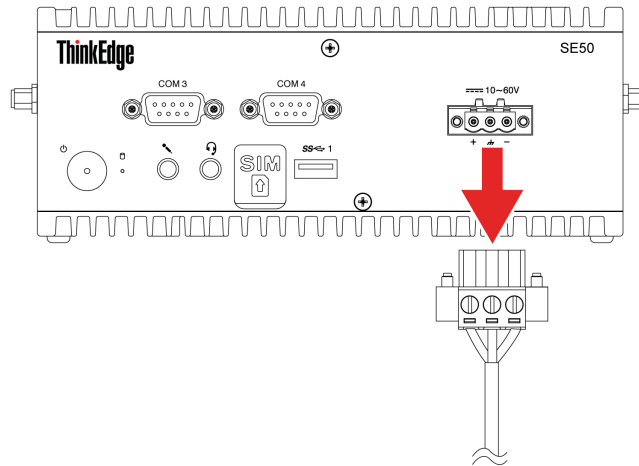
4. Connect the power terminal to the computer.
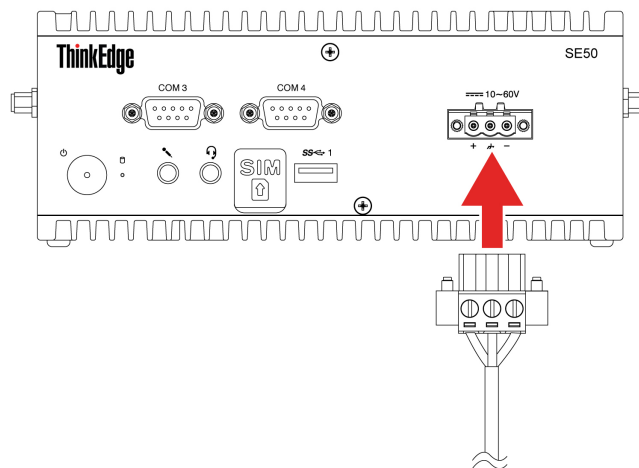
5. Reconnect the external cables to the corresponding connectors on the computer, and then reconnect the power cord to the electrical outlet.

Chapter 6. Help and support

Self-help resources

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

Resources	How to access?
Product documentation: • *Safety and Warranty Guide* • *Setup Guide* • This *User Guide* • *Regulatory Notice*	Go to https://pcsupport.lenovo.com. Then, follow the on-screen instructions to filter out the documentation you want.
Lenovo Support Web site with the latest support information of the following: • Drivers and software • Diagnostic solutions • Product and service warranty • Product and parts details • Knowledge base and frequently asked questions	https://pcsupport.lenovo.com
Ubuntu help information	https://help.ubuntu.com/lts/ubuntu-help/index.html

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

Prepare the following before you contact Lenovo:

1. Record the problem symptoms and details:
   - 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?
2. Record the system information:
   - Product name
   - Machine type and serial number

The following illustration shows where to find the machine type and serial number of your computer.
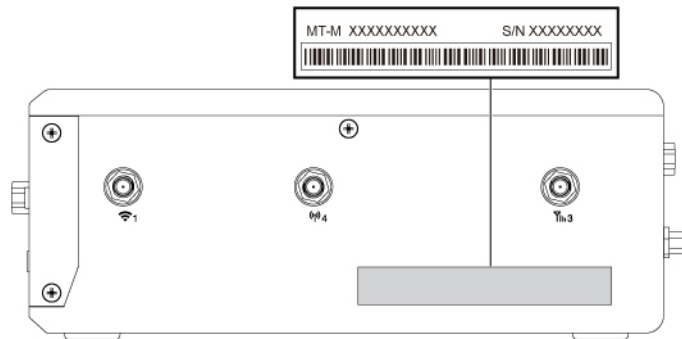
Lenovo Customer Support Center

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/supportphonelist

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 nonwarranted 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.

Certification-related information

Product name	Machine types
ThinkEdge SE50	11RH, 11RJ, 11RK, and 11RL

The latest compliance information is available at:
https://www.lenovo.com/us/en/compliance

Compliance information

For more compliance information, refer to *Regulatory Notice* at https://smartsupport.lenovo.com and *Generic Safety and Compliance Notices* at https://support.lenovo.com/docs/generic_notices_a.

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. Supplemental information about the Ubuntu operating system

In limited countries or regions, Lenovo offers customers an option to order computers with the preinstalled Ubuntu® operating system.

If the Ubuntu operating system is available on your computer, read the following information before you use the computer. Ignore any information related to Windows-based programs, utilities, and Lenovo preinstalled applications in this documentation.

Access the Lenovo Limited Warranty

This product is covered by the terms of the Lenovo Limited Warranty (LLW), version L505-0010-02 08/2011. You can view the LLW in a number of languages from the following Web site. Read the Lenovo Limited Warranty at:
https://www.lenovo.com/warranty/llw_02

The LLW also is preinstalled on the computer. To access the LLW, go to the following directory:

```
/opt/lenovo
```

If you cannot view the LLW either from the Web site or from your computer, contact your local Lenovo office or reseller to obtain a printed version of the LLW.

Access the Ubuntu help system

The Ubuntu help system provides information about how to use the Ubuntu operating system. To access the help system from Home Screen, move your pointer to the Launch bar, and then click the **Help** icon. If you cannot find the **Help** icon from the Launch bar, click the **Search** icon on the bottom left, and type Help to search it.

To learn more about the Ubuntu operating system, go to:
https://www.ubuntu.com

Get support information

If you need help, service, technical assistance, or more information about the Ubuntu operating system or other applications, contact the provider of the Ubuntu operating system or the provider of the application. If you need the service and support for hardware components shipped with your computer, contact Lenovo. For more information about how to contact Lenovo, refer to the *User Guide* and *Safety and Warranty Guide*.

To access the latest *User Guide* and *Safety and Warranty Guide*, go to:
https://pcsupport.lenovo.com

Open source information

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You may obtain a copy of the corresponding source code for any such open source software licensed under the General Public License and/or the Lesser General Public License (or any other license requiring us to make a written offer to provide corresponding source code to you) from Lenovo for a period of three years without charge except for the cost of media, shipping, and handling, upon written request to Lenovo. This offer is valid to anyone in receipt of this Device.

You may send your request in writing to the address below accompanied by a check or money order for $15 to:

Lenovo Legal Department
Attn: Open Source Team / Source Code Requests
8001 Development Dr.
Morrisville, NC 27560

Please include the version of the OS and the version of the Linux Kernel pre-shipped on this Device as part of your request. Be sure to provide a return address.

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Appendix B. Notices and trademarks

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