Panasonic®

OPERATING INSTRUCTIONS
Basic Guide
Personal Computer

Model No. **CF-MX4** series

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Getting Started

Useful Information

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Appendix

Please read these instructions carefully before using this product, and save this manual for future use.

Introduction

Thank you for purchasing this Panasonic product. For optimum performance and safety, please read these instructions carefully.

In these instructions, the names are referred as follows.
Windows 8.1 indicates Windows® 8.1 Operating System.
Windows 7 indicates Windows® 7 Operating System.

■ **Terms and illustrations in these instructions**

CAUTION :	Conditions that may result in minor or moderate injury.
NOTE :	Useful and helpful information.
Enter :	Press [Enter] key.
Fn + **F5** :	Press and hold [Fn] key, and then press [F5] key.
Windows 8.1	
● Display "Charm":	Align the pointer to the top right (or bottom right) corner of the screen to display Charm menu. Alternatively, flick toward the center of the screen from the right edge.
● ⚙ - ⏻ :	Click ⚙ (Settings) and then click ⏻ (Power).
Windows 7	
🏁 (Start) - [All Programs] :	Click 🏁 (Start), and then click [All Programs]. You may need to double-click in some cases.
➔ :	Page in these Operating Instructions or in the Reference Manual.
📖 :	Reference to the on-screen manuals.

- Some illustrations are simplified to help your understanding and may look different from the actual unit.
- If you do not log on as an administrator, you cannot use some functions or cannot display some screens.
- Refer for the latest information about optional products to the catalogs, etc.
- In these instructions, the names and terms are referred as follows.
  - "Windows® 8.1 Pro Update 64-bit" as "Windows" or "Windows 8.1"
  - "Windows® 7 Professional 32-bit Service Pack 1" and "Windows® 7 Professional 64-bit Service Pack 1" as "Windows" or "Windows 7"
  - "Multilanguage User Interface" as "MUI"
  - For models with the flash memory drive, read the terms "hard disk" and "hard disk drive" as "flash memory drive".
- Windows 8.1
  Screen messages are explained in [English (United States)].
  (Depending on the language preference, some screen messages in these instructions are different from the actual screen messages. For example, [Flight mode] may be displayed instead of [Airplane mode] in some language preference.)

■ **Disclaimer**

Computer specifications and manuals are subject to change without notice. Panasonic Corporation assumes no liability for damage incurred directly or indirectly from errors, omissions or discrepancies between the computer and the manuals.

Getting Started

■ **Trademarks**

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Names of products, brands, etc., appearing in this manual are trademarks or registered trademarks of their respective own companies.

■ **On-screen Manual**

For further information about the computer, you can refer to the on-screen manual.

● **Reference Manual**

The Reference Manual contains the practical information to help you fully enjoy the computer's performance.

● **Important Battery Tips**

The Important Battery Tips will provide you with the battery information so that you can use the battery in the optimum condition to obtain longer operation time.

To access the on-screen manuals, follow the steps below.

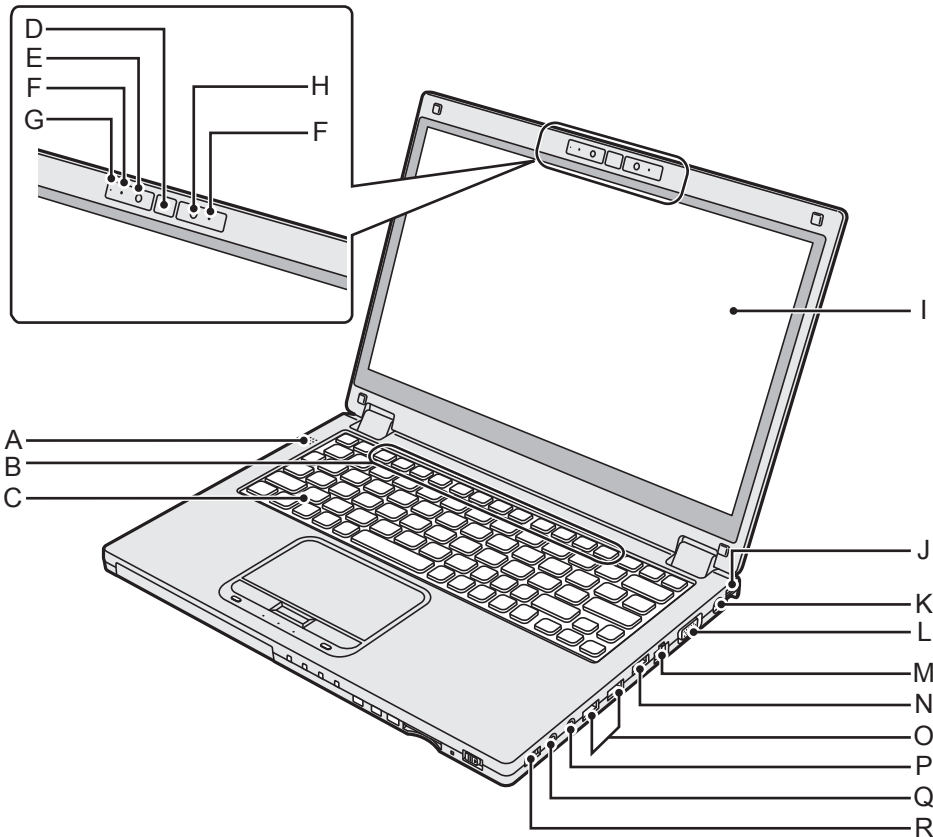Double-click [Manual Selector] on the desktop, and select the on-screen manual.

Windows 8.1

Alternatively, click the [Manual Selector] tile, on the Start screen and select the on-screen manual.

NOTE

• [Contents] tab or [Search] tab of the on-screen manuals is displayed on the left side of the window. Select tab and display the desired item.

Getting Started

Description of Parts

A: Speaker

B: Function Keys
- → 📖 *Reference Manual* "Key Combinations"

C: Keyboard

D: Windows Button

E: Camera
- → 📖 *Reference Manual* "Camera"

F: Microphone

G: Camera Indicator

H: Ambient Light Sensor
The ambient light sensor is equipped with an automatic brightness adjustment function that adjusts the display screen.

I: LCD (with touchscreen)
- → 📖 *Reference Manual* "Screen Input Operation"

J: Strap Holder (Both sides)
Mounting holder for a hand strap (optional).

K: DC-IN Jack DC IN 16V

L: VGA Port ▢
- → 📖 *Reference Manual* "External Display"

M: LAN Port 品
- → 📖 *Reference Manual* "LAN"

N: HDMI Port HDMI
- → 📖 *Reference Manual* "External Display"

O: USB 3.0 Port ss←
USB 3.0 Port (USB Charging) ss← CHARGE
- → 📖 *Reference Manual* "USB Devices"
- Keep USB memory cards away from infants and small children.
- Do not insert any foreign object in the USB port.

P: Microphone Jack 🎤
A condenser microphone can be used. If other types of microphones are used, audio input may not be possible, or malfunctions may occur as a result.
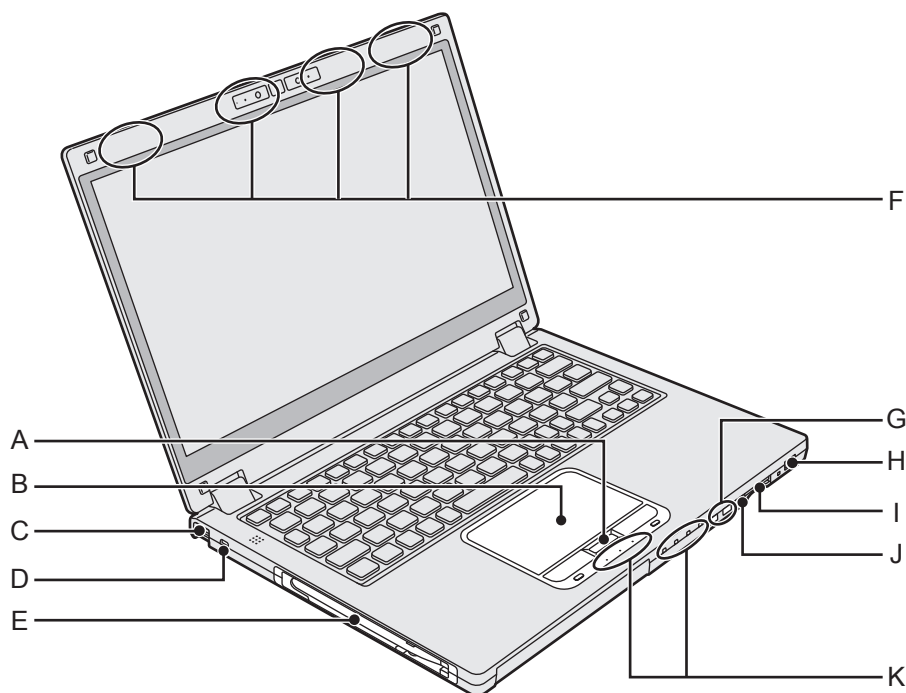
Q: Headphone Jack ∩
You can connect headphones or amplified speakers. When they are connected, audio from the internal speakers is not heard.

R: Wireless Switch
WIRELESS
- → 📖 *Reference Manual* "Disabling/ Enabling Wireless Communication"

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A: HOLD Button
You can press the HOLD button to disable the keyboard and touchpad or only the touchpad.

B: Touchpad
➜ ⌨ *Reference Manual* "Using the Touch Pad"

C: Strap Holder (Both sides)
Mounting holder for a hand strap (optional).

D: Security Lock
A Kensington cable can be connected. For further information, read the manual that comes with the cable.

E: Stylus Holder

F: Wireless Antenna
➜ ⌨ *Reference Manual* "Wireless LAN"
➜ ⌨ *Reference Manual* "Bluetooth"
➜ ⌨ *Reference Manual* "Wireless WAN
   <Only for model with wireless WAN>"*1

*1 Only for model with wireless WAN

G: Volume Button

H: Power Switch/Power Indicator ⏻
Off: Power off/Hibernation, Green: Power on, Blinking Green: Sleep, Blinking green rapidly: Cannot power on or resume due to low temperature.

I: SD Memory Card Slot ⚡ ▯
Keep SD Memory Cards away from infants and small children.
➜ ⌨ *Reference Manual* "SD Memory Card"

J: Rotation Lock Button 🔒
The Rotation Lock button allows you to lock the screen display.

K: LED Indicator
Ⓐ : Caps lock
HOLD: Hold Mode
① : Numeric Lock (NumLk)
🔋1 : Battery Indicator 1
🔋2 : Battery Indicator 2
➜ ⌨ *Reference Manual* "Battery Power"
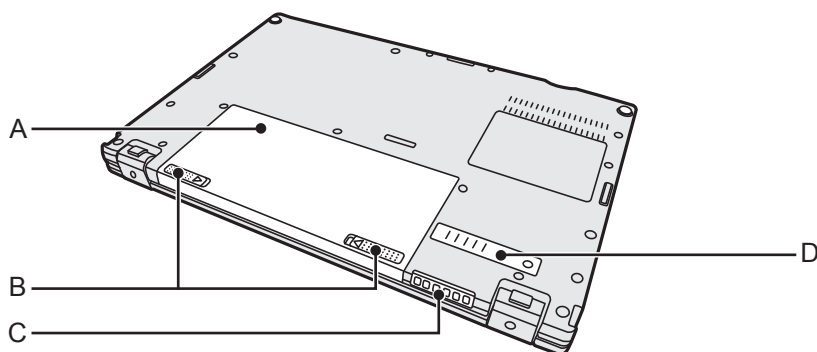🖫 : Drive Indicator
⌷SD : SD Memory Card Indicator
(Blinking: During access or a password is requested)
➜ ⌨ *Reference Manual* "SD Memory Card"

Description of Parts

Bottom side

A: **Battery Pack**
  ➜ 📖 *Reference Manual* "Battery Power"
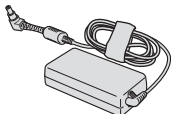B: **Battery Latch**
C: **Ventilation Hole (Exhaust)**
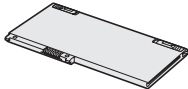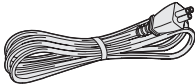D: **Dust Cover**

Getting Started

First-time Operation

■ **Preparation**

① Check and identify the supplied accessories.
  If you do not find the described accessories, contact your support office.

• **AC Adaptor. . . . . . . 1**   • **AC Cord . . . . 1**   • **Battery Pack 1**

Model No: CF-AA6413C

Model No: CF-VZSU92EA

• **Soft Cloth . . . . 1**   • **Stylus 1**

• **OPERATING INSTRUCTIONS - Basic Guide (This book). 1**
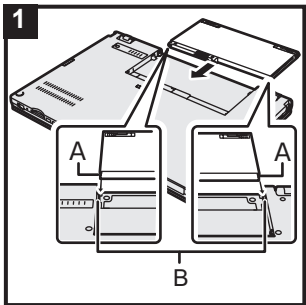
1   Insert the battery pack

Flip the computer over, and slide the battery pack in the direction of the arrow to install it.
Insert the battery pack so that the grooves on its left and right sides (A) align with the protrusions on the computer (B).

CAUTION
- Make sure the latch is securely locked. Otherwise the battery pack may fall when you carry the computer.
- Do not touch the terminals of the battery pack and the computer. Doing so can make the terminals dirty or damaged, and may cause malfunction of the battery pack and the computer.

First-time Operation
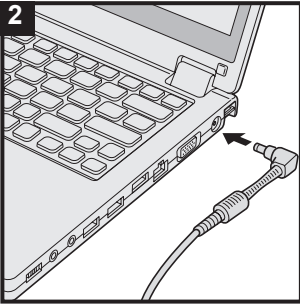
2   Connect your computer to a power outlet

The battery charging starts automatically.

CAUTION

● Do not disconnect the AC adaptor and do not switch the wireless switch to on until the first-time operation procedure is completed.
● When using the computer for the first time, do not connect any peripheral device except the battery pack and AC adaptor.
● **Handling the AC adaptor**
  Problems such as sudden voltage drops may arise during periods of thunder and lightning. Since this could adversely affect your computer, an uninterruptible power source (UPS) is highly recommended unless running from the battery pack alone.
● When the DC plug is not connected to the computer, disconnect the AC cord from your electrical outlet. Power is consumed simply by having the AC adaptor plugged into an electrical outlet.
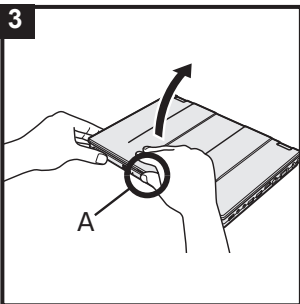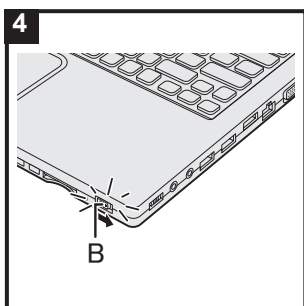

3   Open the display

Hold the computer by its sides, and open the display while holding (A).

CAUTION

● Do not apply excessive pressure to the LCD. Do not open or close the computer holding the edge of the LCD segment.

4   Turn on the computer

Slide and hold the power switch ⏻ (B) until the power indicator lights.

CAUTION

● Do not slide the power switch repeatedly.
● The computer will be forcibly turned off if you slide and hold the power switch for 4 seconds or longer.
● Once you turn off the computer, wait for 10 seconds or more before you turn on the computer again.
● Do not perform the following operation until the drive indicator ⊜ turns off.
  • Connecting or disconnecting the AC adaptor
  • Sliding the power switch
  • Touching the keyboard, touchpad, touchscreen <only for model with touchscreen> or external mouse
  • Closing the display
  • Turn on/off the wireless switch
● When the CPU temperature is high, the computer may not start up to prevent overheating of the CPU. Wait until the computer cools down, and then turn the power on again. If the computer does not power on even after cooling down, contact Panasonic Technical Support (➔ page 41).
● Any changes from the default setting of the Setup Utility must not be made until the First-time Operation is completed.

5   Windows 7
Select language and OS (32-bit or 64-bit)

CAUTION

● Carefully choose your language because you cannot change it later. If you set a wrong language, you need to reinstall Windows.

  ① Select language and OS (32-bit or 64-bit) on "Select OS" screen and click [OK].
  The language setting will start by clicking [OK] on the confirmation screen.
  The language and OS setting will be completed in about 15 minutes.
  ② When termination screen is displayed, click [OK] to turn off the computer.

Getting Started

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6	Setup Windows

Windows 8.1

Select language and click [Next].

Windows 7

Turn on the computer.

Follow the on-screen instructions.

● The computer restarts several times. Do not touch the keyboard or touchpad, and wait until the drive indicator 🖴 has turned off.
● After the computer is turned on, the screen remains black or unchanged for a while, but this is not a malfunction. Wait for a moment until the Windows setup screen appears.
● During setup of Windows, use the touchpad and clicking to move the pointer and to click an item.
● Setup of Windows will take approximately **Windows 8.1** 5 minutes / **Windows 7** 20 minutes.
  Go to the next step, confirming each message on the display.
● You can set the Wireless Network after the setup of Windows is complete.
  Windows 8.1 If "Get online" is displayed, select "Skip this step".
  Windows 7 "Join a wireless network" screen may not appear.
● **Windows 8.1** Verify the time zone, date and time.

CAUTION

● You can change the user name, password, image and security setting after setup of Windows.
● Remember your password. If you forget the password, you cannot use Windows. Creating a password reset disk beforehand is recommended.
● Use standard characters as a computer name: numbers 0 through 9, uppercase and lowercase letters from A to Z, and the hyphen (-) character. If the error message "The computer name is not valid" appears, check if characters other than the above are not entered. If the error message still remains on the display, set the key entry mode to English ("EN") and enter characters.

<For MUI OS model>

● When setting up the keyboard, choose the appropriate one to your computer.
  Otherwise, input by the keyboard may become unavailable.
● Do not use the following words and characters for user name: CON, PRN, AUX, CLOCK$, NUL, COM1 to COM9, LPT1 to LPT9, LPT, @, &, space. In particular, if you create a user name (account name) that includes the "@" mark, a password will be requested at the log-on screen, even if no password has been set. If you try to log on without entering a password, "The user name or password is incorrect." may be displayed and you will not be able to **Windows 8.1** sign in / **Windows 7** log on to Windows (➜ page 30).

7   Create a recovery disc

A recovery disc allows you to install OS and restore its factory default condition, in case, the recovery partition of the HDD is damaged.

We recommend creating a recovery disc before you begin using the computer.

Refer to ➜ 📖 *Reference Manual* "Recovery Disc Creation Utility" about creating the disc.

Getting Started

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First-time Operation

NOTE

● **PC Information Viewer**

This computer periodically records the management information of the hard disk, etc.
The maximum data volume for each record is 1024 bytes.
This information is only used for estimating the cause in the case when the hard disk goes down by any possibility. They are never sent to outside via network nor used for any other purpose except for the purpose described the above.
To disable the function, add the check mark for [Disable the automatic save function for management information history] in [Hard Disk Status] of PC Information Viewer, and click [OK].
(➜ 🕮 *Reference Manual* "Troubleshooting (Advanced)" - "Checking the Computer's Usage Status")
Then follow the on-screen instructions.

<For MUI OS model>

● **Windows 8.1** In the default settings, a shortcut icon for Korean language is on the Desktop screen. You may delete the icon if not necessary.
● **Windows 7** If the recovery partition is deleted, you cannot create Recovery Disc(s).

■ **Before using wireless function**

① Open the cover, and then Slide the wireless switch to ON.
Windows 8.1
② Display "Charm" and click 🔧 - [Change PC Settings] - [Network] - [Airplane mode].
  Set [Airplane mode] to [Off], and then;
  Set [Wi-Fi] to [On] (for wireless LAN).
  Set [Bluetooth] to [On] (for Bluetooth).
 <Only for model with wireless WAN>
  Set [Mobile broadband] to [On] (for wireless WAN).
 <Only for model with wireless WAN>
  Set [GPS] to [On] (for wireless WAN).

■ **To change the partition structure**

You can shrink a part of an existing partition to create unallocated disk space, from which you can create a new partition.
In the default setting, you can use a single partition.

① **Windows 8.1**
 Right-click 🪟 at the bottom left corner of the Desktop screen.
 Windows 7
 Click 🪟 (Start) and right-click [Computer], then click [Manage].
 ● A standard user needs to enter an administrator password.
② Click [Disk Management].
③ Right-click the partition for Windows ("c" drive in the default setting), and click [Shrink Volume].
 ● The partition size depends on the computer specifications.
④ Input the size in [Enter the amount of space to shrink in MB] and click [Shrink].
 ● You cannot input a larger number than the displayed size.
 ● To select [Reinstall Windows to the OS related partitions] in installing OS (➜ page 23),
  Windows 8.1 100 GB / **Windows 7** 60 GB or more is necessary for [Total size after shrink in MB].
⑤ Right-click [Unallocated] (the shrunk space in the step ④) and click [New Simple Volume].
⑥ Follow the on-screen instructions to make the settings, and click [Finish].
 Wait until formatting is completed.

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● You can create an additional partition using remaining unallocated space or newly creating unallocated space.
● To delete a partition, right-click the partition and click [Delete Volume] in the step ③.

■ **Windows 8.1 <For MUI OS model> To select language**

To select a language other than the one you have selected during the first-time operation, follow the steps below.

① Perform either of the following procedures.
   ● Right-click ⊞ at the bottom left corner of the Desktop screen.
   ● Click ⊕ on the Start screen.
② Click [Control Panel].
③ Click [Clock, Language, and Region] - [Language] - [Add a language].
④ Select a language, and then click [Add].
   Depending on the region, 2 or more languages are selectable. Click [Open] and select the desired language, and then click [Add].
⑤ Click [Options] for the language you want to use.
⑥ Click [Make this the primary language].

● If [Make this the primary language] is not displayed, you cannot change to this language. Follow the on-screen instructions.

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⑦ Click [Log off now].
⑧ Sign in to the Windows.

Turning On / Turning Off

Turning On

Slide and hold the power switch ⏻ (➔ page 5) until the power indicator (➔ page 5) lights.

NOTE
- Do not slide the power switch repeatedly.
- The computer will forcibly be turned off if you slide and hold the power switch for 4 seconds or longer.
- Once you turn off the computer, wait for 10 seconds or more before you turn on the computer again.
- Do not perform the following operation until the drive indicator ⊟ turns off.
  - Connecting or disconnecting the AC adaptor
  - Sliding the power switch
  - Touching the keyboard, touchpad, touchscreen <only for model with touchscreen> or external mouse
  - Closing the display
  - Turn on/off the wireless switch

Turning Off

Windows 8.1

You can shut down the computer by using either of the following steps.
- From the Desktop screen:
  ① Right-click ⊞ at the bottom left corner of the Desktop screen.
  ② Click [Shut down or sign out] - [Shut down].
- From the Start screen:
  ① Click ⏻ - [Shut down].
- Both the Start screen and Desktop screen:
  ① Display "Charm" and click ⚙.
  ② Click [Power] - [Shut down].

Windows 7
  ① Click ⊕ (Start) - [Shutdown].

NOTE
- Windows 8.1

  To turn off the computer completely, proceed as follows.
  ① Display "Charm" and click ⚙ - [Change PC settings] - [Update and recovery] - [Recovery].
  ② Click [Restart now] under "Advanced startup".
  ③ Click [Turn off your PC].

Precautions against Starting Up/Shutting Down

● Do not do the following
  • Connecting or disconnecting the AC adaptor
  • Sliding the power switch
  • Touching the keyboard, touchpad, touchscreen <only for model with touchscreen> or external mouse
  • Closing the display
  • Turn on/off the wireless switch

NOTE

● To conserve power, the following power saving methods are set at the time of purchase.
  • The screen automatically turns off after :
    10 minutes (when AC adaptor is connected) of inactivity
    5 minutes (when operating on battery power) of inactivity
  • The computer automatically enters sleep[*1] after :
    20 minutes (when AC adaptor is connected) of inactivity
    15 minutes (when operating on battery power) of inactivity
[*1] Refer to 📖 *Reference Manual* "Sleep or Hibernation Functions" about resuming from sleep.

Getting Started

Handling and Maintenance

Operation environment

- Place the computer on a flat stable surface not subject to shock, vibration, and danger of dropping. Do not place the computer upright or turn it over. If the computer is exposed to an extremely strong impact, it may become damaged.
- Temperature: Operation : 5 °C to 35 °C
  - Storage : -20 ℃ to 60 ℃
  - Humidity: Operation : 30 % to 80 % RH (No condensation)
  - Storage : 30 % to 90 % RH (No condensation)

  Even within the above temperature/humidity ranges, operation for a long time in extreme environments, smoking nearby, or operation in places where oil is used or where there is a lot of dust will result in the product deterioration and will shorten the product life.
  - Be sure to use the computer in an environment with sufficient heat ventilation.
    - Avoid using the computer on a highly heat retentive surfaces (e.g., rubber pads and blankets). If possible, use the computer on surfaces that can dissipate heat, such as a steel desk.
    - Do not cover the computer with towels, keyboard covers, etc., as this prevents heat dissipation.
    - When using the computer, always keep the display open. (Note, however, that closing the display while the computer is in use does not cause generation of heat, ignition, or other malfunctions.)
- Do not place the computer in the following areas, otherwise the computer may be damaged.
  - Near electronic equipment. Image distortion or noise may occur.
  - In extremely high or low temperature.
- As the computer can become hot during operation, keep it away from items that are sensitive to heat.

Handling cautions

This computer is designed to minimize shock to parts such as the LCD and the hard disk drive and equipped with a drip-proof keyboard, but no warranty is provided against any trouble caused by shock. Be extremely careful when handling the computer.
- Always place your computer on a level, stable surface.
- Avoid physical shock and pressure.
- When carrying the computer:
  - Turn off the computer.
  - Remove all external devices, cables, PC Cards and other protruding objects.
  - Do not drop or hit the computer against solid objects.
  - Do not leave the display open.
  - Do not pick up or hold the computer by the display part.

Correct   Incorrect   Incorrect

  - Use a carrying case that provides adequate cushioning and protection. Do not pack your computer in a tightly-packed suitcase or bag. Placing your computer under physical stress may damage or deform your computer.
- Do not put anything (e.g., a piece of paper) between the display and keyboard.
- When you board an airplane, take the computer with you and never put it in your checked luggage. When using the computer on airplane, follow the airline's instructions.
- When carrying a spare battery, put it in a plastic bag to protect its terminals.

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● This computer contains a magnet and magnetic products at the locations circled in the illustration at the right. Avoid leaving metallic object or magnetic media in contact with these areas.
● Do not place an object containing magnetic power to the (A) portions. Doing so may cause the computer to detect mistakenly that the display is closed, and as a result, the display may go out and the computer may enter sleep.
● The touchpad is designed to be used by fingertip. Do not place any object on its surface and do not press down strongly with sharp-pointed or hard objects that may leave marks (e.g., nails, pencils and ball point pens).
● Avoid any harmful substances such as oil from getting into the touchpad. The pointer may not work correctly.
● If the computer is being carried in a soft bag with the battery pack removed, avoid undue pressure on the body of the computer in a crowded place, etc., as this may result in damage to the LCD.
● Be careful not to get injured by dropping or getting hit when carrying the computer.
<Only for model with touchscreen>
● Use only the pen to touch the screen. Do not place any object on its surface and do not press down strongly with sharp-pointed or hard objects that may leave marks (e.g., nails, pencils and ball point pens).
● Do not use the screen when dust or dirt (e.g., oil) is on the screen. Otherwise foreign particles on the screen/pen can scratch the screen surface or obstruct the pen operation.
● Use the pen only for touching the screen. Using it for any other purpose may damage the pen and result in scratches on the screen.

■ **When the battery indicator does not light on**

The battery indicator may not light on even if the AC adaptor and the battery pack are correctly connected to the computer, due to the following reasons.
● The AC adaptor's protection function may be working. In this case, pull out the AC cord and wait for more than 1 minute before reconnecting the AC cord.

■ **If the computer becomes warm during usage**

● Click ◢ on the notification area, click 📄, and click [Panasonic Power management (Better Heat Dispersion)].
   • When changing to [Panasonic Power management (Better Heat Dispersion)], the following settings will change.
     - Change to [High Speed] from [Standard] in [Fan control mode].
       Rotation of the cooling fan will become faster and the computer can be cooled down. Note that the battery operating time will be shorter.
     - Switch the screen saver to [Prohibited].
     - Other setting changes such as the lowering of the internal LCD brightness.
   • When you do not frequently use CPU or the rotation noise of the fan bothers you, set [Standard] or [Low Speed] in [Fan control mode].
● If you are not using a wireless LAN, turn the wireless LAN off.
● Clean the inside of the dust cover once a month. (➜ page 19)

Useful Information

Handling and Maintenance

■ **When using peripheral devices**

Follow these instructions and the Reference Manual to avoid any damage to the devices.
Carefully read the instruction manuals of the peripheral devices.
● Use the peripheral devices conforming to the computer's specifications.
● Connect to the connectors in the correct direction.
● If it is hard to insert, do not try forcibly but check the connector's shape, direction, alignment of pins, etc.
● If screws are included, fasten them securely.
● Remove the cables when you carry the computer. Do not pull the cables forcibly.

■ **Preventing your computer from unauthorized use via wireless LAN/Bluetooth/ wireless WAN**

<Only for model with wireless LAN/Bluetooth/wireless WAN>
● Before using wireless LAN/Bluetooth/wireless WAN, make the appropriate security settings such as data encryption.

■ **Battery Recalibration**

● The battery recalibration may take a long time due to the large battery capacity. This is not a malfunction. (➔ page 37)

■ **Battery duration**

● Note that the computer consumes electricity even when the computer power is off. (➔ page 37)

Maintenance

To clean the LCD panel
If drops of water or other stains get on the surface of the LCD panel, wipe them off immediately.
Failure to do so may result in staining.

<Only for model with touchscreen>
Use the soft cloth included with the computer. (For further information, refer to "Suggestions About Cleaning the LCD Surface". 📖 *Reference Manual* "Screen Input Operation")

<Only for model without touchscreen>
Wipe with a soft dry cloth such as gauze.

To clean areas other than the LCD panel
Wipe with a soft dry cloth such as gauze. When using detergent, dip a soft cloth in water-diluted detergent and wring it thoroughly.

CAUTION
● Do not use benzene, thinner, or rubbing alcohol since it may adversely affect the surface causing discoloration, etc. Do not use commercially-available household cleaners and cosmetics, as they may contain components harmful to the surface.
● Do not apply water or detergent directly to the computer, since liquid may enter inside of the computer and cause malfunction or damage.

Useful Information

To clean the inside of the dust cover

Clean the inside of the dust cover once a month.

① Turn off the computer, and disconnect the AC adaptor.
② Close the display, and turn the computer over.
③ Remove the battery pack.
④ Remove the screw (B), and remove the dust cover (C) in the direction of the arrow.
⑤ Clean the inside of the dust cover.
⑥ After cleaning, reset the dust cover (C), and secure the screw (B).

C   B
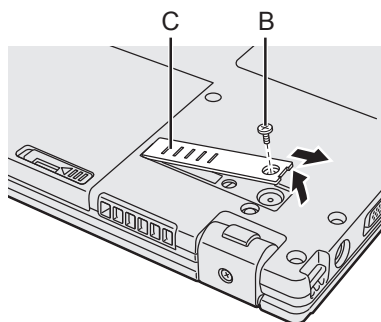
CAUTION

● If dust is piled up inside the dust cover and hard to remove, use an electric cleaner.
  Be careful not to inhale dust.
● Make sure no water or other liquid spills inside the dust cover, and pay attention not to drop the screw inside the dust cover.

Dispose of Computer

■ **Preparation**

● Remove all peripherals and SD memory card, etc.
● Erase the stored data. (➔ 📖 *Reference Manual* "Hard Disk Data Erase Utility")

<Only for model with Built-in Bridge Battery>
<For Europe and U.S.A./Canada>

Attention Customers
Don't remove the battery by yourself. The battery must be removed by qualified professionals.
When disposing of this product, be sure to contact qualified professionals to remove the battery.

Attention Qualified professionals to remove the battery
Dispose of this product correctly in accordance with the local regulations after removing the battery as shown in the following procedure.

CAUTION
● Never disassemble the computer except before disposal.
● Refer to the precautions when disposing of the computer
 (➔ OPERATING INSTRUCTIONS - Read Me First).

Handling and Maintenance

■ **Remove the built-in battery**

1. Turn off the computer, and disconnect the AC adaptor.
   Do not remove the built-in battery when the computer is in the sleep/hibernation mode.

2. While pressing the HOLD button, slide and hold the power switch for 5 seconds or longer.
   This operation will stop the output from the built-in battery.

3. Flip the computer over, remove the main battery pack.
   While sliding the right and left latches to the direction to unlock them, lift up the battery pack slightly, and remove it. (➔ page 7)

4. Remove the screws, and then remove the cover.
   Remove all the screws on the bottom.
   Note that the screw in the position (D) does not need to be removed.
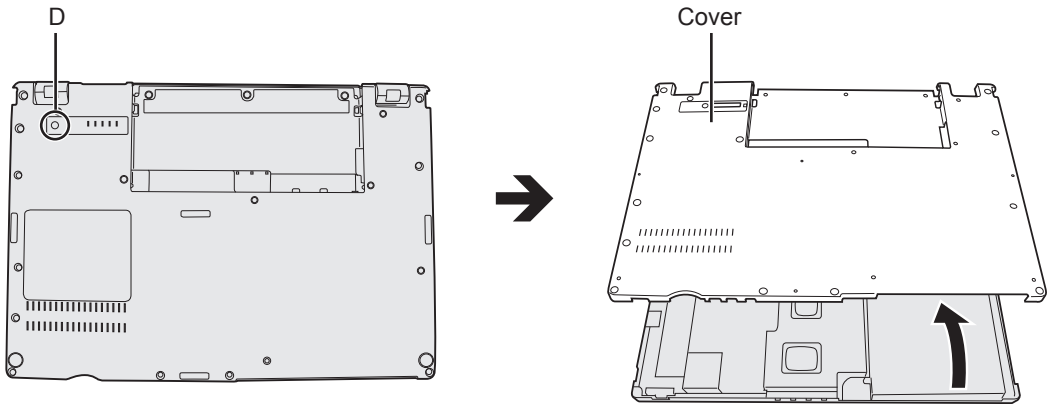
5. Remove the connector, and then remove the battery.

20
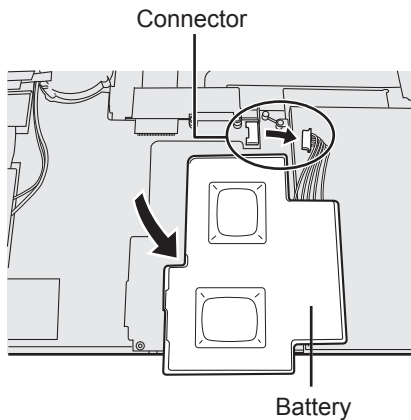
Installing Software

Installing software will return the computer to the default condition. When you install the software, the hard disk data will be erased.
Back up important data to other media or an external hard disk before installation.

CAUTION
● Do not delete the Recovery Partition on the hard disk. The disk space in the partition is not available to store data.
  To check the Recovery Partition, perform the following methods.
  ① **Windows 8.1**
     Right-click ⊞ at the bottom left corner of the Desktop screen.
     Windows 7
     Click ⊕ (Start) and right-click [Computer], then click [Manage].
     ● A standard user needs to enter an administrator password.
  ② Click [Disk Management].

■ **Windows 8.1** Remove everything and reinstall Windows

Preparation
  ● Remove all peripherals and SD memory card, etc.
  ● Connect the AC adaptor and do not remove it until installation is complete.

1   Perform "Remove everything and reinstall Windows".
  ① Display "Charm" and click ⚙ - [Change PC settings] - [Update and recovery] - [Recovery].
  ② Click [Get Started] under "Remove everything and reinstall Windows".
  ③ Click [Next].
  ④ Select the option.
     ● Just remove my files
        Perform the reinstallation of the Windows in a few moments (Approximately 20 minutes).
     ● Fully clean the drive
        By fully cleaning, the deleted files can not be recovered easily and the security level will be increased. The processing time will be longer (Approximately 140 minutes).
     Follow the on-screen instructions.
     After the reinstallation, the computer will restart.
  ● Do not interrupt installation, for example by turning off the computer or performing other operation.
     Otherwise installation may become unavailable as Windows may not start up or the data may be corrupted.

2   Perform the "First-time Operation" (➔ page 10).

  NOTE
  ● The date and time, and the time zone may not be correct. Be sure to set them correctly.

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3   Perform Windows Update.

4   <Only for model with TPM> Clear TPM.
  ① Perform either of the following procedures.
     ● Right-click ⊞ at the bottom left corner of the Desktop screen.
     ● Click ⊙ on the Start screen.
  ② Click [Run], then input [tpm.msc] and click [OK].
  ③ Click [Clear TPM…] under "Actions" on the right of the "TPM Manager on Local Computer" screen.

Useful Information

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④ Click [Restart] of the "Manage the TPM security hardware" screen.
The computer will restart.
⑤ When "TPM configuration change was requested to ..." is displayed, press $\overline{\text{F12}}$.
⑥ Click the Desktop tile, and when "TPM is ready" appears, click [Close].

■ **Disk recovery**

You can reinstall the OS that was pre-installed at the time of purchase (Windows 8.1 or Windows 7).
Windows 8.1 If reinstallation using the method described in "Remove everything and reinstall Windows" is not successful, follow the steps below.
Preparation
● Remove all peripherals and SD memory card, etc.
● Connect the AC adaptor and do not remove it until installation is complete.

1   Start the Setup Utility.
Windows 8.1
① Display "Charm", and click ▣ - [Change PC settings] - [Update and recovery] - [Recovery].
② Click [Restart now] under "Advanced startup".
③ Click [Troubleshoot] - [Advanced options] - [UEFI Firmware Settings] - [Restart].
Windows 7
Turn on the computer, and press $\overline{\text{F2}}$ or $\overline{\text{Del}}$ while [Panasonic] boot screen is displayed.
● If the [Panasonic] boot screen is not displayed, turn on the computer while holding down $\overline{\text{F2}}$ or $\overline{\text{Del}}$.
● If the password is requested, enter the Supervisor Password.

2   Write down all of the contents of the Setup Utility and press $\overline{\text{F9}}$.
At the confirmation message, select [Yes] and press $\overline{\text{Enter}}$.

3   Check the [UEFI Boot] setting of the Setup Utility.
Check the [UEFI Boot] setting of the Setup Utility.
[UEFI Boot] should be set to as follows.
When installing Windows 8.1 : [Enabled]
When installing Windows 7   : [Disabled]

4   Press $\overline{\text{F10}}$.
At the confirmation message, select [Yes] and press $\overline{\text{Enter}}$.
Computer will restart.

5   Press $\overline{\text{F2}}$ or $\overline{\text{Del}}$ while [Panasonic] boot screen is displayed.
The Setup Utility starts up.
● If the password is requested, enter the Supervisor Password.

6   Select the [Exit] menu, then select [Recovery Partition] and press $\overline{\text{Enter}}$.

7   Windows 8.1
Click [Next] and click [YES].
Windows 7
Click [Reinstall Windows] and click [Next].

8   At the License Agreement screen, click [Yes, I agree to the provisions above and wish to continue!] and click [Next].

9 Click [Next].

<Only for model with onboard drive>

If the installation drive is displayed, confirm it.

If the option is displayed, select the setting and click [Next].

● [Initialize and reinstall Windows to the whole Disk]
  Select this option when you want to install Windows to the factory default. After installation, you can create a new partition. For how to create a new partition, refer to "To change the partition structure" (➔ page 12).

● [Reinstall Windows to the OS related partitions][1]
  Select this option when the hard disk has already been divided into several partitions and you want to keep the partition structure. For how to create a new partition, refer to "To change the partition structure" (➔ page 12).

  [1] This does not appear if Windows cannot be installed to the recovery partition and the area usable by Windows.

10 ⟨Windows 7⟩ **At the confirmation message, click [YES].**

11 ⟨Windows 7⟩

<For localized OS model>
Select OS (32bit or 64bit) and click [OK].
<For MUI OS model>
Select language and system type (32bit or 64bit), then click [OK].

At the confirmation message, click [OK].

To cancel the recovery procedure, click [CANCEL], and click the [✕] mark that appear the top right corner of the screen.

12 At the confirmation message, click [YES].

Installation starts according to the instructions on the screen. (It will take approximately 20 minutes.)

● Do not interrupt installation, for example by turning off the computer or performing other operation.
  Otherwise installation may become unavailable as Windows may not start up or the data may be corrupted.

13 When Ending process screen is displayed, click [OK] to turn off the computer.

14 Turn on the computer.

● If the password is requested, enter the Supervisor Password.

15 Perform the "First-time Operation" (➔ page 10).

NOTE

● ⟨Windows 8.1⟩ The date and time, and the time zone may not be correct. Be sure to set them correctly.

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16 Start the Setup Utility and change the settings as necessary.

17 Perform Windows Update.

18 ⟨Windows 8.1⟩ **<Only for model with TPM> Clear TPM (➔ page 21).**

Installing Software

■ Using Recovery Disc

Use the Recovery Disc in the following conditions.
- You have forgotten the administrator password.
- Installation is not complete. The recovery partition in the hard disk may be broken.
- **Windows 7** <Only for Windows 7 downgrade model>
  To change OS from Windows 7 to Windows 8.1, or vice versa.

NOTE

● **Windows 7** To change OS from 32 bit to 64 bit, or vice versa, install OS using the recovery partition in the hard disk.

Preparation
- ● Prepare the following items:
  - • Recovery Disc (**Windows 8.1** USB memory device can also be used as a recovery disc.)
    (➔ 📖 *Reference Manual* "Recovery Disc Creation Utility")
  - • Commercially available optical drive
- ● Remove all peripherals and SD memory card, etc. (except for the commercially available optical drive)
- ● Connect the AC adaptor and do not remove it until installation is complete.

1   Connect the commercially available optical drive to the USB port.

2   Start the Setup Utility.

Windows 8.1
① Display "Charm", and click ⚙ - [Change PC settings] - [Update and recovery] - [Recovery].
② Click [Restart now] under "Advanced startup".
③ Click [Troubleshoot] - [Advanced options] - [UEFI Firmware Settings] - [Restart].

Windows 7
Turn on the computer, and press **F2** or **Del** while [Panasonic] boot screen is displayed.
- ● If the [Panasonic] boot screen is not displayed, turn on the computer while holding down **F2** or **Del**.
- ● If the password is requested, enter the Supervisor Password.

3   Write down all of the contents of the Setup Utility and press F9.

At the confirmation message, select [Yes] and press **Enter**.

4   Check the [UEFI Boot] setting of the Setup Utility.

[UEFI Boot] should be set to as follows.
When the recovery disc for Windows 8.1 is used : [Enabled]
When the recovery disc for Windows 7 is used   : [Disabled]

5   Set the Recovery Disc into the CD/DVD drive or commercially available optical drive.

6   Press F10.

At the confirmation message, select [Yes] and press **Enter**.
Computer will restart.

7 **Press $\overline{\text{F2}}$ or $\overline{\text{Del}}$ while [Panasonic] boot screen is displayed.**

The Setup Utility starts up.
● If the password is requested, enter the Supervisor Password.

8 **Select the [Exit] menu, then select CD/DVD drive or commercially available optical drive in [Boot Override] and press $\overline{\text{Enter}}$.**

The computer will restart.

9 **Click [Reinstall Windows] and click [Next].**

10 **Windows 8.1 At the confirmation message, click [YES].**

11 **At the License Agreement screen, click [Yes, I agree to the provisions above and wish to continue!] and click [Next].**

12 **Windows 7 <For MUI OS model>**
Click [Next].

If the option is displayed, select the setting and click [Next].
● [Reinstall with HDD recovery partition.]
Standard recovery method.
You can use recovery from Recovery Partition.
● [Reinstall without HDD recovery partition.]
Increase usable HDD size.
You can NOT use recovery from Recovery Partition.
When this option is selected, you can no longer create Recovery Disc(s) after the recovery operation.

CAUTION
● Carefully choose above item because you cannot change it later.

13 **Click [Next].**

<Only for model with onboard drive>
If the installation drive is displayed, confirm it.
If the option is displayed, select the setting and click [Next].
● [Initialize and reinstall Windows to the whole Disk]
Select this option when you want to install Windows to the factory default. After installation, you can create a new partition. For how to create a new partition, refer to "To change the partition structure" (➔ page 12).
● [Reinstall Windows to the OS related partitions][2]
Select this option when the hard disk has already been divided into several partitions and you want to keep the partition structure. For how to create a new partition, refer to "To change the partition structure" (➔ page 12).
[2] This does not appear if Windows cannot be installed to the recovery partition and the area usable by Windows.

Installing Software

14   At the confirmation message, click [YES].

Installation starts according to the instructions on the screen. (It will take approximately 30 - 45 minutes.)

● Do not interrupt installation, for example by turning off the computer or pressing **Ctrl** + **Alt** + **Del**.
Otherwise installation may become unavailable as Windows may not start up or the data may be corrupted.

15   Windows 7 <For MUI OS model>
Select language and system type (32bit or 64bit), then click [OK].

At the confirmation message, click [OK].
To cancel the recovery procedure, click [CANCEL], and click the [x] mark that appear the top right corner of the screen.

Windows 7 / Windows 8.1
Installation starts according to the instructions on the screen. (It will take approximately 30 - 45 minutes.)

● Do not interrupt installation, for example by turning off the computer or pressing **Ctrl** + **Alt** + **Del**.
Otherwise installation may become unavailable as Windows may not start up or the data may be corrupted.

16   When Ending process screen is displayed, remove the Recovery Disc and CD/DVD drive or commercially available optical drive and then click [OK].

Follow the on-screen instructions.
Some models may take approximately 40 minutes.

17   Perform the "First-time Operation" (➜ page 10).

18   Start the Setup Utility and change the settings as necessary.

19   Perform Windows Update.

20   Windows 8.1 <Only for model with TPM> Clear TPM (➜ page 21).

Troubleshooting (Basic)

Follow the instructions below when a problem has occurred. There is also an advanced troubleshooting guide in the "Reference Manual". For a software problem, refer to the software's instruction manual. If the problem persists, contact Panasonic Technical Support. You can also check the computer's status in the PC Information Viewer (➔ 📖 *Reference Manual* "Troubleshooting (Advanced)").

■ Starting Up

The computer does not power on / The power status indicator or battery indicator is not lit.	● Connect the AC adaptor. ● Insert a fully charged battery. ● Remove the battery pack and the AC adaptor, then connect them again. ● When the CPU temperature is high, the computer may not start up to prevent overheating of the CPU. Wait until the computer cools down, and then turn the power on again. If the computer does not power on even after cooling down, contact your technical support office. ● Pull out the AC cord and wait for more than 1 minute to reconnect the AC cord.
Windows does not start up.	● Remove all peripheral devices (e.g. USB memory). ● If the power status indicator is lit, slide the power switch for 4 seconds or longer to turn off, then turn on again. ● **Windows 7** Using the following procedure, start up in Safe Mode, and check the error details. 　① Turn on the computer, and when the [Panasonic] boot screen disappears (after entering the password*1 if one is set) hold down **F8**. 　② Release your finger when [Windows Advanced Options Menu] is displayed, and with **↑** or **↓**, select [Safe Mode], then press **Enter**. 　Follow the on-screen instructions. *1 Supervisor Password or User Password set with the Setup Utility ● Press **F9** in the Setup Utility to return the Setup Utility settings (excluding the passwords) to the default values. Start the Setup Utility and make the settings again. ● Check the [UEFI Boot] setting of the Setup Utility. [UEFI Boot] should be set to **Windows 8.1** [Enabled] / **Windows 7** [Disabled].
After adding or changing the RAM module, the power is turned on but nothing is displayed on the screen.	● Turn off the computer and remove the RAM module, then confirm whether the RAM module has conformed to specification. When the RAM module has conformed to specification, install it again.

Troubleshooting (Basic)

■ **Starting Up**

You have forgotten the password.	● Supervisor Password or User Password: Contact Panasonic Technical Support.
	● Administrator password:
	  • If you have another account with Administrator authority, log-on with it, then delete the password for the problem account.
	  • If you have a password reset disk, click [Reset password] displayed after the password input error, then follow the on-screen instructions and set a new password.
	If you cannot do either of the above, you will need to reinstall (→ page 21) and setup Windows.

"Remove disks or other media. Press any key to restart" or a similar message appears.	● A floppy disk in the drive or USB memory is connected, and it does not contain system startup information. Remove the floppy disk and USB memory, then press any key. ● If a device is connected to the USB port, disconnect the device, or set [USB Port] or [Legacy USB Support] to [Disabled] in the [Advanced] menu of the Setup Utility. ● If the problem persists after removing the disk, it may be a flash memory drive failure. Perform the installation and return the flash memory drive to its condition at the time of purchase. (→ page 21) If the problem persists even after the reinstallation, contact Panasonic Technical Support.

The date and time are incorrect.	● Make the correct settings.
	  ① Open the Control Panel.
	    (Windows 8.1)
	    1. Perform either of the following procedures.
	      ● For the desktop screen:
	        Right-click ▦ at the bottom left corner of the Desktop screen.
	      ● For the Start screen:
	        Click ⊕ on the Start screen.
	    2. Click [Control Panel].
	    (Windows 7)
	    Click ⊕ (Start) - [Control Panel].
	  ② Click [Clock, Language, and Region] - [Date and Time].
	  ③ Click [Change time zone…].
	  ④ Select the time zone, then click [OK].
	  ⑤ Click [Change date and time…], then set the date and time.
	● If the problem persists, the internal clock battery may need to be replaced. Contact Panasonic Technical Support.
	● When the computer is connected to LAN, check the date and time of the server.
	● The 2100 A.D. or later year will not be correctly recognized on this computer.

[Executing Battery Recalibration] screen appears.	● The Battery Recalibration was canceled before Windows was shut down last time. To start up Windows, turn off the computer by the power switch, and then turn on.

■ **Starting Up**

[Enter Password] does not appear when resuming from sleep / hibernation.	● Select [Enabled] in [Password On Resume] in the [Security] menu of the Setup Utility (➔ 📖 *Reference Manual* "Setup Utility"). ● The Windows password can be used instead of the password set in the Setup Utility. ① Open the Control Panel. 　**Windows 8.1** 　1. Perform either of the following procedures. 　　● For the desktop screen: 　　　Right-click ⊞ at the bottom left corner of the Desktop screen. 　　● For the Start screen: 　　　Click ⊙ on the Start screen. 　2. Click [Control Panel]. 　**Windows 7** 　Click 🪟 (Start) - [Control Panel]. ② **Windows 8.1** 　Click [System and Security] - [Power Option] - [Require a password on wakeup] and add a check mark for [Require a password]. 　**Windows 7** 　Click [System and Security] - [Power Option] - [Require a password when the computer wakes] and add a check mark for [Require a password].
The computer will not automatically enter sleep or hibernation.	● If you connect to a network using wireless LAN function, perform access point settings. (➔ 📖 *Reference Manual* "Wireless LAN") ● If you do not use wireless LAN function, turn off wireless LAN function. (➔ 📖 *Reference Manual* "Disabling/Enabling Wireless Communication") ● Make sure that you are not using any software that regularly accesses the hard disk.
When logging on (e.g., resuming the computer), audio is distorted.	● Perform the following steps to change the audio settings to prevent audio output. 　**Windows 8.1** ① Click the [Desktop] tile on the Start screen. ② Right-click the desktop and click [Personalize] - [Sound]. ③ Remove the check mark from [Play Windows Startup sound], and click [OK]. 　**Windows 7** ① Right-click the desktop and click [Personalize] - [Sounds]. ② Remove the check mark from [Play Windows Startup sound], and click [OK].
Cannot resume.	● One of the following operations may have been carried out. Slide the power switch to turn on the computer. Data not saved will be lost. • In sleep mode, the AC adaptor or battery pack was disconnected, or a peripheral was connected or disconnected. • The power switch was slid for 4 seconds or longer to forcibly turn off the computer.

Troubleshooting

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Troubleshooting (Basic)

■ Starting Up

Other startup problems.	● Check to see if there was a disk error.
	  ① Remove all peripheral devices including an external display.
	  ② **Windows 8.1**
	    Perform either of the following procedures.
	    ● For the desktop screen:
	      1. Right-click ⊞ at the bottom left corner of the Desktop screen.
	      2. Click [File Explorer].
	    ● For the Start screen:
	      1. Right-click ⊙ on the Start screen.
	      2. Click [PC].
	    Windows 7
	    Click ⊕ (Start) - [Computer].
	  ③ **Windows 8.1** Right-click [Windows (C:)], and click [Properties].
	    Windows 7 Right-click [Local Disc (C:)], and click [Properties].
	  ④ **Windows 8.1**
	    Click [Tools] - [Check].
	    Windows 7
	    Click [Tools] - [Check Now...].
	    • A standard user needs to enter an administrator password.
	  ⑤ Follow the on-screen instructions.
	● **Windows 7**
	  Start the computer in Safe Mode and check the error details.
	  (➜ page 27 "Windows does not start up".)

■ Entering Password

Even after entering the password, password input screen is displayed again.	● The computer may be in ten-key mode. If the NumLk indicator ① lights, press **NumLk** to disable the ten-key mode, and then input. ● The computer may be in Caps Lock mode. If the Caps Lock indicator Ⓐ lights, press **Caps Lock** to disable the Caps Lock mode, and then input.
Cannot log on to Windows. ("The user name or password is incorrect" is displayed.)	● The user name (account name) includes the "@" mark. If another user account exists: Log on to Windows using another user account, and delete the account that includes "@". Then create a new account. If no other account exists: You need to reinstall Windows (➜ page 21).

■ Shutting down

Windows does not shut down.	● Remove all peripheral devices. ● Wait one or two minutes. It is not a malfunction.

Troubleshooting

■ **Display**

When the screen becomes black for a moment.	● When you set [Display power saving function] of Power Plan Extension Utility to [Enabled], if you do the following operations, the screen becomes black for a moment, but this is not a malfunction. You can use it. • Adjust the brightness of the screen with **Fn** + **F1** / **Fn** + **F2**. • Remove and insert the AC adaptor. While you are using motion video playback software, benchmark software for graphic, if error screen is displayed or application software does not function normally, set [Display power saving function] to [Disabled].
No display.	● The external display is selected. Press **Fn** + **F3** (or ⊞ + **P**) to switch the display. **Windows 7** Wait until the display has been switched completely before pressing **Fn** + **F3** (or ⊞ + **P**) again. **Windows 8.1** Then click the display mode. ● The display is turned off by the power-saving function. To resume, do not press the direct selection keys, but press any other key like **Ctrl**. ● The computer entered sleep or hibernation by the power-saving function. To resume, slide the power switch. ● The screen may become darker. Press **Fn** + **F2** to make the screen brighter.

The screen is disordered.	● Changing the number of display colors and resolution may affect the screen. Restart the computer.
	● The refresh rate of the internal LCD may be 40 Hz. Change the refresh rate of the internal LCD.
	① **Windows 8.1**
	  1. Click the [Desktop] tile on the Start screen.
	  2. Right-click on the desktop, and click [Graphics Properties].
	  Windows 7
	  Right-click on the desktop, and click [Graphics Properties].
	② Click [Display].
	③ If [Refresh Rate] for the Notebook is [40 Hz], change to [60 Hz] and click [Apply].
	④ Follow the on-screen instructions.

The external display does not work normally.	● If the external display does not support the power saving function, it may not work normally when the computer enters the power saving mode. Turn off the external display.

■ **Battery**

The battery indicator lights red.	● The battery level is very low (the charge is approx. 9 % or less). ● Connect the AC adaptor. You can use the computer when the indicator light is orange. If you do not have an AC adaptor, save your data and power off your computer. After replacing the battery pack with a fully charged one, turn your computer on again.

Troubleshooting

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Troubleshooting (Basic)

■ Battery

The battery indicator is blinking.	● If blinking red: Quickly save your data and power off your computer. Remove the battery pack and disconnect the AC adaptor, then connect them again. If the problem persists, contact Panasonic Technical Support. The battery pack or charging circuit may be defective. ● If blinking orange: • Battery cannot be recharged temporarily because the internal temperature of the battery pack is outside the acceptable temperature range for recharging. Your computer can be used normally in this state. Once the range requirement is satisfied, charging begins automatically. • Software applications and peripheral devices (USB devices, etc.) are consuming too much power. Exit the software applications currently running, and remove all peripherals. Once the range requirement is satisfied, charging begins automatically.
The battery indicator is flashing.	● The battery is recharging. If [Battery Charging Indicator] in [Main] menu of the Setup Utility is set to [Flashing], the indicator will alternately become lighter and darker.

■ Touchpad

The cursor does not work.	● When using the external mouse, connect it correctly. ● Restart the computer using the keyboard. ● If the computer does not respond to keyboard commands, read "No response" (➜ page 33).

■ On-screen Document

Windows 7 The document of PDF format is not displayed.	● Install Adobe Reader and update to its latest version. If your computer is connected to the internet, start up Adobe Reader and click [Help] - [Check for Updates...].

Troubleshooting

■ Others

No response.	● Press **Ctrl** + **Shift** + **Esc** to open Task Manager and close the software application that is not responding.
	● An input screen (e.g., password input screen at startup) may be hidden behind another window. Press **Alt** + **Tab** to check.
	● Press the power switch for 4 seconds or longer to shut down the computer, and then press the power switch to turn it on. If the application program does not work normally, uninstall and reinstall the program. To uninstall,
	① Open the Control Panel.
	
	  Windows 8.1
	  1. Perform either of the following procedures.
	    ● For the desktop screen:
	      Right-click ⊞ at the bottom left corner of the Desktop screen.
	    ● For the Start screen:
	      Click ⊙ on the Start screen.
	  2. Click [Control Panel].
	
	  Windows 7
	  Click ⊛ (Start) - [Control Panel].
	② Click [Program] - [Uninstall a program].

The battery status indicator lights green and then turns off immediately.	● When the battery is fully charged and the computer is not operating (i.e., it is turned off or in sleep mode), the power supply from the AC adaptor stops and power consumption is inhibited. In such cases, the indicator will light green upon connecting the AC adaptor, but only for a moment.

Troubleshooting

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Appendix

Specifications

This page provides the specifications for the basic model.
The model number is different according to the unit configuration.

- To check the model number:
  Check the bottom of the computer or the box the computer came in at the time of purchase.
- To check CPU speed, memory size and the hard disk drive (HDD) size:
  Run the Setup Utility (➔ 📖 *Reference Manual* "Setup Utility") and select [Information] menu.
  [Processor Speed]: CPU speed, [Memory Size]: Memory size, [Hard Disk]: Hard disk drive size

■ Main Specifications

CPU	Intel® Core™ i5-5300U Processor (3 MB[*1] cache, 2.3 GHz up to 2.9 GHz) with Intel® Turbo Boost Technology 2.0
Chip Set	Built-in CPU
Video controller	Intel® HD Graphics 5500 (Built-in CPU)
Main Memory[*2]	4 GB[*1] / 8 GB[*1], DDR3L SDRAM
Storage	128 GB[*3] (SSD) / 256 GB[*3] (SSD) **Windows 8.1** Approx. 20 GB[*3] is used as a partition with disk recovery tools. (Users cannot use this partition.) Approx. 1 GB[*3] is used as a partition with system tools. (Users cannot use this partition.) **Windows 7** <Only for Windows 7 downgrade model> Approx. 50 GB[*3] is used as a partition with disk recovery tools. (Users cannot use this partition.) Approx. 300 MB[*3] is used as a partition with system tools. (Users cannot use this partition.)
Display Method	12.5" (16:9) FHD (1920 × 1080 dots)
Internal LCD[*4]	Max. 16,777,216 colors (1920 × 1080 dots)
External Display[*5]	65,536 / 16,777,216 colors (1920 × 1200 dots Max.)
Wireless LAN[*6]	Intel® Dual Band Wireless-AC 7265 (a/b/g/n/ac) ➔ page 38
Bluetooth[*7]	➔ page 38
LAN	IEEE 802.3 10Base-T / IEEE 802.3u 100BASE-TX / IEEE 802.3ab 1000BASE-T
<Only for model with Wireless WAN> Wireless WAN[*8]	LTE compatible
Sound	WAVE and MIDI playback, Intel® High Definition Audio subsystem support
Security Chip	TPM (TCG V1.2 compliant)
Card Slots	SD Memory Card Slot [*9]	× 1
	Smart Card Slot	Equipped for some models
	SIM Card Slot	<Only for model with Wireless WAN> × 1
Interface	USB 3.0 Ports x 2[*10] / LAN Port (RJ-45) x 1 / External Display Port (VGA) (Mini Dsub 15-pin female) / HDMI Port (Type A)[*11] / Microphone Jack (Miniature jack, 3M) / Headphone Jack (Miniature jack, 3M)
Keyboard, Pointing Device	85 keys / 84 keys, Touchpad, Touchscreen (Capacitive)

■ Main Specifications

Camera	Resolution	FHD 1080p
	Effective number of pixels	Max. 1920 x 1080
	Microphone	Built-in (Microphone Array)
Ambient light sensor		Equipped
Magnetic sensor		Equipped
Gyro sensor		Equipped
Acceleration sensor		Equipped
Power Supply		AC adaptor or Battery pack
AC Adaptor[*12]		Input: 100 V - 240 V AC, 50 Hz/60 Hz, Output: 16 V DC, 4.06 A
Built-in Battery (not replaceable)		(For hot swap only)
Battery Pack		Li-ion 7.2 V, Typical 4800 mAh / Minimum 4560 mAh
Operating Time[*13]		<Model with 4 GB main memory> Approx. 13 hours (Economy Mode (ECO) - Disable) <Model with 8 GB main memory> Approx. 12.5 hours (Economy Mode (ECO) - Disable)
Charging Time[*14]		Approx. 4 hours
Remaining battery indicator recalibration time		Full charge: Approx. 4 hours (max.) Complete discharge: Approx. 5 hours (max.)
Battery duration[*15]	In sleep	Approx. 8 days (Approx. 6 days with Wake Up from wired LAN function activated)
	In hibernation	Approx. 35 days (Approx. 10 days with Wake Up from wired LAN function activated)
	When power is off	Approx. 35 days (Approx. 10 days with Power On by LAN function activated)
Power Consumption[*16]		Approx. 20 W[*17] / Approx. 45 W (maximum when recharging in the ON state)
Physical Dimensions (W × D × H)		301.4 mm × 210 mm × 21 mm
Weight		Model without either wireless WAN or smart card slot: Approx. 1.140 kg Model with wireless WAN, but without smart card slot: Approx. 1.145 kg Model without wireless WAN, but with smart card slot: Approx. 1.155 kg Model with wireless WAN and smart card slot: Approx. 1.160 kg
Environment	Operating	Temperature	5 °C to 35 °C
		Humidity	30 % to 80 % RH (No condensation)
	Storage	Temperature	- 20 °C to 60 °C
		Humidity	30 % to 90 % RH (No condensation)

Specifications

■ Software

Base OS	Windows® 8.1 Pro Update 64-bit
Installed OS[18]	**Windows 8.1** Windows® 8.1 Pro Update 64-bit **Windows 7** Windows® 7 Professional 32-bit Service Pack 1 (downgraded to Windows® 7)[19] / Windows® 7 Professional 64-bit Service Pack 1 (downgraded to Windows® 7)[19]
Pre-installed Software	Adobe Reader, PC Information Viewer, Intel® PROSet/Wireless Software[20], Intel® PROSet/Wireless Software for Bluetooth® Technology[20], Battery Recalibration Utility, Infineon TPM Professional Package[20][21], Recovery Disc Creation Utility, Dashboard for Panasonic PC, Power Plan Extension Utility, Camera Utility[20], Manual Selector, Microsoft Office Trial[22], Touch Screen Mode Setting Utility, Intel® My WiFi Technology, Intel® WiDi, USB Charge Setting Utility, Hotkey Settings, HOLD Mode Settings Utility, Hand Writing 2, Touch pad Accidental Operation Prevention Utility, Projector Helper, Display Rotation Tool **Windows 8.1** Wireless Toolbox, Camera for Panasonic PC[20], Touch Operation Help Utility **Windows 7** Wireless Switch Utility, Wireless Connection Disable Utility[20][21], Quick Boot Manager, PC Information Popup, Resolution Switch Utility
	Aptio Setup Utility, PC-Diagnostic Utility, Hard Disk Data Erase Utility[23]

■ Wireless LAN[6]

Data Transfer Rates	IEEE802.11a : 54 Mbps[24]
	IEEE802.11b : 11 Mbps[24]
	IEEE802.11g : 54 Mbps[24]
	IEEE802.11n[25] : HT20 = 150 Mbps
	               HT40 = 300 Mbps
	IEEE802.11ac : VHT80 : 866.7 Mbps
	               VHT40 : 433.3 Mbps

Standard Supported	IEEE802.11a / IEEE802.11b / IEEE802.11g / IEEE802.11n / IEEE802.11ac
Transmission Method	OFDM system, DS-SS system

■ Bluetooth[7]

Bluetooth Version	4.0
	Classic mode / Low Energy mode
Transmission method	FHSS system
Wireless Channels Used	Channels 1 to 79 / Channels 0 to 39
RF Frequency Band	2.402 GHz - 2.480 GHz

Appendix

*1 1 MB = 1,048,576 bytes / 1 GB = 1,073,741,824 bytes

*2 Memory size of the factory default depends on the model. You can physically expand the memory up to 8 GB, but the total amount of usable memory available will be less depending on the actual system configuration.

*3 1 MB = 1,000,000 bytes / 1 GB = 1,000,000,000 bytes. Your operating system or some application software will report as fewer GB.

*4 Depending on the OS settings.

*5 Selectable resolution depends on the specifications of the external display. Display may be impossible using some connected external displays.

*6 Only for model with wireless LAN.

*7 Only for model with Bluetooth. Does not guarantee operation of all Bluetooth peripherals.

*8 The specifications may differ depending on the model.
A SIM card (15 mm × 25 mm) must be inserted in the SIM card slot.
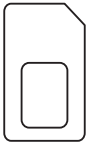
*9 This slot is compatible with UHS- I / UHS- II. Operation has been tested and confirmed using Panasonic SD/SDHC/SDXC Memory Cards with a capacity of up to 64 GB. Operation on other SD equipment is not guaranteed.

*10 Does not guarantee operation of all USB-compatible peripherals.

*11 Does not guarantee operation of all HDMI-compatible peripherals.

*12 <Only for North America>
The AC adaptor is compatible with power sources up to 240 V AC adaptor. This computer is supplied with a 125 V AC compatible AC cord.   20-M-2-1

*13 Measured with LCD brightness : 60 cd/m^2
Varies depending on the usage conditions, or when an optional device is attached.

*14 Varies depending on the usage conditions, CPU speed, etc.

*15 The table shows the battery duration while the USB port continuous charging function is not used.
The battery duration will slightly be longer if a LAN cable is not connected to the computer, even when Wake Up from wired LAN function is activated.

*16 Approx. 0.5 W when the battery pack is fully charged (or not being charged) and the computer is off.

<When using with 115 V AC>
Even when the AC adaptor is not connected to the computer, power is consumed (Max. 0.2 W) simply by having the AC adaptor plugged into an AC outlet.

<When using with 240 V AC>
Even when the AC adaptor is not connected to the computer, power is consumed (Max. 0.3 W) simply by having the AC adaptor plugged into an AC outlet.

*17 Rated power consumption.   23-E-1

Specifications

[*18] Operations of this computer are not guaranteed except for the pre-installed OS and the OS which is installed by using the hard disk recovery and the recovery disc.

[*19] This system is preinstalled with Windows® 7 Professional software and also comes with a license for Windows 8.1 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version.

[*20] Depending on the models, this application software is not installed.

[*21] Must be installed before use.

[*22] To continue using this software after the end of the trial, purchase a license by following the on-screen instructions.

[*23] Perform on the recovery disc.
Windows 7
Alternatively perform on the hard disk recovery partition.

[*24] These are speeds specified in IEEE802.11a+b+g+n+ac standards. Actual speeds may differ.

[*25] Available when set to "WPA-PSK", "WPA2-PSK" or "none".
Only available when HT40 enabled by the computer and access point which associated supports HT40.

Appendix

Standard Limited Warranty

Panasonic System Communications Company Europe

Panasonic System Communications Company Europe (referred to as "Panasonic") will repair this product (other than software, which is treated in a different section of this warranty) with new or refurbished parts, from the date of original purchase in the event of a defect in materials or workmanship. This warranty only applies to new Panasonic Toughbooks purchased in the EEA and Switzerland and Turkey.

Panasonic (or its authorised Service Provider) target to repair your equipment within 48 hours from its receipt in our service centre.

Additional charges may apply for shipment to countries outside of the European Union. Panasonic will use all reasonable endeavours to ensure this service.

This warranty only covers failures due to defects in materials or workmanship which occur during normal use for the applicable Service Agreement Period listed below. In the event that any product (or part thereof) is replaced, Panasonic shall transfer ownership of the replacement product (or part) to the customer and the customer shall transfer ownership of the replaced product (or part) to Panasonic.

Service Agreement Period - from original date of purchase

- Toughbooks (and every accessory included in the original packaging except the battery) - 3 years
- Toughpads (and every accessory included in the original packaging except the battery) - 3 years
- Accessories included in the original package - 3 years
- Additional peripherals manufactured by Panasonic (including media bay devices such as CD-ROM drives) - 1 year
- Batteries - 6 months. Panasonic Warranty covers the battery for six months. A battery is considered good if it maintains 50% of its charge capacity during the warranty period. If a battery is returned under this contract and testing determines that it has charge capacity greater than 50%, the battery will be returned with an invoice for the retail purchase price of a new battery.

This warranty is extended solely to the original purchaser. A purchase receipt or other proof of date of original purchase will be required before warranty performance is rendered.

Limits and Exclusions:

This warranty does not cover and shall be void for:

- Broken or cracked LCD screen.
- Defective pixel in notebook displays and LCD screens within 0.002%
- Damage that is attributable to fire, theft or acts of God.
- Damage caused by environmental influences (electrical storms, magnetic fields etc.).
- Damage which has not been caused during normal operation
- Repair of damage that is cosmetic only or does not affect product functionality such as wear and tear, scratches and dents.
- Failures caused by products not supplied by Panasonic.
- Failures resulting from alteration, accidental damage, casualty, misuse, abuse or neglect.
- Introduction of liquid or other foreign matter into the unit.
- Improper installation, operation or maintenance.
- Improper connections with peripherals.
- Maladjustment of consumer controls such as function settings.
- Modification or service by anyone other than Panasonic or its approved Service Providers.
- Products used as short term rental or leased equipment.
- Products whose serial number has been removed making the unit warranty condition impossible to clearly determine.

Standard Limited Warranty

THIS PRODUCT IS NOT INTENDED FOR USE AS, OR AS PART OF, NUCLEAR EQUIPMENT/ SYSTEMS, AIR TRAFFIC CONTROL EQUIPMENT/SYSTEMS, OR AIRCRAFT COCKPIT EQUIPMENT/SYSTEMS. PANASONIC WILL NOT BE RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE OF THIS PRODUCT ARISING OUT OF THE FOREGOING USES.

There are no other express warranties except as listed above.

We strongly recommend that customers backup their data before sending back their unit to an Authorised Service Provider.

Panasonic shall not be liable for loss of data or other incidental or consequential damages resulting from the use of this product, or arising out of any breach of this warranty. All express and implied warranties, including the warranties of satisfactory quality and fitness for a particular purpose are limited to the applicable warranty period set forth above. Panasonic shall not be liable for any indirect, special or consequential loss or damage (including without limitation any loss of profits) arising from the use of this product or for any breach of this warranty.

This limited warranty gives you specific legal rights, and you may have other rights that vary from country to country. You must consult the applicable country laws for a full determination of your rights. This limited warranty is in addition to, and does not affect any rights arising out of any contract of sale or by statute.

Panasonic System Communications Company Europe

Data Storage Media

Data Storage Media is the media on which the Operating System, drivers and programs originally installed by Panasonic on the main unit are stored. This media is originally provided with the unit.

Panasonic warrants to you only that the disc(s) or other media on which the Programs are furnished will be free from defects in material and workmanship under normal use for a period of sixty (60) days from the date of delivery thereof to you, as evidenced by your purchase receipt.

This is the only warranty Panasonic makes to you. Panasonic does not warrant that the functions contained in the Programs will meet your requirements or that the operation of the Programs will be uninterrupted or error free.

Panasonic's entire liability and your exclusive remedy under this warranty shall be limited to the replacement of any defective disk or other media which is returned to Panasonic's authorized Service Centre, together with a copy of the purchase receipt, within the aforesaid warranty period.

Panasonic shall have no obligation for any defects in the disk(s) or other media on which the Programs are furnished resulting from your storage thereof, or for defects that have been caused by operation of the disk(s) or other media otherwise than on the Product or in the environment conditions other than those specified by Panasonic by alteration, accident, misuse, abuse, neglect, mishandling, misapplication, installation, maladjustment of consumer controls, improper maintenance, modification or damage that is attributable to acts of God. In addition, Panasonic shall have no obligation for any defects in the disk(s) or other media if you have modified, or attempted to modify any Program.

Duration of implied warranties, if any is limited to sixty (60) days.

Pre-installed software

Pre-installed software means the software shipped pre-loaded by Panasonic, not that loaded by any third party or selling agent.

Contacts

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Appendix