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Lenovo B50–30 All-In-One Computer
Hardware Maintenance Manual

lenovo® **FOR**
THOSE
WHO DO.™

Machine Types: F0AU [B50-30]



Lenovo B50–30 All-In-One Computer Hardware Maintenance Manual

Machine Types: F0AU [B50-30]

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Contents

Chapter 1. About this manual	1	Chapter 7. Replacing hardware	21
Important Safety Information	1	General information	21
Chapter 2. Safety information	3	Replacing the keyboard and mouse	22
General safety	3	Replacing the power cord	22
Electrical safety	3	Removing the stand base	23
Safety inspection guide	5	Removing the foot cover	24
Handling electrostatic discharge-sensitive devices	5	Replacing the memory module	25
Grounding requirements	6	Replacing the hard disk drive	26
Safety notices	6	Replacing the optical drive	27
Chapter 3. General information	9	Removing the stand holder	29
Specifications	9	Removing the middle cover	30
Chapter 4. General Checkout	11	Replacing the converter board	31
Chapter 5. Using the Setup Utility.	13	Removing the EMI cover	32
Starting the Lenovo BIOS Setup Utility program	13	Replacing the Wi-Fi card	33
Viewing and changing settings	13	Replacing the TV tuner card	34
Using passwords	13	Replacing the heat-sink	35
Enabling or disabling a device	15	Replacing the CPU	36
Selecting a startup device	16	Replacing the system fan	39
Exiting the Lenovo BIOS Setup Utility program	17	Replacing the speaker system	40
Chapter 6. Symptom-to-FRU Index	19	Replacing the power switch board	41
Hard disk drive boot error	19	Replacing the motherboard	41
Power Supply Problems	19	Removing the rear deco	43
POST error codes	20	Replacing the camera	44
Undetermined problems	20	Replacing the LED panel module	45
		Chapter 8. FRU lists	49
		Chapter 9. General information	59
		Additional Service Information	59

Chapter 1. About this manual

This manual contains service and reference information for Lenovo B50–30 All-In-One computers listed on the cover. It is intended only for trained servicers who are familiar with Lenovo computer products.

Before servicing a Lenovo product, be sure to read the Safety Information.

The description of the TV-tuner card in this manual applies only to computers with a TV-tuner card installed. It does not apply to computers without a TV-tuner card.

Important Safety Information

Be sure to read all CAUTION and DANGER sections in this manual before following any of the instructions.

Veillez lire toutes les consignes de type DANGER et ATTENTION du présent document avant d'exécuter les instructions.

Lesen Sie unbedingt alle Hinweise vom Typ "ACHTUNG" oder "VORSICHT" in dieser Dokumentation, bevor Sie irgendwelche Vorgänge durchführen

Leggere le istruzioni introdotte da ATTENZIONE e PERICOLO presenti nel manuale prima di eseguire una qualsiasi delle istruzioni

Certifique-se de ler todas as instruções de cuidado e perigo neste manual antes de executar qualquer uma das instruções

Es importante que lea todas las declaraciones de precaución y de peligro de este manual antes de seguir las instrucciones.

执行任何说明之前，请确保已阅读本书中的所有警告和危险声明。

執行任何指示前，請確實閱讀本書中的所有警告及危險聲明。

Chapter 2. Safety information

This chapter contains the safety information that you need to be familiar with before servicing a computer.

General safety

Follow these rules to ensure general safety:

- Keep the areas around the computer clear and clean during and after maintenance.
- When lifting any heavy object:
 1. Ensure you can stand safely without slipping.
 2. Distribute the weight of the object equally across both feet.
 3. Lift slowly. Never move suddenly or twist when you attempt to lift.
 4. Lift by standing or by pushing up with your leg muscles; this action removes the strain from the muscles in your back.
Do not attempt to lift any objects that weigh more than 16 kg (35 lb) or objects that you think are too heavy for you.
- Do not perform any action that would create a hazard for the customer, or would make the computer unsafe.
- Before you start the computer, ensure that other service representatives and customer personnel are not in a position that would create a hazard for them.
- Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the computer.
- Keep your tool case away from areas that people may walk through to ensure no-one trips over it.
- Do not wear loose clothing that can be trapped in the moving parts of a machine. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, tie or fasten it back.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a non-conductive clip, approximately 8 centimeters (3 inches) from the end.
- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing.
Remember: Metal objects are good electrical conductors.
- Wear safety glasses when you are: hammering, drilling soldering, cutting wire, attaching springs, using solvents, or working in any other conditions that might be hazardous to your eyes.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reattach all covers correctly before returning the computer to the customer.

Electrical safety



CAUTION:

Electrical current from power, telephone, and communication cables can be hazardous. To avoid personal injury or equipment damage, disconnect any attached power cords, telecommunication cables, network cables, and modem cables before you open the computer covers, unless instructed otherwise in the installation and configuration procedures.

Observe the following rules when working on electrical equipment.

Important: Use only approved tools and test equipment. Some hand tools have handles covered with a soft material that does not insulate you when working with live electrical currents. Many customers have rubber floor mats near their equipment that contain small conductive fibers to decrease electrostatic discharge.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Performing a mechanical inspection
 - Working near power supplies
 - Removing or installing Field Replaceable Units (FRUs)
- Before you start to work on the computer, unplug the power cord. If you cannot unplug it, ask the customer to power-off the electrical outlet that supplies power to the machine and to lock the electrical outlet in the off position.
- If you need to work on a computer that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you.
Remember: Another person must be there to switch off the power, if necessary.
 - Use only one hand when working with powered-on electrical equipment; keep the other hand in your pocket or behind your back.
Remember: There must be a complete circuit to cause electrical shock. By observing the above rule, you may prevent a current from passing through your body.
 - When using a tester, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Stand on suitable rubber mats (obtained locally, if necessary) to insulate you from grounds such as metal floor strips and machine frames.

Observe the special safety precautions when you work with very high voltages; these instructions are in the safety sections of the maintenance information. Use extreme care when measuring high voltages.

- Regularly inspect and maintain your electrical hand tools to ensure they are safe to use.
- Do not use worn or broken tools and testers.
- *Never assume* that power has been disconnected from a circuit. First, *check* that it has been powered off.
- Always look carefully for possible hazards in your work area. Examples of these hazards are wet floors, non-grounded power extension cables, conditions that may cause or allow power surges, and missing safety grounds.
- Do not touch live electrical circuits with the reflective surface of a plastic dental mirror. This surface is conductive, and touching a live circuit can cause personal injury and damage to the computer.
- Do not service the following parts with the power on when they are removed from their normal operating positions in a computer:
 - Power supply units
 - Pumps
 - Blowers and fans
 - Motor generatorsand similar units. (This practice ensures correct grounding of the units.)
- If an electrical accident occurs:
 - Use caution; do not become a victim yourself.

- Switch off power.
- Send another person to get medical aid.

Safety inspection guide

The intent of this inspection guide is to assist you in identifying potential hazards posed by these products. Each computer, as it was designed and built, had required safety items installed to protect users and service personnel from injury. This guide addresses only those items. However, good judgment should be used to identify potential safety hazards due to attachment of features or options not covered by this inspection guide.

If any hazards are present, you must determine how serious the apparent hazard could be and whether you can continue without first resolving the problem.

Consider the following items and the safety hazards they present:

- Electrical hazards, especially primary power (primary voltage on the frame can cause serious or fatal electrical shock).
- Explosive hazards, such as a damaged CRT face or bulging capacitor
- Mechanical hazards, such as loose or missing hardware

The guide consists of a series of steps presented as a checklist. Begin the checks with the power off, and the power cord disconnected.

Checklist:

1. Check exterior covers for damage (loose, broken, or sharp edges).
2. Power-off the computer. Disconnect the power cord.
3. Check the power cord for:
 - a. A third-wire ground connector in good condition. Use a meter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
 - b. The power cord should be the appropriate type as specified in the parts listings.
 - c. Insulation must not be frayed or worn.
4. Remove the cover.
5. Check for any obvious alterations. Use good judgment as to the safety of any alterations.
6. Check inside the unit for any obvious hazards, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.
7. Check for worn, frayed, or pinched cables.
8. Check that the power-supply cover fasteners (screws or rivets) have not been removed or tampered with.

Handling electrostatic discharge-sensitive devices

Any computer part containing transistors or integrated circuits (ICs) should be considered sensitive to electrostatic discharge (ESD). ESD damage can occur when there is a difference in charge between objects. Protect against ESD damage by equalizing the charge so that the computer, the part, the work mat, and the person handling the part are all at the same charge.

Notes:

1. Use product-specific ESD procedures when they exceed the requirements noted here.
2. Make sure that the ESD protective devices you use have been certified (ISO 9000) as fully effective.

When handling ESD-sensitive parts:

- Keep the parts in protective packages until they are inserted into the product.
- Avoid contact with other people while handling the part.
- Wear a grounded wrist strap against your skin to eliminate static on your body.
- Prevent the part from touching your clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Select a grounding system, such as those listed below, to provide protection that meets the specific service requirement.

Note: The use of a grounding system is desirable but not required to protect against ESD damage.

- Attach the ESD ground clip to any frame ground, ground braid, or green-wire ground.
- Use an ESD common ground or reference point when working on a double-insulated or battery-operated system. You can use coax or connector-outside shells on these systems.
- Use the round ground-prong of the AC plug on AC-operated computers.

Grounding requirements

Electrical grounding of the computer is required for operator safety and correct system function. Proper grounding of the electrical outlet can be verified by a certified electrician.

Safety notices

The CAUTION and DANGER safety notices in this section are provided in the language of English.



DANGER

Electrical current from power, telephone and communication cables is hazardous.

To avoid a shock hazard:

- **Do not connect or disconnect any cables or perform installation, maintenance, or reconfiguration of this product during an electrical storm.**
- **Connect all power cords to a properly wired and grounded electrical outlet.**
- **Connect any equipment that will be attached to this product to a properly wired outlet.**
- **When possible, use one hand only to connect or disconnect signal cables.**
- **Never turn on any equipment when there is evidence of fire, water, or structural damage.**
- **Disconnect the attached power cords, telecommunications cables, network cables, and modem cables before you open the device covers, unless instructed otherwise in the installation and configuration procedures.**
- **Connect and disconnect cables as described in the following table when installing, moving, or opening covers on this product or attached devices.**

To Connect	To Disconnect
<ol style="list-style-type: none"> 1. Turn everything OFF. 2. First, attach all cables to devices. 3. Attach signal cables to connectors. 4. Attach power cords to outlet. 5. Turn device ON. 	<ol style="list-style-type: none"> 1. Turn everything OFF. 2. First, remove power cords from outlets. 3. Remove signal cables from connectors. 4. Remove all cables from devices.



CAUTION:

When replacing the lithium battery, use only Part Number 45C1566 or an equivalent type battery recommended by the manufacturer. If your system has a module containing a lithium battery, replace it only with the same module type made by the same manufacturer. The battery contains lithium and can explode if not properly used, handled, or disposed of.

Do not:

- Throw into or immerse in water
- Heat to more than 100°C (212°F)
- Repair or disassemble

Dispose of the battery as required by local ordinances or regulations.



CAUTION:

When laser products (such as CD-ROMs, DVD-ROM drives, fiber optic devices, or transmitters) are installed, note the following:

- Do not remove the covers. Removing the covers of the laser product could result in exposure to hazardous laser radiation. There are no serviceable parts inside the device.
- Use of controls or adjustments or performance of procedures other than those specified herein might result in hazardous radiation exposure.



 **DANGER**

Some laser products contain an embedded Class 3A or Class 3B laser diode. Note the following:

These diodes emit radiation when open. Do not stare into the beam, do not view directly with optical instruments, and avoid direct exposure to the beam.

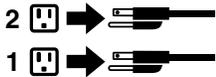


		
≥18 kg (37 lbs)	≥32 kg (70.5 lbs)	≥55 kg (121.2 lbs)

CAUTION:
Use safe practices when lifting.



CAUTION:
The power control button on the device and the power switch on the power supply do not turn off the electrical current supplied to the device. The device also might have more than one power cord. To remove all electrical current from the device, ensure that all power cords are disconnected from the power source.



CAUTION:
Do not place any object weighing more than 82 kg (180 lbs.) on top of rack-mounted devices.



Chapter 3. General information

This chapter provides general information that applies to all computer models covered by this manual.

Specifications

This section lists the physical specifications for your computer.

This section lists the physical specifications for your computer.

Type Lenovo B50-30

This section lists the physical specifications.

Environment

Air temperature:

Operating: 10° to 35°C

Transit: -20° to 55°C

Humidity:

Operating: 35% to 80%

Transit: 20% to 90% (40°C)

Altitude: 86KPa to 106KPa

Electrical input:

Input voltage: 90V-264V(AC)

Input frequency: 47Hz-63Hz

Chapter 4. General Checkout

Attention: The drives in the computer you are servicing might have been rearranged or the drive startup sequence may have been changed. Be extremely careful during write operations such as copying, saving, or formatting. Data or programs can be overwritten if you select an incorrect drive.

General error messages appear if a problem or conflict is found by an application, the operating system, or both. For an explanation of these messages, refer to the information supplied with that software package.

Use the following procedure to help determine the cause of the problem:

1. Power-off the computer and all external devices.
2. Check all cables and power cords.
3. Set all display controls to the middle position.
4. Power-on all external devices.
5. Power-on the computer.
 - Look for displayed error codes.
 - Look for readable instructions or a main menu on the display.

If you did not receive the correct response, proceed to step 6.

If you did receive the correct response, proceed to step 7.

6. If one of the following happens, follow the instruction given:
 - If the computer displays a POST error, go to “POST error codes”.
 - If the computer hangs and no error is displayed, continue at step 7.
7. If the test stops and you cannot continue, replace the last device tested.

Chapter 5. Using the Setup Utility

The Setup Utility program is used to view and change the configuration settings of your computer, regardless of which operating system you are using. However, the operating system settings might override any similar settings in the Setup Utility program.

Starting the Lenovo BIOS Setup Utility program

To start the Lenovo BIOS Setup Utility program, do the following:

1. If your computer is already on when you start this procedure, shut down the operating system and turn off the computer.
2. Press and hold the **F1** key then turn on the computer. When the Lenovo BIOS Setup Utility program is displayed, release the **F1** key.

Note: If a Power-On Password or an Administrator Password has been set, the Setup Utility program menu will not be displayed until you type your password. For more information, see “Using passwords.”

Viewing and changing settings

System configuration options are listed in the Lenovo BIOS Setup Utility program menu. To view or change settings, see “Starting the Setup Utility program.”

You must use the keyboard when using the Lenovo BIOS Setup Utility menu. The keys used to perform various tasks are displayed on the bottom of each screen.

Using passwords

You can use the Lenovo BIOS Setup Utility program to set passwords to prevent unauthorized persons from gaining access to your computer and data. See “Starting the Setup Utility program.” The following types of passwords are available:

- Administrator Password
- Power-On Password

You do not have to set any passwords to use your computer. However, if you decide to set passwords, read the following sections.

Password considerations

A password can be any combination of letters and numbers up to 16 characters (a-z and 0-9). For security reasons, it is a good idea to use a strong password that cannot be easily compromised. We suggest that passwords should follow these rules:

- For a strong password, use 7-16 characters and a mix of letters and numbers.
- Do not use your name or your user name.
- Do not use a common word or a common name.
- Use something significantly different from your previous password.

Attention: Administrator and Power-On passwords are not case sensitive.

Administrator Password

Setting an Administrator Password deters unauthorized persons from changing configuration settings. You might want to set an Administrator Password if you are responsible for maintaining the settings of several computers.

After you set an Administrator Password, a password prompt is displayed every time you access the Lenovo BIOS Setup Utility program.

If both the Administrator and Power-On Password are set, you can type either password. However, you must use your Administrator Password to change any configuration settings.

Setting, changing, or deleting an Administrator password

To set an Administrator Password, do the following:

Note: A password can be any combination of letters and numbers up to 16 characters (a-z and 0-9). For more information, see “Password considerations” on page 13.

1. Start the Lenovo BIOS Setup Utility program (see “Starting the Lenovo BIOS Setup Utility program” on page 13).
2. From the **Security** menu, select **Set Administrator Password** and press the **Enter** key.
3. The password dialog box will be displayed. Type the password then press the **Enter** key.
4. Re-type the password to confirm, then press the **Enter** key. If you typed the password correctly, the password will be installed.

To change an Administrator Password, do the following:

1. Start the Lenovo BIOS Setup Utility program (see “Starting the Lenovo BIOS Setup Utility program” on page 13).
2. From the **Security** menu, select **Set Administrator Password** and press the **Enter** key.
3. The password dialog box will be displayed. Type the current password then press the **Enter** key.
4. Type the new password, then press the **Enter** key. Re-type the password to confirm the new password. If you typed the new password correctly, the new password will be installed. A Setup Noticed confirming that changes have been saved will be displayed.

To delete a previously set Administrator Password, do the following :

1. From the **Security** menu, select **Set Administrator Password** and press the **Enter** key.
2. The password dialog box will be displayed. Type the current password and press the **Enter** key.
3. To delete an **Administrator Password**, leave each new password line item blank, then press the **Enter** key. A Setup Notice confirming that changes have been saved will be displayed.
4. Return to the Lenovo BIOS Setup Utility program menu and select the **Exit** option.
5. Select **Save changes and Exit** from the menu.

Power-On Password

When a Power-On Password is set, you cannot start the Lenovo BIOS Setup Utility program until a valid password is typed from the keyboard.

Setting, changing, or deleting a Power-On Password

Note: A password can be any combination of letters and numbers up to 16 characters (a-z and 0-9).

To set a Power-On Password, do the following:

1. Start the Lenovo BIOS Setup Utility program (See "Starting the Lenovo BIOS Setup Utility program" on page 13.)
2. From the **Security** menu, select **Set Power-On Password** and press the **Enter** key.
3. The password dialog box will be displayed. Type the password, then press the **Enter** key.
4. Re-type the password to confirm. If you typed the password correctly, the password will be installed.

To change a Power-On Password, do the following:

1. Start the Lenovo BIOS Setup Utility program (See "Starting the Lenovo BIOS Setup Utility program" on page 13.)
2. From the **Security** menu, select **Set Power-On Password** and press the **Enter** key.
3. The password dialog box will be displayed. Type the current password then press the **Enter** key.
4. Type the new password, then press the **Enter** key. Re-type the password to confirm the new password. If you typed the new password correctly, the new password will be installed. A Setup Noticed confirming that changes have been saved will be displayed.

To delete a previously set Power-On Password, do the following :

1. From the **Security** menu, select **Set Power-On Password** and press the **Enter** key.
2. The password dialog box will be displayed. Type the current password and press the **Enter** key.
3. To delete the **Power-On Password**, leave each new password line item blank, then press Enter. A Setup Notice confirming that changes have been saved will be displayed.
4. Return to the Lenovo BIOS Setup Utility program menu and select the **Exit** option.
5. Select **Save changes and Exit** from the menu.

Enabling or disabling a device

The Devices options is used to enable or disable user access to the following devices:	
USB Functions	Select whether to enable or disable USB (Universal Serial Bus) functions. If the functions are disabled, no USB devices can be used.
SATA Mode	When this feature is set to Disabled , all devices connected to the SATA connectors (e.g. hard disk drives or the optical disk drive) are disabled and cannot be accessed.
Onboard Audio Controller	Select whether to enable or disable the Onboard Audio Controller . When this feature is set to Disabled all devices connected to the audio connectors (e.g. headphones or a microphone) are disabled and cannot be used.
Onboard Ethernet Controller or LAN Boot Agent	Select whether to enable or disable the Onboard Ethernet Controller , or select whether to enable or disable load onboard PXE (Preboot Execution Environment) .

To enable or disable a device, do the following:

1. Start the Setup Utility program (see "Starting the Setup Utility program" on page 13).
2. From the Setup Utility program menu, select **Devices**.
3. Select an option as follows:

Select **USB Setup**, press the **Enter** key, then select **USB Functions**.

Select **ATA Device Setup**, press the **Enter** key, then select **SATA Mode**.

Select **Audio Setup**, press the **Enter** key, then select **Onboard Audio Controller**.

Select **Network Setup**, press the **Enter** key, then select **Onboard Ethernet Support** or **LAN Boot Agent**.

4. Select **Disabled** or **Enabled** and press the **Enter** key.
5. Return to the Lenovo BIOS Setup Utility program menu and select the **Exit** option.
6. Select **Save changes and Exit** from the menu.

Notes:

- a. If you do not want to save the settings, select **Discard changes and Exit** from the menu.
- b. Select IDE/AHCI Mode: Device driver support is required for AHCI. Depending on how the hard disk image was installed, changing this setting may prevent the system from booting.

Selecting a startup device

If your computer does not boot from a device such as the CD/DVD-ROM drive disk or hard disk as expected, follow one of the procedures below.

Selecting a temporary startup device

Use this procedure to start up from any boot device.

Note: Not all CDs, DVDs or hard disk drives are bootable.

1. Turn off your computer.
2. Press and hold the **F12** key then turn on the computer. When the **Startup Device Menu** appears, release the **F12** key.

Note: If the **Startup Device Menu** does not display using these steps, repeatedly press and release the **F12** key rather than keeping it pressed when turning on the computer.

3. Use **↑** and **↓** arrows to select the desired startup device from the **Startup Device Menu** and press the **Enter** key to begin.

Note: Selecting a startup device from the **Startup Device Menu** does not permanently change the startup sequence.

Selecting or changing the startup device sequence

To view or permanently change the configured startup device sequence, do the following:

1. Start the Lenovo BIOS Setup Utility program (see “Starting the Lenovo BIOS Setup Utility program” on page 13).
2. From the Lenovo BIOS Setup Utility program main menu, select the **Startup** option.
3. Press the **Enter** key, and select the devices for the **Primary Boot Sequence**. Read the information displayed on the right side of the screen.
4. Use **-** and **^** arrows to select a device. Use the **<+>** or **<->** keys to move a device up or down. Use the **<x>** key to exclude the device from or include the device in the boot sequence.
5. Return to the Lenovo BIOS Setup Utility program menu and select the **Exit** option.
6. Select **Save changes and Exit** from the menu.

Notes:

- a. If you do not want to save the settings, select **Discard changes and Exit** from the menu.
- b. If you have changed these settings and want to return to the default settings, select **Load Optimal Defaults** from the menu.

Exiting the Lenovo BIOS Setup Utility program

After you finish viewing or changing settings, press the **Esc** key to return to the Lenovo BIOS Setup Utility program main menu. You might have to press the **Esc** key several times. Do one of the following:

- If you want to save the new settings, select **Save changes and Exit** from the menu. When the **Save & reset** window shows, select the **Yes** button, and then press the **Enter** key to exit the Lenovo BIOS Setup Utility program.
- If you do not want to save the settings, select **Discard changes and Exit** from the menu. When the **Reset Without Saving** window shows, select the **Yes** button, and then press the **Enter** key to exit the Lenovo BIOS Setup Utility program.

Chapter 6. Symptom-to-FRU Index

The Symptom-to-FRU index lists error symptoms and possible causes. The most likely cause is listed first. Always begin with Chapter 4, “General Checkout,” on page 11. This index can also be used to help you decide which FRUs to have available when servicing a computer. If you are unable to correct the problem using this index, go to “Undetermined problems” on page 20.

Notes:

- If you have both an error message and an incorrect audio response, diagnose the error message first.
- If you cannot run the diagnostic tests or you get a diagnostic error code when running a test but did receive a POST error message, diagnose the POST error message first.
- If you did not receive any error message look for a description of your error symptoms in the first part of this index.

Hard disk drive boot error

A hard disk drive boot error can be caused by the following.

Error	FRU/Action
The startup drive is not included in the boot sequence configuration.	Check the configuration and ensure the startup drive is in the boot sequence.
No operating system is installed on the boot drive.	Install an operating system on the boot drive.
The boot sector on the startup drive is corrupted.	The drive must be formatted. Do the following: <ol style="list-style-type: none">1. Attempt to back up the data on the failing hard disk drive.2. Use the operating system to format the hard disk drive.
The drive is defective.	Replace the hard disk drive.

Power Supply Problems

Follow these procedures if you suspect there is a power supply problem.

Check/Verify	FRU/Action
Check that the following are properly installed: <ul style="list-style-type: none">• Power Cord• On/Off Switch connector• System Board Power Supply connectors• Microprocessor connections	Reseat connectors
Check the power cord.	Power Cord
Check the power-on switch.	Power-on Switch

POST error codes

Each time you turn the computer on, it performs a series of tests to check that the system is operating correctly and that certain options are set. This series of tests is called the *Power-On Self-Test*, or *POST*. POST does the following:

- Checks some basic motherboard operations
- Checks that the memory is working correctly
- Starts video operations
- Verifies that the boot drive is working

POST Error Message	Description/Action
Keyboard error	Cannot initialize the keyboard. Make sure the keyboard is properly connected to the computer and that no keys are held pressed during POST. To purposely configure the computer without a keyboard, select Keyboardless operation in Startup and set the option to Enabled . The BIOS then ignores the missing keyboard during POST.
Reboot and Select proper Boot device or Insert Boot Media in selected Boot device	The BIOS was unable to find a suitable boot device. Make sure the boot drive is properly connected to the computer. Make sure you have bootable media in the boot device.

Undetermined problems

1. Power-off the computer.
2. Remove or disconnect the following components (if connected or installed) one at a time.
 - a. External devices (modem, printer, or mouse)
 - b. Extended video memory
 - c. External Cache
 - d. External Cache RAM
 - e. Hard disk drive
 - f. Disk drive
3. Power-on the computer to re-test the system.
4. Repeat steps 1 through 3 until you find the failing device or component.

If all devices and components have been removed and the problem continues, replace the system board.

Chapter 7. Replacing hardware

Attention: Do not remove the computer cover or attempt any repair before reading the “Important safety information” in the Safety and Warranty Guide that was included with your computer. To obtain copies of the Safety and Warranty Guide, go to the Support Web site at: <http://consumersupport.lenovo.com>.

Note: Use only parts provided by Lenovo.

General information

Pre-disassembly instructions

Before starting the disassembly procedure, make sure that you do the following:

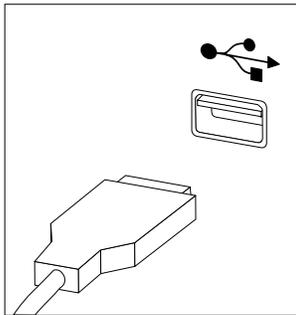
1. Turn off the power to the system and all peripherals.
2. Unplug all power and signal cables from the computer.
3. Place the system on a flat, stable surface.

Replacing the keyboard and mouse

Note: Your keyboard will be connected to a USB connector at either side or at the rear of the computer.

To replace the keyboard:

- Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the computer, and turn off all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Locate the connector for the keyboard. Refer to “Side view of the computer” and “Rear view of the computer”.



- Step 4. Disconnect the defective keyboard cable from the computer and connect the new keyboard cable to the same connector.
- Step 5. The mouse can be replaced using the same method.

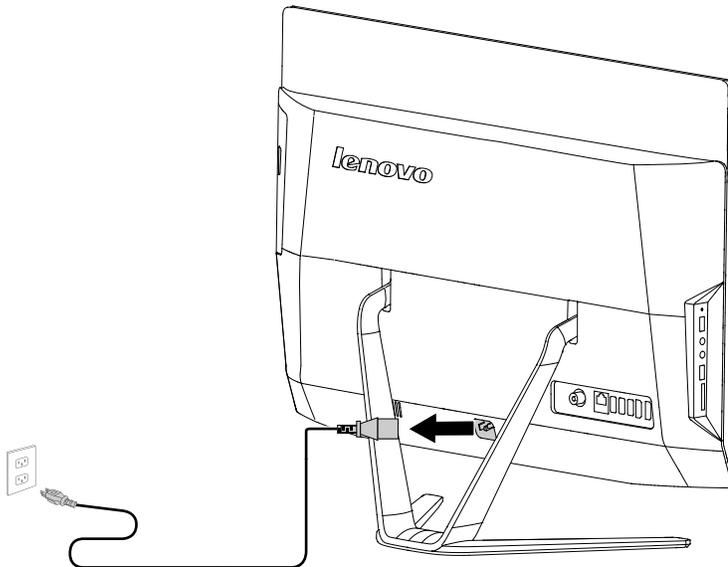
Replacing the power cord

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

- Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.

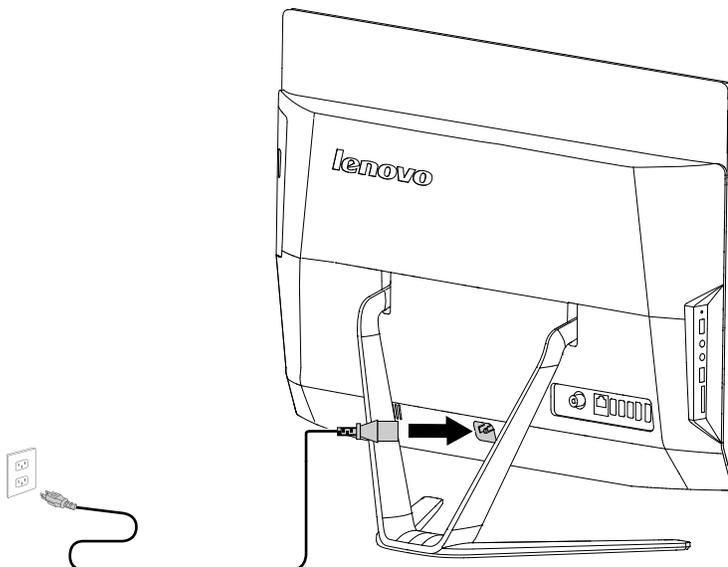
Step 2. Disconnect the power cord from the connector on the computer **1**, then unplug the power cord from electrical outlet. **2**

B50-30/B50-35



Step 3. Connect the new power cord as shown.

B50-30/B50-35

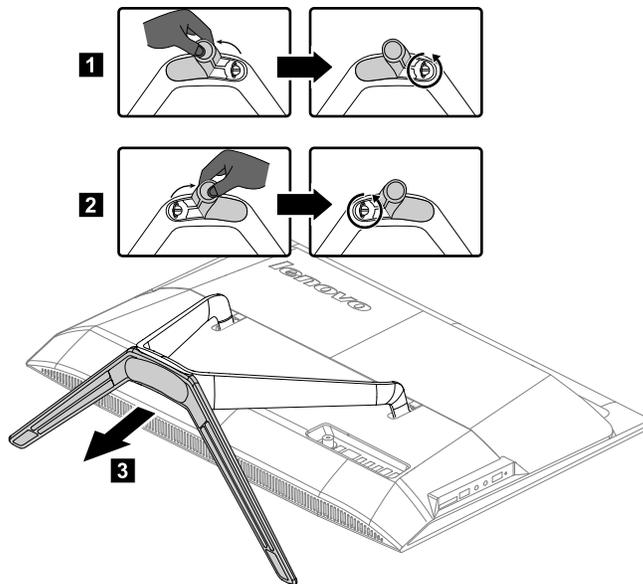


Removing the stand base

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right views” and “Rear view” for help with locating the various connectors.
- Step 4. Twist the hand screw ring counter-clockwise until the base comes loose to release the stand base from the stand holder. **1 2**
- Step 5. Slide the stand base out from the holder then put it aside. **3**



- Step 6. Refer to “Installing the computer stand” to reinstall the stand base.

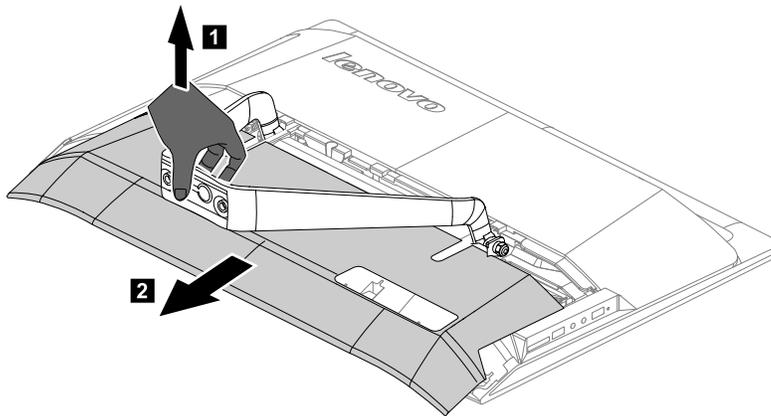
Removing the foot cover

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right views” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the foot base. Refer to “Removing the foot base”.

Step 5. Lift up the stand holder then slide out the foot cover as shown.



Step 6. To reattach the foot cover:

- a. Lift up the stand holder.
- b. Line up the foot cover with mounting holes on the back of the computer, then slide it back into position.

Replacing the memory module

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.

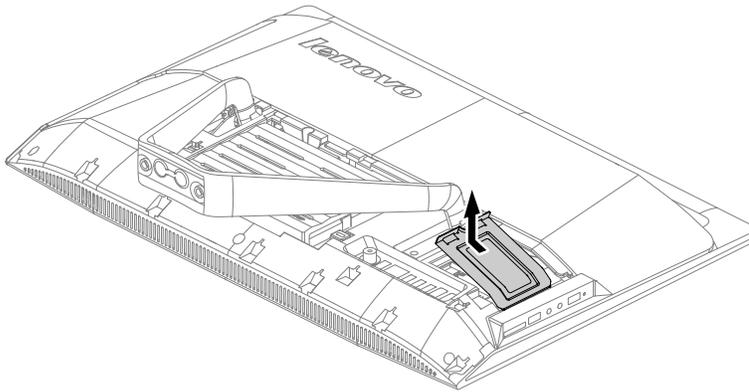
Step 2. Unplug all power cords from electrical outlets.

Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right views” and “Rear view” for help with locating the various connectors.

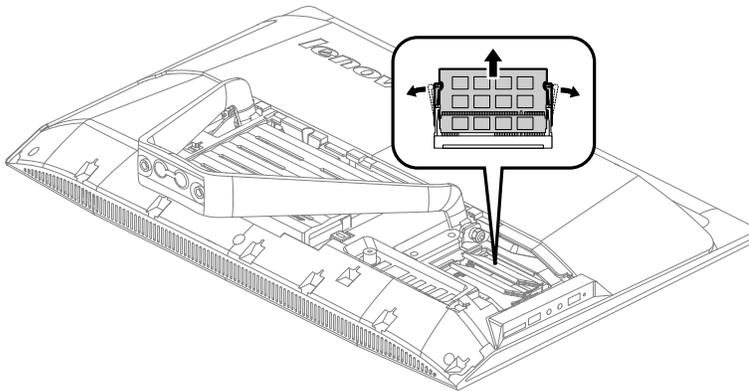
Step 4. Remove the stand base. Refer to “Removing the stand base”.

Step 5. Remove the foot cover. Refer to “Removing the foot cover”.

Step 6. Remove the memory shielding as shown.



Step 7. Push out the latches on both sides of the memory socket to release the memory module **1** and gently pull the memory module upward to remove it from its socket. **2**



Step 8. To install the new memory module:

- a. Align the new memory module with the memory socket, then insert it and push down on the top edge. Make sure the latches lock the memory module in place.
- b. Reattach the memory shielding.

Step 9. Reattach the foot cover and stand base.

Replacing the hard disk drive

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.

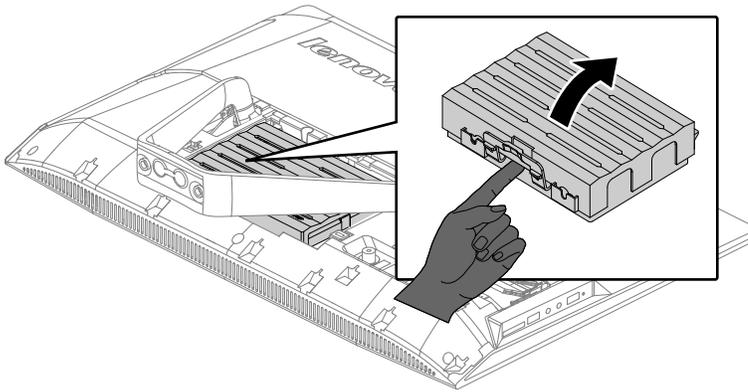
Step 2. Unplug all power cords from electrical outlets.

Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to "Left and right views" and "Rear view" for help with locating the various connectors.

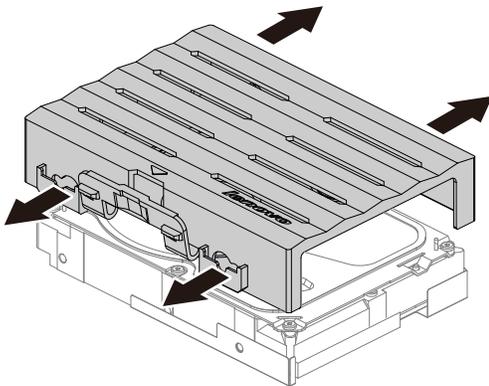
Step 4. Remove the stand base. Refer to "Removing the stand base".

Step 5. Remove the foot cover. Refer to "Removing the foot cover".

Step 6. Lift out the hard disk drive and bracket as shown.



Step 7. Push the lock pins outward to release the hard disk drive from the bracket.



Step 8. To install the new hard disk drive:

- a. Line up the new hard disk drive with the bracket and secure it with the pins.
- b. Connect the data and power cables to the new hard disk drive.
- c. Slide the hard disk drive and bracket back into position.

Step 9. Reattach the foot cover and stand base.

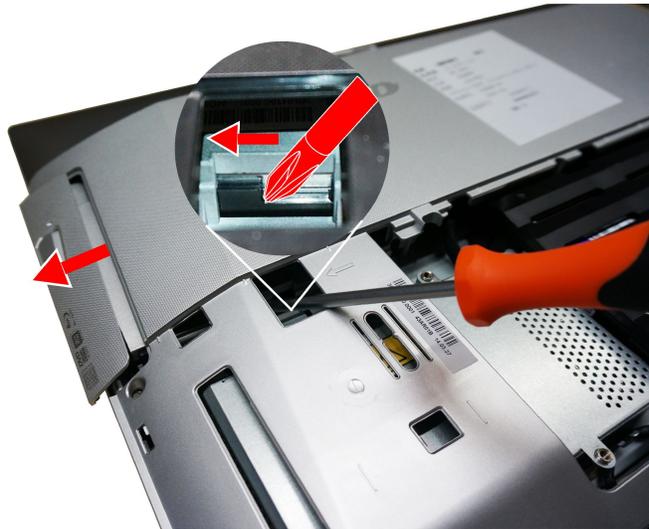
Replacing the optical drive

Attention: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

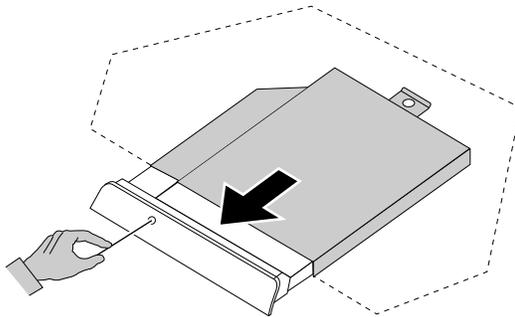
Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the touch screen from scratches or other damage.

- Step 1. Remove any media (disks, CDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right views” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.

Step 6. Locate the optical removal notch, and then use a screw driver push the optical drive out.



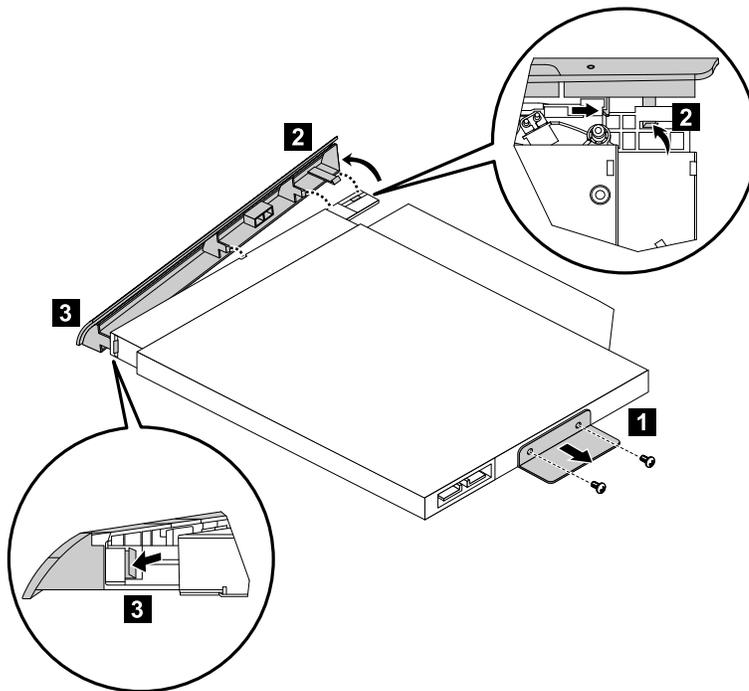
Step 7. Push a small iron stick (paper clip) into the small hole on the optical drive cover so that the disk springs out as shown.



Step 8. Remove the 2 screws that secure the optical drive to the metal bracket. **1**

Step 9. Use a small flat head screwdriver to press and push out the pins that secure the cover to the disk. **2 3**

Step 10. Separate the cover from the defective optical drive.



Step 11. To install the new optical drive:

- a. Align the new optical drive with the cover, and then push the cover back into position.
- b. Slide the new optical drive into the drive bay.

Step 12. Reattach the foot cover and stand base.

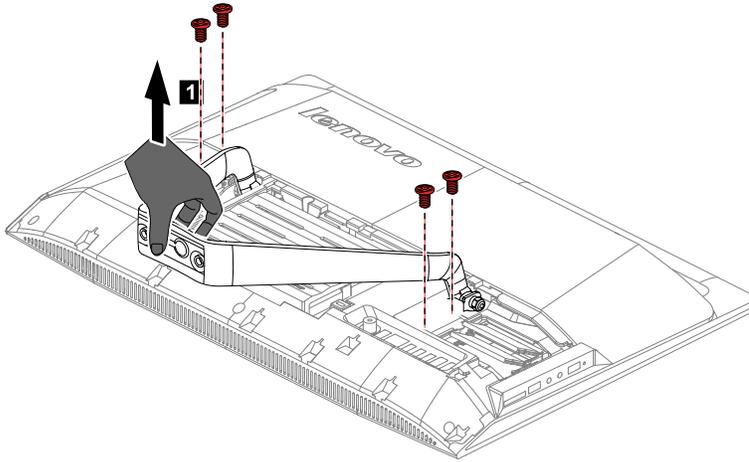
Removing the stand holder

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To remove the stand holder:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the four screws that secure the stand holder to the chassis, then lift up the stand holder to remove it.



Step 7. To reattach the stand holder:

- a. Align the holes on the stand holder with mounting holes on the chassis, place the stand holder back into position.
- b. Secure the stand holder to the chassis with the four screws.

Step 8. Line up the foot cover with mounting holes on the back of the computer, then slide it back into position.

Step 9. Reattach the stand base.

Removing the middle cover

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To remove the middle cover:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the six screws that secure the middle cover to the chassis, then



Step 9. Lift up the middle cover as shown to remove it.



Step 10. To reattach the middle cover:

- a. Line up the middle cover with chassis, then place the middle cover back.
- b. Secure the middle cover to the chassis with the six screws.

Step 11. Reattach the stand holder, optical drive, foot cover and stand base.

Replacing the converter board

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the converter board:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Disconnect the two cables from the converter, and then remove the two screws that secure the converter board to the chassis.
- Step 10. Slide the converter board out to remove it.



- Step 11. To install the new converter board:
 - a. Connect the two cables to the new converter board.
 - b. Align then slide the new converter board into position.
 - c. Secure the new converter board with the screw.
- Step 12. Reattach the middle cover, optical drive, stand holder, foot cover and stand base.

Removing the EMI cover

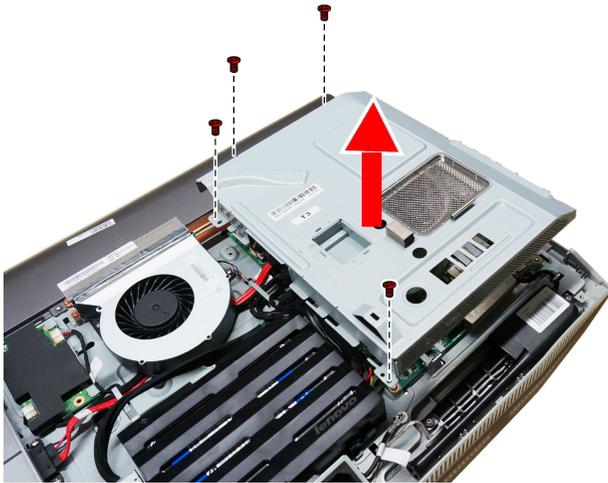
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the EMI cover

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.

- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the three screws that secure the EMI cover to the chassis, and then lift it up.



- Step 10. To reattach the EMI cover:
 - a. Line up the holes on the EMI cover with mounting holes on the chassis, then place EMI cover back into position.
 - b. Secure the EMI cover to the chassis with three screws.
- Step 11. Reattach the middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the Wi-Fi card

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the Wi-Fi card:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.

- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the EMI cover. Refer to “Removing the EMI cover”.
- Step 10. Disconnect the antenna cables from the Wi-Fi card.
- Step 11. Remove the screw that secures the Wi-Fi card to the motherboard.
- Step 12. Lift up the Wi-Fi card to remove it from the socket.



- Step 13. To install the new Wi-Fi card:
 - a. Insert the notched end of the Wi-Fi card into the card port on the motherboard.
 - b. Secure new the Wi-Fi card to the motherboard with the screw.
 - c. Connect the antenna cables to the new Wi-Fi card.
- Step 14. Reattach the EMI cover, middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the TV tuner card

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the TV tuner card

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.

- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the EMI cover. Refer to “Removing the EMI cover”.
- Step 10. Disconnect the antenna cable from the TV-Tuner card.
- Step 11. Remove the screw that secures the TV-Tuner card to the motherboard.
- Step 12. Pull the TV-Tuner card upward to remove it from the card port on the motherboard.



- Step 13. To install the new TV-Tuner card:
 - a. Insert the notched end of the TV-Tuner card into the card port on the motherboard.
 - b. Secure new the TV-Tuner card to the motherboard with the screw.
 - c. Connect the antenna cable to the new TV-Tuner card.
- Step 14. Reattach the EMI cover, middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the heat-sink

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the heat-sink:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.

- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the EMI cover. Refer to “Removing the EMI cover”.
- Step 10. Remove the sealing tape between the system fan and heat-sink.
- Step 11. Remove the six screws that secure the heat-sink to the motherboard and chassis.
- Step 12. Slide then lift up the heat-sink to remove it.



Attention: Place the heat-sink upside down on a flat surface to prevent thermal grease from contaminating other components.

Attention: Use an alcohol pad to wipe the thermal grease off the CPU.

- Step 13. To install the new heat-sink:
 - a. Line up the new heat-sink with mounting holes on the motherboard, then place it into position.
 - b. Follow the numbers printed on the new heat-sink to secure it in order using the screws.
 - c. Use the sealing tape to seal the gap in-between the system fan and heat-sink.
- Step 14. Reattach the EMI cover, middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the CPU

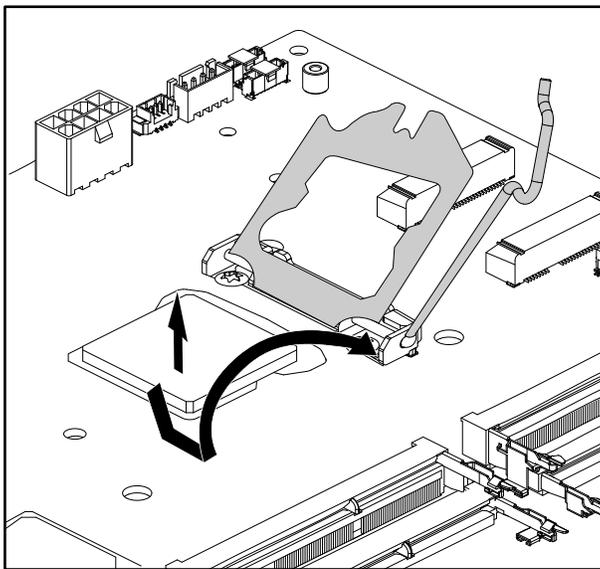
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the CPU

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.

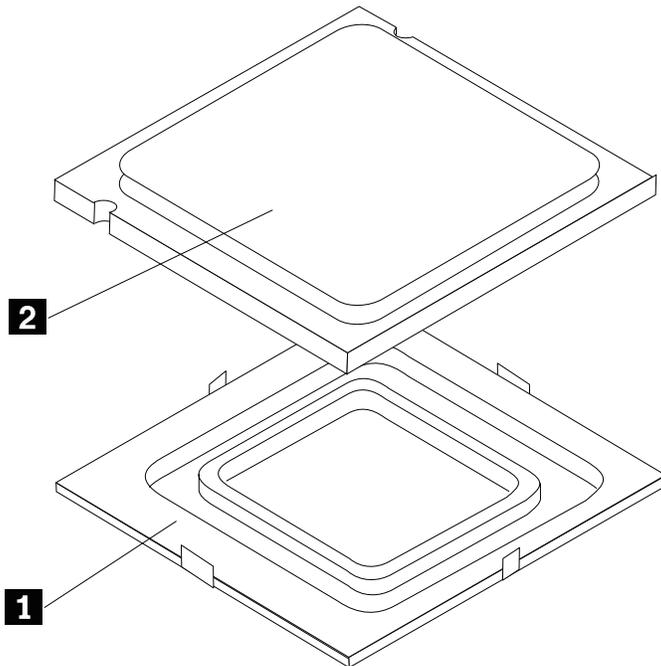
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the EMI cover. Refer to “Removing the EMI cover”.
- Step 10. Remove the heat-sink. Refer to “Replacing the heat sink”.
- Step 11. Lift the small handle and open the retainer.
- Step 12. Lift the microprocessor straight up and out of the socket. **3**



Attention: Do not touch the gold contacts on the bottom of the microprocessor. When handling the microprocessor, touch only the sides.

Note: Do not drop anything onto the microprocessor socket while it is exposed. The socket pins must be kept as clean as possible.

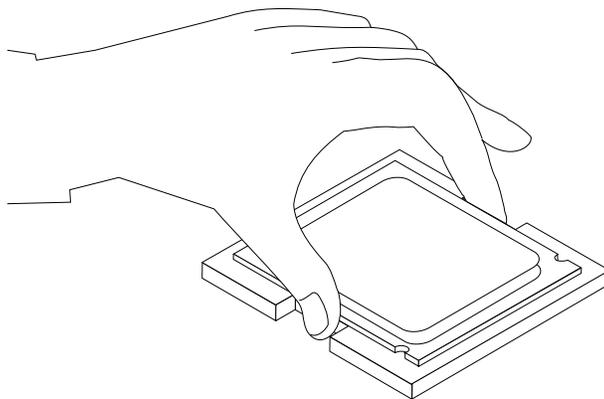
Step 13. Holding the sides of the microprocessor with your fingers, remove the protective cover **1** that protects the gold contacts on the new microprocessor. **2**



Step 14. Holding the sides of the microprocessor with your fingers, position the microprocessor so that the notches on the microprocessor are aligned with the tabs in the microprocessor socket.

Important: To avoid damaging the microprocessor contacts, keep the microprocessor completely level while installing it into the socket.

Step 15. Lower the microprocessor straight down into its socket on the motherboard.



Step 16. To secure the microprocessor in the socket, close the microprocessor retainer and lock it into position with the small handle.

Step 17. Use a thermal grease syringe to place 5 drops of grease on the top of the microprocessor. Each drop of grease should be 0.03ml (3 tick marks on the grease syringe).

Step 18. Reattach the heat-sink, EMI cover, middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the system fan

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the system fan

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the EMI cover. Refer to “Removing the EMI cover”.
- Step 10. Remove the sealing tape between the system fan and heat-sink.
- Step 11. Remove the three screws that secure the system fan to the chassis.
- Step 12. Disconnect the power cable from the motherboard.
- Step 13. Lift up the system fan to remove it.



- Step 14. To install the new system fan:
 - a. Place the new system fan into position, and then secure it to the chassis with three screws.
 - b. Connect the system fan power cable to the connector on the motherboard.
 - c. Use the sealing tape to seal the gap in-between the system fan and heat-sink.

Step 15. Reattach the EMI cover, middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the speaker system

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the speaker system:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the EMI cover. Refer to “Removing the EMI cover”.
- Step 10. Disconnect the speaker cables from the connector on the motherboard.
- Step 11. Remove the four screws that secure the speaker system to the chassis, then lift up the speaker system to remove it.



Step 12. To install the new speaker system:

- a. Place the new speaker system into position, then secure it with four screws.
- b. Connect the new speaker cables to the connector on the motherboard.

Step 13. Reattach the EMI cover, middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the power switch board

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the power switch board

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Push the locking pin outward to release the power switch board, then lift up the power switch board to remove it. **1 2**
- Step 10. Disconnect the data cable from the power switch board.



Step 11. To install the power switch board:

- a. Line up the notches on the new power switch board with the keys in the slot.
- b. Secure the power switch board with the locking pin.

Step 12. Reattach the middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the motherboard

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the motherboard:

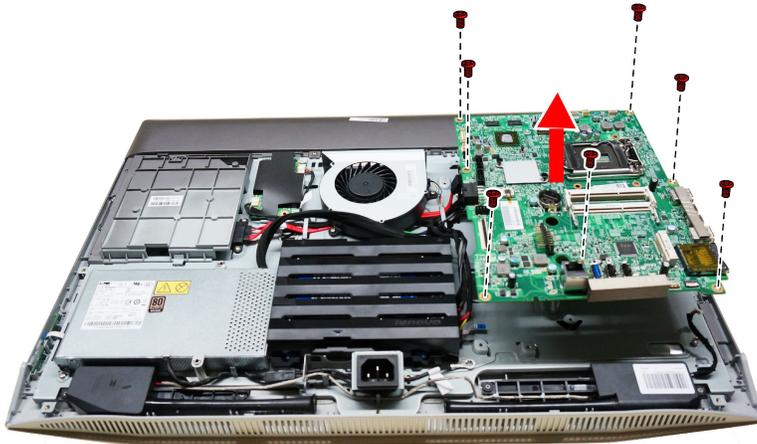
- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the memory modules. Refer to “Replacing a memory module”.
- Step 7. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 8. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 9. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 10. Remove the EMI cover. Refer to “Removing the EMI cover”.
- Step 11. Remove the heat-sink. Refer to “Replacing the heat-sink”.
- Step 12. Remove the CPU. Refer to “Replacing the CPU”.
- Step 13. Remove the TV-Tuner card. Refer to “Replacing the TV tuner card”.
- Step 14. Remove the WLAN card. Refer to “Replacing the WLAN card”.
- Step 15. Remove the TV-Tuner antenna jack as shown.



- Step 16. Unplug the following cables from connectors on the motherboard:
 - Converter cable
 - System fan power cable
 - Touch control board cable
 - Optical drive SATA cable (Red)
 - Hard disk drive SATA cable (Black)
 - Power supply cable

- Hard disk drive power cable
- Power switch board cable
- Speaker system cable
- Camera cable
- LVDS cable

Step 17. Remove the seven screws that secure the motherboard to the chassis and lift the motherboard up to remove it.



Step 18. To install the new motherboard:

- Line up the holes on the new motherboard with the mounting holes chassis and place the new motherboard into position.
- Use the screws to secure the new motherboard to the chassis.
- Connect all the cables to the new motherboard.

Step 19. Install the following parts to the new motherboard:

- Wi-Fi card
- TV-Tuner card
- CPU
- Heat-sink
- Memory module
- TV-Tuner antenna jack

Step 20. Reattach the EMI cover, middle cover, optical drive, stand holder, foot cover and stand base.

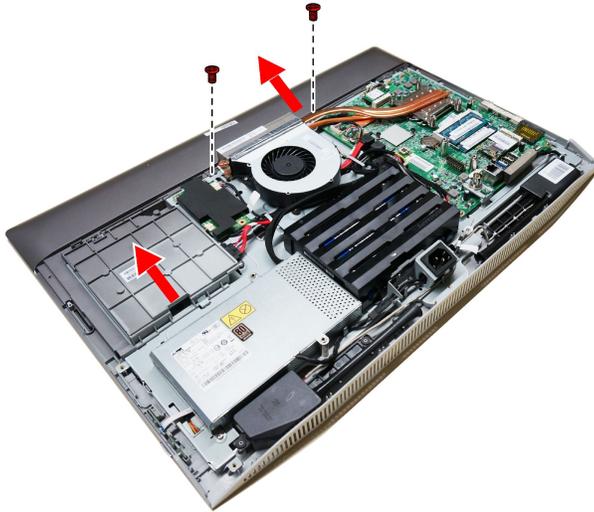
Removing the rear deco

Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To remove the rear deco:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.
- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the two screws that secure the rear deco to the chassis, then slide the rear deco upward to remove it.



- Step 10. To reattach the rear deco:
 - a. Line up the rear deco with the guide track on the chassis.
 - b. Secure the rear deco to the chassis with the two screws.
- Step 11. Reattach the middle cover, stand holder, optical drive, foot cover and stand base.

Replacing the camera

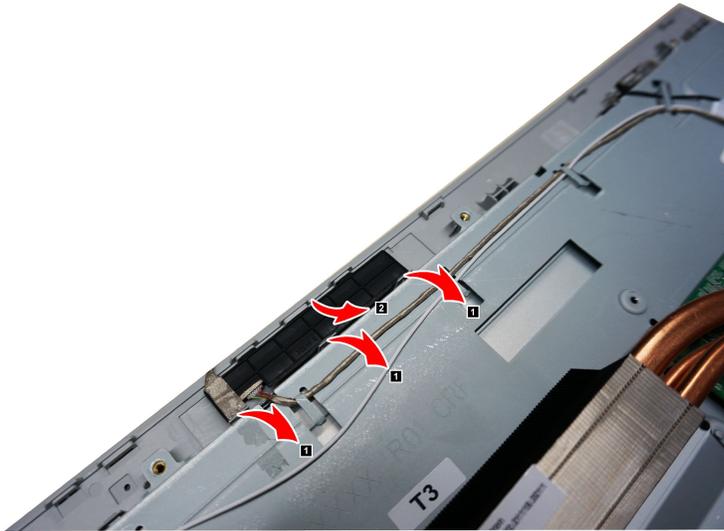
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the camera:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.

- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the rear deco. Refer to “Replacing the rear deco”.
- Step 10. Pushing the camera locking pin outward to release the camera. **1**
- Step 11. Slide out the camera as shown. **2**



- Step 12. Disconnect the camera data cable from the connector on the camera.
- Step 13. To install the new camera:
 - a. Connect the data cable to the new camera.
 - b. Slide the new camera into position, secure the camera to the front bezel with the locking pins.
- Step 14. Reattach the rear deco, middle cover, optical drive, stand holder, foot cover and stand base.

Replacing the LED panel module

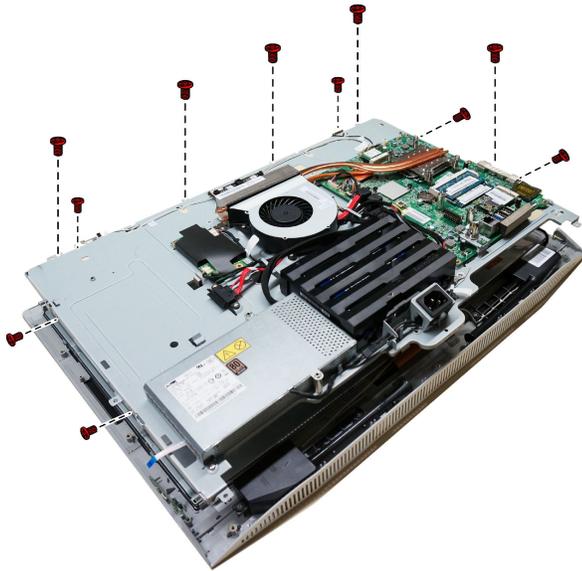
Note: Turn off the computer and wait 3 to 5 minutes to let it cool down before removing the cover.

Note: It may be helpful to place the computer face-down on a soft flat surface for this procedure. Lenovo recommends that you use a blanket, towel, or other soft cloth to protect the computer screen from scratches or other damage.

To replace the LED panel module:

- Step 1. Remove any media (disks, CDs, DVDs, or memory cards) from the drives, shut down the operating system, and turn off the computer and all attached devices.
- Step 2. Unplug all power cords from electrical outlets.

- Step 3. Disconnect all cables attached to the computer. This includes power cords, input/output (I/O) cables, and any other cables that are connected to the computer. Refer to “Left and right view” and “Rear view” for help with locating the various connectors.
- Step 4. Remove the stand base. Refer to “Removing the stand base”.
- Step 5. Remove the foot cover. Refer to “Removing the foot cover”.
- Step 6. Remove the optical drive. Refer to “Replacing the optical drive”.
- Step 7. Remove the stand holder. Refer to “Removing the stand holder”.
- Step 8. Remove the middle cover. Refer to “Removing the middle cover”.
- Step 9. Remove the EMI cover. Refer to “Removing the EMI cover”.
- Step 10. Remove the system fan. Refer to “Replacing the system fan”.
- Step 11. Remove the speaker system. Refer to “Replacing the speaker system”.
- Step 12. Remove the rear deco. Refer to “Removing the rear deco”.
- Step 13. Remove the camera. Refer to “Replacing the camera”.
- Step 14. Remove the eleven screws that secure the chassis to the LED panel module.

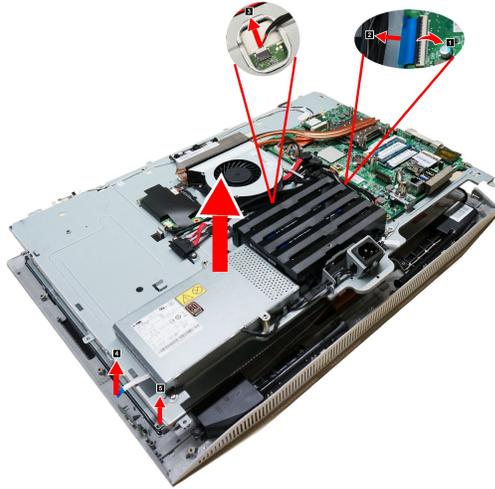


Step 15. Disconnect the LVDS cable from connector as shown. **1 2**

Step 16. Disconnect the touch control board cables from connector. **3**

Step 17. Disconnect the power switch board cables from connector. Refer to “Replacing the power switch board”. **4**

Step 18. Lift up the chassis from the bottom and disconnect the converter cable from the connector on the LED panel. **5**



Step 19. Lift up the chassis to separate the chassis from the LED panel module.



Step 20. To install the new the LED panel module:

The new LED panel module including:	<ol style="list-style-type: none">1. LED panel2. LVDS cable3. Touch control board and touch cable. (Touch model only)
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- a. Line up the chassis with new LED panel module, place the chassis into position.
- b. Connect the converter cable to the connector on the LED panel.

- c. Connect the LVDS cable to the connector on the motherboard.
- d. Connect the touch control board cables to the connector on the touch control board.
- e. Connect the power switch board cable to the connector on the power switch board.
- f. Secure the LED panel to the chassis with the eleven screws.
- g. Attach the camera to the new LED module.
- h. Line up the rear deco with the guide track on the LED module, then slide the rear deco into position.
- i. Secure the rear deco to the new LED module with the two screws.
- j. Secure the rear deco with the
- k. Line up the chassis and new LED panel with the front bezel, and then place it into position.
- l. Attach the speaker module to the new LED module.

Step 21. Reattach the system fan, EMI cover, middle cover, optical drive, computer stand, foot cover and stand base.

Chapter 8. FRU lists

This chapter lists the information on the field replaceable units (FRUs) for Lenovo B50–30 All-In-One desktop computer.

Attention: Be sure to read and understand all the safety information before replacing any FRUs.

Notes: FRUs that have a 1 or 2 in the CRU column are Customer Replaceable Units (CRUs).

- **1**– identifies parts that are fairly simple to replace, requiring few or no tools.
- **2**– identifies parts that are slightly more difficult to replace.
- **N**– identifies parts that are not to be replaced by the customer.

Item #	Description	Lenovo PN	CRU ID
	CPU		
	I I7-4785T 2.2/1600/4C/8M/1150 35W CPU	1101090	N
	I I7-4790S 3.2/1600/4C/8M/1150/65 CPU®	SSA0D93139	
	I I5-4460T 1.9/1600/4C/6M/1150 35W CPU	1101092	
	I I5-4460S 2.9/1600/4C/6M/1150 65W CPU	1101108	
	I I3-4150 3.5/1600/2C/3M/1150 54W CPU	1101088	
	I G3240 3.1/1333/2C/3M/1150 54W CPU	1101089	
	BDPLANAR		N
	W B5030 NOK UMA MB	5B20G53729	
	W B5030 W8P UMA MB	5B20G53732	
	W B5030 NOK DIS MB	5B20G53728	
	W B5030 W8P DIS MB	5B20G53730	
	W B5030 NOK 2G W/HDMI_IN_TV MB	5B20G54554	
	W B5030 W8P 2G W/HDMI_IN_TV MB	5B20G54572	
	W B5030 NOK 2G W/HDMI_OUT MB	5B20G54566	
	W B5030 W8P 2G W/HDMI_OUT MB	5B20G54561	
	W B5030 NOK W/HDMI_IN_TV UMA MB	5B20G54557	
	W B5030 W8P W/HDMI_IN_TV UMA MB	5B20G54551	
	W B5030 NOK W/HDMI_OUT UMA MB	5B20G54573	
	W B5030 W8P W/HDMI_OUT UMA MB	5B20G54569	
	W B5030 NOK 1G W/HDMI_IN MB	5B20G54563	
	W B5030 W8P 1G W/HDMI_IN MB	5B20G54558	
	W B5030 NOK 1G MB	5B20G54550	
	W B5030 W8P 1G MB	5B20G54571	
	W B5030 NOK 2G W/HDMI_IN MB	5B20G54565	
	W B5030 W8P 2G W/HDMI_IN MB	5B20G54567	
	W B5030 NOK 2G 820A W/TV MB	5B20G54562	

W B5030 W8P 2G 820A W/TV MB	5B20G54559	
W B5030 NOK 2G W/HDMI_TV MB	5B20G54553	
W B5030 W8P 2G W/HDMI_TV MB	5B20G54576	
W B5030 NOK 1G W/HDMI_IN_TV MB	5B20G54570	
W B5030 W8P 1G W/HDMI_IN_TV MB	5B20G54564	
W B5030 NOK W/TV UMA MB	5B20G54560	
W B5030 W8P W/TV UMA MB	5B20G54552	
W B5030 NOK2G 820A W/HD_IN_TVMB	5B20G54577	
W B5030 W8P2G 820A W/HD_IN_TVMB	5B20G54555	
W B5030 NOK 2G MB	5B20G54574	
W B5030 W8P 2G MB	5B20G54575	
W B5030 NOK 1G W/HDMI_TV MB	5B20G54568	
W B5030 W8P 1G W/HDMI_TV MB	5B20G54556	
RAM		2
M471B5674QH0-YK0 2GB D3L-1600S Memory -HF	1-100983	
HMT425S6AFR6A-PB 2GB D3L-1600S Memory-HF	1-100643	
MT4KTF25664HZ-1G6E1 2GB D3L-1600S Memory	1-100956	
Mic_R D9PSH 2GB D3L-1600S Memory-HF	1-100965	
M471B5173DB0-YK0 4GB D3L-1600S Memory-HF	1-100942	
HMT451S6BFR8A-PB 4GB D3L-1600S Memory-HF	1-100985	
MT8KTF51264HZ-1G6E1 4GB D3L-1600S Memory-HF	1-100957	
Mic_R D9QBJ 4GB D3L-1600S Memory-HF	1-100967	
M471B1G73DB0-YK0 8GB D3L-1600S Memory-HF	1-100943	
HMT41GS6BFR8A-PB 8GB D3L-1600S Memory-HF	1-100986	
MT16KTF1G64HZ-1G6E1	1-100635	
Mic_R D9QBJ 8GB D3L-1600S Memory-HF	1-101012	
M471B5674QH0-YK0 2GB D3L-1600S Memory-HF	1-100983	
M471B5173DB0-YK0 4GB D3L-1600S Memory-HF	1-100942	
HMT425S6AFR6A-PB 2GB D3L-1600S Memory-HF	1-100643	
HMT451S6BFR8A-PB 4GB D3L-1600S Memory-HF	1-100985	
Mic_R D9PSH 2GB D3L-1600S Memory-HF	1-100965	
Mic_R D9QBJ 4GB D3L-1600S Memory-HF	1-100967	
M471B5173DB0-YK0 4GB D3L-1600S Memory-HF	1-100942	
M471B1G73DB0-YK0 8GB D3L-1600S Memory-HF	1-100943	
HMT451S6BFR8A-PB 4GB D3L-1600S Memory-HF	1-100985	
HMT41GS6BFR8A-PB 8GB D3L-1600S Memory-HF	1-100986	
Mic_R D9QBJ 4GB D3L-1600S Memory-HF	1-100967	
Mic_R D9QBJ 8GB D3L-1600S Memory-HF	1-101012	

HDD			2
	TSB Mars 4K 500G DT01ACA050 -LH	16200512	
	WDXL500A WD5000AAKX-08U6AA0 500G HDD-LH	16200544	
	ST Pharaoh 4K Non-MC ST500DM002 500GHDD	16200674	
	3.5inch SATA6G 7.2K Grenada BP 1.5 1TB	16200528	
	TSB Mars 4K 1TB DT01ACA100 -LH	16200513	
	WD10EZEX-08M2NA0	16200613	
	3.5inch SATA6G 7.2K Grenada BP 1.5 2TB	16200529	
	TSB Mars 4K 2TB DT01ACA200 -LH	16200514	
SSHD			2
	SGT Grenada 1TB ST1000DX001 SSHD-LH	16200534	
	SGT Grenada 2TB ST2000DX001 SSHD-LH	16200535	
ODD			2
	PSN UJ8FB 9.5mm Tray Rambo w/o bezel	25215310	
	DU-8A5SH(LSOPU)	25214499	
	GU90N	25214073	
POWER			N
	liteon PS-2151-08VB ES SLIM 150w PSU	36200624	
	Acbel APC003-EL1G ES SLIM 150w PSU	36200625	
	APB003-EL1G	SP50A36150	
	PS-2181-08VB	SP50A36152	
Wifi			N
	Liteon WB335 1x1BGN+BT4.0 HMC WLAN	20200437	
	LTN RTL8723BE 1x1bgn+BT HMC WLAN	20200439	
	CBT RTL8821AE 1x1ac BT combo HMC	20200571	
	LTN RTL8821AE 1x1ac+BT4.0 Combo HMC	11202485	
TV tuner			N
	Avermedia H334 DVB-T Mini TV Card	11201071	
	wistron TV tuner bracket B5030(R)	31507256	
	Philips 43 key IR remoter black	888900018	
	Philips Win7 Receiver®	888010662	
	Philips IR receiver	888900019	

	Camera		N
	AVC 1080P 5830 2724 WB 2DM S Cam	20200635	
	Bison 1080P 5830 2724 WB 2DM S Cam	20200636	
	wistron 2D camera holder B5030(R)	31507254	
	Intel 3D web camera B560	20200653	
	AVC 2DMIC module B560	25216344	
	Bison 2DMIC module B560	25216345	
	wistron 3D camera holder B5030(R)	31507255	
	Camera B5030 W/Bracket 2D	5C20G56065	
	Speaker		N
	B56X JBL Speaker	25216350	
	Thermal module		N
	CM HEL00106W1GP2 65W CPU DIS Module	31507279	
	AVC SL42Q00001 65W CPU DIS Module	31507281	
	CM HEL00107W1GP2 65W CPU UMA Module	31507280	
	AVC SL42R00001 65W CPU UMA Module	31507282	
	Delta BUB1112DDA02 3450RPM 11022FAN	31507283	
	SUNON MFB0201V1C010S99 3450RPM 11022FAN	31507284	
	Cable		N
	Cable Camera B5030	5C10G56056	
	Cable Converter to MB B5030	5C10G56053	
	Cable Power Switch Board B5030	5C10G56048	
	Cable TV Tuner B5030 PAL	5C10G56072	
	Cable TV Tuner B5030 NTSC	5C10G56051	
	Cable SATA HDD&ODD B5030	5C10G56054	
	Antenna B5030	5A30G56060	
	CARDPOP		N
	Board Power Switch B5030	5C50G56071	
	Converter B5030	5C50G56058	
	Accessory		N
	Bracket TV Tuner B5030	5B40G56050	
	Bracket ODD B5030	5B40G56047	
	Slide B5030 W/TV_HDMI_IN/OUT BLK	5CB0G56073	
	Slide B5030 W/HDMI_IN/OUT BLK	5CB0G56068	
	Slide B5030 W/TV BLK	5CB0G56067	
	Slide B5030 W/HDMI_OUT BLK	5CB0G57234	
	Slide B5030 W/HDMI_IN BLK	5CB0G57260	
	Slide B5030 W/HDMI_OUT_TV BLK	5CB0G57243	
	Slide B5030 W/HDMI_IN_TV BLK	5CB0G57266	
	Slide B5030 BLK	5CB0G57244	

Slide B5030W/TV_HDMI_IN/OUT Silver	5CB0G57267
Slide B5030 W/HDMI_IN/OUT Silver	5CB0G57252
Slide B5030 W/HDMI_OUT Silver	5CB0G57272
Slide B5030 W/HDMI_IN Silver	5CB0G57255
Slide B5030 W/HDMI_OUT_TV Silver	5CB0G57235
Slide B5030 W/TV Silver	5CB0G57236
Slide B5030 W/HDMI_IN_TV Silver	5CB0G57257
Slide B5030 Silver	5CB0G57239
Bezel ODD B5030 BLK	5B30G56069
Bezel ODD B5030 Silver	5B30G57240
Bracket HDD B5030	5B40G56064
Shield MB B5030 W/TV_HDMI_IN/OUT	5S60G56061
Shielding MB B5030 W/HDMI_IN/OUT	5S60G56063
Shielding MB B5030 W/TV	5S60G56059
Shield MB B5030 W/HDMI_OUT	5S60G57262
Shield MB B5030 W/HDMI_OUT_TV	5S60G57237
Shield MB B5030 W/HDMI_IN	5S60G57258
Shield MB B5030 W/HDMI_IN_TV	5S60G57245
Shield MB B5030	5S60G57261
Cover Middle B5030 W/HDMI BLK	5CB0G56057
Cover Middle B5030 W/O HDMI BLK	5CB0G56055
Cover Middle B5030 W/HDMI Silver	5CB0G57241
Cover Middle B5030 W/O HDMI Silver	5CB0G57263
Back B5030 W/TV_HDMI_IN/OUT BLK	5CB0G56052
Back B5030 W/HDMI_IN/OUT BLK	5CB0G56049
Back B5030 W/TV BLK	5CB0G56070
Back B5030 W/HDMI_OUT BLK	5CB0G57250
Back B5030 W/HDMI_IN BLK	5CB0G57269
Back B5030 W/HDMI_OUT_TV BLK	5CB0G57253
Back B5030 W/HDMI_IN_TV BLK	5CB0G57273
Back B5030 BLK	5CB0G57238
Back B5030 W/TV_HDMI_IN/OUT Silver	5CB0G57259
Back B5030 W/HDMI_IN_OUT Silver	5CB0G57242
Back B5030 W/HDMI_OUT Silver	5CB0G57265
Back B5030 W/HDMI_IN Silver	5CB0G57248
Back B5030 W/HDMI_OUT_TV Silver	5CB0G57268
Back B5030 W/TV Silver	5CB0G57251
Back B5030 W/HDMI_IN_TV Silver	5CB0G57271
Back B5030 Silver	5CB0G57246
Shielding HDD B5030	5S60G56046

	Stand Hinge B5030 BLK	5SE0G56066	
	Base Hinge B5030 BLK	5SE0G56062	
	Stand Hinge B5030 Silver	5SE0G57264	
	Base Hinge B5030 Silver	5SE0G57256	
	LCD Module		N
	LCD Module B5030 W/O NFC TS BLK	5D10G56968	
	LCD Module B5030 W/O NFC NT BLK	5D10G56967	
	LCD Module B5030 W/NFC TS BLK	5D10G56970	
	LCD Module B5030 W/NFC NT BLK	5D10G56971	
	LCD ModuleB5030W/O NFC TS Silver	5D10G57247	
	LCD ModuleB5030W/O NFC NT Silver	5D10G57249	
	LCD Module B5030 W/NFC TS Silver	5D10G57270	
	LCD Module B5030 W/NFC NT Silver	5D10G57254	
	NFC Module		N
	NFC Module B5030	5C50G56969	
	KB&MS		1
	Sunrex EKB-10YA(US) B-Silk USB KB-LVT8	25209111	
	Primax KB4721(US) B-Silk USB KB-LVT8	25209112	
	Sunrex EKB-10YA(TW) B-Silk USB KB-LVT8	25209114	
	Sunrex EKB-10YA(TH) B-Silk USB KB-LVT8	25209115	
	Sunrex EKB-10YA(CZ-SL) B-S USB KB-LVT8	25209116	
	Sunrex EKB-10YA(IN) B-Silk USB KB-LVT8	25209117	
	Sunrex EKB-10YA(RU) B-Silk USB KB-LVT8	25209118	
	Sunrex EKB-10YA(UK) B-Silk USB KB-LVT8	25209119	
	Sunrex EKB-10YA(Nordic) B-S USB KB-LVT8	25209120	
	Sunrex EKB-10YA(LA) B-Silk USB KB-LVT8	25209121	
	Sunrex EKB-10YA(AR) B-Silk USB KB-LVT8	25209122	
	Sunrex EKB-10YA(SW) B-Silk USB KB-LVT8	25209123	
	Sunrex EKB-10YA(GE) B-Silk USB KB-LVT8	25209124	
	Sunrex EKB-10YA(TR) B-Silk USB KB-LVT8	25209125	
	Sunrex EKB-10YA(SP) B-Silk USB KB-LVT8	25209126	
	Sunrex EKB-10YA(SL) B-Silk USB KB-LVT8	25209127	
	Sunrex EKB-10YA(IT) B-Silk USB KB-LVT8	25209128	
	Sunrex EKB-10YA(HB) B-Silk USB KB-LVT8	25209129	
	Sunrex EKB-10YA(FR) B-Silk USB KB-LVT8	25209130	
	Sunrex EKB-10YA(GK) B-Silk USB KB-LVT8	25209131	
	Sunrex EKB-10YA(HG) B-Silk USB KB-LVT8	25209132	
	Sunrex EKB-10YA(BG) B-Silk USB KB-LVT8	25209133	
	Sunrex EKB-10YA(KR) B-Silk USB KB-LVT8	25209134	
	Sunrex EKB-10YA(JP) B-Silk USB KB-LVT8	25209135	

Sunrex EKB-10YA(EN-FR) B-S USB KB-LVT8	25209136
Sunrex EKB-10YA(PT) B-Silk USB KB-LVT8	25209137
Sunrex EKB-10YA(BE-EN) B-S USB KB-LVT8	25209138
Sunrex EKB-10YA(US-EU) B-S USB KB-LVT8	25209139
Liteon LXH-SM-8825 B-Silk Mouse	25200528
Sunrex LXH-EMS-10ZA B-Silk Mouse	25200530
Primax M300 USB gesture mouse BLK	25213876
Liteon SK-8861(US) 2.4G KB-Black8	25209175
Liteon SK-8861(US-MY) 2.4G KB-Black8	25209176
Liteon SK-8861(TW) 2.4G KB-Black8	25209177
Liteon SK-8861(TH) 2.4G KB-Black8	25209178
Liteon SK-8861(CS-SK) 2.4G KB-Black8	25209179
Liteon SK-8861(US-IN) 2.4G KB-Black8	25209180
Liteon SK-8861(RU) 2.4G KB-Black8	25209181
Liteon SK-8861(GB) 2.4G KB-Black8	25209182
Liteon SK-8861(Nordic) 2.4G KB-Black8	25209183
Liteon SK-8861(LA) 2.4G KB-Black8	25209184
Liteon SK-8861(LA-AR) 2.4G KB-Black8	25209185
Liteon SK-8861(SA) 2.4G KB-Black8	25209186
Liteon SK-8861(CH) 2.4G KB-Black8	25209187
Liteon SK-8861(DE) 2.4G KB-Black8	25209188
Liteon SK-8861(TR) 2.4G KB-Black8	25209189
Liteon SK-8861(ES) 2.4G KB-Black8	25209190
Liteon SK-8861(SL) 2.4G KB-Black8	25209191
Liteon SK-8861(IT) 2.4G KB-Black8	25209192
Liteon SK-8861(IL) 2.4G KB-Black8	25209193
Liteon SK-8861(FR) 2.4G KB-Black8	25209194
Liteon SK-8861(GR) 2.4G KB-Black8	25209195
Liteon SK-8861(HU) 2.4G KB-Black8	25209196
Liteon SK-8861(BG) 2.4G KB-Black8	25209197
Liteon SK-8861(KR) 2.4G KB-Black8	25209198
Liteon SK-8861(JP) 2.4G KB-Black8	25209199
Liteon SK-8861(EN-FR) 2.4G KB-Black8	25209200
Liteon SK-8861(PT) 2.4G KB-Black8	25209201
Liteon SK-8861(BE-EN) 2.4G KB-Black8	25209202
Liteon SK-8861(US-EU) 2.4G KB-Black8	25209203
Liteon SM-8861(WW) Mouse Black	25203464
Liteon SM-8861 Mouse(No Battery) Black	25203465
Liteon SM-8861 Mouse(MY) Black	25203466
Liteon SM-8861(JP) Mouse-Black	25205773

Liteon SK-8861(US) 2.4G KB-Silver8	25209204
Liteon SK-8861(US-MY) 2.4G KB-Silver8	25209205
Liteon SK-8861(TW) 2.4G KB-Silver8	25209206
Liteon SK-8861(TH) 2.4G KB-Silver8	25209207
Liteon SK-8861(CS-SK) 2.4G KB-Silver8	25209208
Liteon SK-8861(US-IN) 2.4G KB-Silver8	25209209
Liteon SK-8861(RU) 2.4G KB-Silver8	25209210
Liteon SK-8861(GB) 2.4G KB-Silver8	25209211
Liteon SK-8861(Nordic) 2.4G KB-Silver8	25209212
Liteon SK-8861(LA) 2.4G KB-Silver8	25209213
Liteon SK-8861(LA-AR) 2.4G KB-Silver8	25209214
Liteon SK-8861(SA) 2.4G KB-Silver8	25209215
Liteon SK-8861(CH) 2.4G KB-Silver8	25209216
Liteon SK-8861(DE) 2.4G KB-Silver8	25209217
Liteon SK-8861(TR) 2.4G KB-Silver8	25209218
Liteon SK-8861(ES) 2.4G KB-Silver8	25209219
Liteon SK-8861(SL) 2.4G KB-Silver8	25209220
Liteon SK-8861(IT) 2.4G KB-Silver8	25209221
Liteon SK-8861(IL) 2.4G KB-Silver8	25209222
Liteon SK-8861(FR) 2.4G KB-Silver8	25209223
Liteon SK-8861(GR) 2.4G KB-Silver8	25209224
Liteon SK-8861(HU) 2.4G KB-Silver8	25209225
Liteon SK-8861(BG) 2.4G KB-Silver8	25209226
Liteon SK-8861(KR) 2.4G KB-Silver8	25209227
Liteon SK-8861(JP) 2.4G KB-Silver8	25209228
Liteon SK-8861(EN-FR) 2.4G KB-Silver8	25209229
Liteon SK-8861(PT) 2.4G KB-Silver8	25209230
Liteon SK-8861(BE-EN) 2.4G KB-Silver8	25209231
Liteon SK-8861(US-EU) 2.4G KB-Silver8	25209232
Liteon SM-8861(WW) Mouse Silver	25203606
Liteon SM-8861 Mouse(No Battery) Silver	25203607
Liteon SM-8861 Mouse(MY) Silver	25203608
Liteon SM-8861 Mouse(JP) Silver	25205774

Power cord		1
LW BLK1.8m UL CSA Power Cord(R)	31026357	
VL BLK1.8m UL CSA Power Cord®	31026145	
LX(BS)1.8M C13 US Power cord	31049521	
LW BLK1.8m ANE Power Cord®	31026350	
VL BLK1.8m ANE Power Cord®	31026140	
LX(BS)1.8M C13 AU Power cord	31049524	
LW 1.8m JAPAN Power Cord®	31039730	
HLS1.8MC13日制 Power cord	31049514	
LX(BS)1.8M C13 JAPAN Power cord	31049523	
GX Black single head1.8mCCC Power cord(R)	31028776	
LX(ASAP) 1.8M CCC C13 power cord®	31040179	
LW BLK1.8m BS Power Cord®	31026096	
VL BLK1.8m BS Power Cord(R)	31026082	
LX(BS)1.8M C13 UK Power cord	31502861	
LW BLK1.8m VDE Power Cord®	31026355	
VL BLK1.8m VDE Power Cord®	31026144	
LX(BS)1.8M C13 EN Power cord	31049522	
LW Black single head1.8m India Power cord®	31033216	
LX(BS)1.8M C13 India Power cord	31502871	
LW BLK1.8m BSMI Power Cord®	31026349	
VL BLK1.8m BSMI Power Cord®	31026146	
LW BLK1.8m SABS Power Cord®	31031394	
HLS1.8MC13 SA Power cord	31049509	
LX(BS)1.8M C13 SA Power cord	31502865	
LW Black single head1.8m C13 IRAM Power cord®	31036980	
HLS1.8MC13 LA Power cord	31049515	
LX(BS)1.8M C13 LA Power cord	31502869	
LW Black single head1.8m C13 Brazil Power cord®	31038784	
HLS1.8MC13 Brazil Power cord	31049513	
LX(BS)1.8M C13 Brazil Power cord	31502862	
LW Black single head1.8m C13 Korea Power cord®	31026351	
VL BLK1.8m KTL Power Cord®	31026143	
LX(BS)1.8M C13 korea Power cord	31502870	
Longwell 1.8M Italy C13 power cord®	31039726	
HLS1.8MC13 Italy Power cord	31049512	
LX(BS)1.8M C13 Italy Power cord	31502864	
Longwell 1.8M Denmark C13 power cord®	31039729	
HLS1.8MC13 Denmark Power cord	31049511	
LX(BS)1.8M C13 Denmark Power cord	31502863	

	Longwell 1.8M SEV C13 power cord®	31039732	
	HLS1.8MC13 Switzerland Power cord	31049516	
	LX(BS)1.8M C13 Switzerland Power cord	31502868	
	Longwell 1.8M Israel C13 power cord®	31039728	
	HLS1.8MC13 Israel Power cord	31049510	
	LX(BS)1.8M C13 Israel Power cord	31502866	

Chapter 9. General information

This chapter provides general information that applies to all computer models covered by this manual.

Additional Service Information

This chapter provides additional information that the service representative might find helpful.

Power management

Power management reduces the power consumption of certain components of the computer such as the system power supply, processor, hard disk drives, and some monitors.

Advanced configuration and power interface (ACPI) BIOS

As this computer has an ACPI BIOS system, the operating system is allowed to control the power management features of the computer and the settings for Advanced Power Management (APM) BIOS mode is ignored. Not all operating systems support ACPI BIOS mode.

Automatic Power-On features

The Automatic Power-On features within the Power Management menu allow you to enable and disable features that turn on the computer automatically.

- **Wake Up on Alarm:** You can specify a date and time at which the computer will be turned on automatically. This can be either a single event , a daily event or a weekly event.
- **Wake Up on LAN:** This feature allows LAN adapter card to wake the System.