



OPERATING INSTRUCTIONS

Personal Computer

Model No. **CF-52** series

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Getting Started

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Troubleshooting

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Appendix

For further information about the computer, you can refer to the on-screen manual.
To access the on-screen manual
→ page 15 "On-screen Manual"

Introduction

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

■ 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.
 (Start) - [All Programs]:	Click  (Start), and then click [All Programs].
→ :	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.
 - “Genuine Windows® 7 Professional 32-bit Service Pack 1” and “Genuine Windows® 7 Professional 64-bit Service Pack 1” as “Windows” or “Windows 7”
 - DVD MULTI drive as “CD/DVD drive”
 - Circular media including DVD-ROM and CD-ROM as “discs”

■ Disclaimer

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

Read Me First

Important Safety Instructions

<Only for model with modem>

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

1. Do not use this product near water, for example, near a bath tub, wash bowl, kitchen sink or laundry tub, in a wet basement or near a swimming pool.
2. Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electric shock from lightning.

3. Do not use the telephone to report a gas leak in the vicinity of the leak.
4. Use only the power cord and batteries indicated in this manual. Do not dispose of batteries in a fire. They may explode. Check with local codes for possible special disposal instructions.

SAVE THESE INSTRUCTIONS

19-E-1

Information to the User

<Only for model with wireless LAN/Bluetooth>

This product and your Health

This product, like other radio devices, emits radio frequency electromagnetic energy. The level of energy emitted by this product however is far much less than the electromagnetic energy emitted by wireless devices like for example mobile phones.

Because this product operates within the guidelines found in radio frequency safety standards and recommendations, we believe this product is safe for use by consumers. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature.

In some situations or environments, the use of this product may be restricted by the proprietor of the building or responsible representatives of the organization. These situations may for example include:

- Using this product on board of airplanes, or
- In any other environment where the risk of interference to other devices or services is perceived or identified as harmful.

If you are uncertain of the policy that applies on the use of wireless devices in a specific organization or environment (e.g. airports), you are encouraged to ask for authorization to use this product prior to turning on the product.

Regulatory Information

We are not responsible for any radio or television interference caused by unauthorized modification of this product. The correction of interference caused by such unauthorized modification will be the responsibility of the user. We and its authorized resellers or distributors are not liable for damage or violation of government regulations that may arise from failing to comply with these guidelines.

26-M-1

Lithium Battery

Lithium Battery!

This computer contains a lithium battery to enable the date, time, and other data to be stored. The battery should only be exchanged by authorized service personnel.

Warning! A risk of explosion from incorrect installation or misapplication may possibly occur.

15-E-1

CD/DVD Drive Caution

CAUTION!

THIS PRODUCT UTILIZES A LASER. USE OF CONTROLS, ADJUSTMENTS OR PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE. DO NOT OPEN COVERS AND DO NOT REPAIR YOURSELF. REFER SERVICING TO QUALIFIED PERSONNEL.

12-E-1

The following label is put on the bottom of the computer.



12-1-1

Models for Europe

<Only for model with a “CE Ⓢ” mark on the bottom of the computer>



Declaration of Conformity (DoC)

“Hereby, Panasonic declares that this Personal Computer is in compliance with the essential requirements and other relevant provisions of the Directive 1999/5/EC.”

Hint:

If you want to get a copy of the original DoC of our above mentioned products, please contact our web address: <http://www.doc.panasonic.de>

Authorised Representative:

Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg, Germany

Network connection of Wired Modem.

The terminal equipment is intended for connection to the following public network;
In all the countries of European Economical Area and Turkey;
- Public Switched Telephony Networks

Technical Features of Wired Modem.

The terminal equipment includes the following features;

- DTMF dialing
- Maximum bitrate receiving mode: 56 kbit/s
- Maximum bitrate sending mode: 33.6 kbit/s

Indication of the countries where WLAN is intended to be used:

AT BE BG CH CY CZ DE DK EE ES
FI FR GB GR HU IE IS IT LT LU
LV MT NL NO PL PT RO SE SI SK TR

18-25-E-1

<Only for model with a “CE” mark on the bottom of the computer>



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18-E-1

This equipment requires minimum 20 cm spacing from all person's body (excluding extremities of hands, wrist and feet) in directions of the back and both sides of the LCD display during wireless modes of operation.

60-E-1

Models for UK

For your safety, please read the following text carefully.

This appliance is supplied with a molded three pin mains plug for your safety and convenience. A 3 ampere fuse is fitted in this plug.

Should the fuse need to be replaced please ensure that the replacement fuse has a rating of 3 ampere and that it is approved by ASTA or BSI to BS1362.

Check for the ASTA mark  or the BSI mark  on the body of the fuse.

If the plug contains a removable fuse cover you must ensure that it is refitted when the fuse is replaced.

If you lose the fuse cover the plug must not be used until a replacement cover is obtained. A replacement fuse cover can be purchased from your local dealer.

If the fitted molded plug is unsuitable for the socket outlet in your home then the fuse should be removed and the plug cut off and disposed of safely.

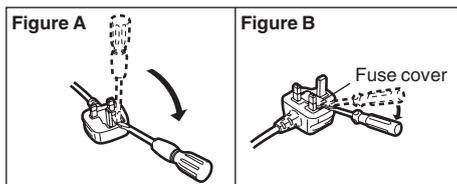
There is a danger of severe electrical shock if the cut off plug is inserted into any 13-ampere socket.

How to replace the fuse

The location of the fuse differs according to the type of AC mains plug (figures A and B).

Confirm the AC mains plug fitted and follow the instructions below. Illustrations may differ from actual AC mains plug.

Open the fuse cover with a screwdriver and replace the fuse and close or attach the fuse cover.



8-E-1

Precautions

THIS PRODUCT IS NOT INTENDED FOR USE AS, OR AS PART OF, NUCLEAR EQUIPMENT/SYSTEMS, AIR TRAFFIC CONTROL EQUIPMENT/SYSTEMS, AIRCRAFT COCKPIT EQUIPMENT/SYSTEMS^{*1}, MEDICAL DEVICES OR ACCESSORIES^{*2}, LIFE SUPPORT SYSTEMS OR OTHER EQUIPMENTS/DEVICES/SYSTEMS THAT ARE INVOLVED WITH ENSURING HUMAN LIFE OR SAFETY. PANASONIC WILL NOT BE RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE OF THIS PRODUCT ARISING OUT OF THE FOREGOING USES.

^{*1} AIRCRAFT COCKPIT EQUIPMENT/SYSTEMS include Class2 Electrical Flight Bag (EFB) Systems and Class1 EFB Systems when used during critical phases of flight (e.g., during take-off and landing) and/or mounted on to the aircraft. Class1 EFB Systems and 2 EFB Systems are defined by FAA: AC (Advisory Circular) 120-76A or JAA: JAA TGL (Temporary Guidance Leaflets) No.36.

^{*2} As defined by the European Medical Device Directive (MDD) 93/42/EEC.

Panasonic cannot guarantee any specifications, technologies, reliability, safety (e.g. Flammability/Smoke/Toxicity/Radio Frequency Emission, etc) requirements related to aviation standards and medical equipment standards that differ from the specifications of our COTS (Commercial-Off-The-Shelf) products.

This computer is not intended for use in medical equipment including life-support systems, air traffic control systems, or other equipment, devices or systems that are involved with ensuring human life or safety. Panasonic cannot be held responsible in any way for any damages or loss resulting from the use of this unit in these types of equipment, devices or systems, etc.

This computer has been designed so as to minimize shock to the LCD and hard disk drive, the leakage of liquid (e.g., water) on to the keyboard, etc., but no warranty is provided against such trouble. Therefore, as a precision instrument, be extremely careful in the handling.

If a Malfunction or Trouble Occurs, Immediately Stop Use

If a Malfunction Occurs, Immediately Unplug the AC Plug and the Battery Pack

- This product is damaged
- Foreign object inside this product
- Smoke emitted
- Unusual smell emitted
- Unusually hot

Continuing to use this product while any of the above conditions are present may result in fire or electric shock.

- If a malfunction or trouble occurs, immediately turn the power off and unplug the AC plug, and then remove the battery pack. Then contact your technical support office for repair.

Do Not Touch This Product In a Thunderstorm If Connected with the AC Cable or Any Other Cables

Electric shock may result.

Do Not Connect the AC Adaptor to a Power Source Other Than a Standard Household AC Outlet

Otherwise, a fire due to overheating may result. Connecting to a DC/AC converter (inverter) may damage the AC adaptor. On an airplane, only connect the AC adaptor/charger to an AC outlet specifically approved for such use.

Do Not Do Anything That May Damage the AC Cord, the AC Plug, or the AC Adaptor

Do not damage or modify the cord, place it near hot tools, bend, twist, or pull it forcefully, place heavy objects on it, or bundle it tightly.

Continuing to use a damaged cord may result in fire, short circuit, or electric shock.

Do Not Pull or Insert the AC Plug If Your Hands Are Wet

Electric shock may result.

Clean Dust and Other Debris of the AC Plug Regularly

If dust or other debris accumulates on the plug, humidity, etc. may cause a defect in the insulation, which may result in a fire.

- Pull the plug, and wipe it with a dry cloth.

Pull the plug if the computer is not being used for a long period of time.

Insert the AC Plug Completely

If the plug is not inserted completely, fire due to overheating or electric shock may result.

- Do not use a damaged plug or loose AC outlet.

Do Not Place Containers of Liquid or Metal Objects on Top of This Product

If water or other liquid spills, or if paper clips, coins, or foreign matter get inside this product, fire or electric shock may result.

- If foreign matter has found its way inside, immediately turn the power off and unplug the AC plug and remove the battery pack. Then contact your technical support office.

Do Not Disassemble This Product

You may receive an electric shock, or foreign matter may enter and result in a fire.

Keep SD Memory Cards Away from Infants and Small Children
Accidental swallowing will result in bodily injury.

- In the event of accidental swallowing, see a doctor immediately.

Do Not Place This Product on Unstable Surfaces

If balance is lost, this product may fall over or drop, resulting in an injury.

Avoid Stacking

If balance is lost, this product may fall over or drop, resulting in an injury.

Do Not Leave This Product in High Temperature Environment for a Long Period of Time

Leaving this product where it will be exposed to extremely high temperatures such as near fire or in direct sunlight may deform the cabinet and/or cause trouble in the internal parts. Continued use in such a resulting condition may lead to short-circuiting or insulation defects, etc. which may in turn lead to a fire or electric shocks.

Do Not Block the Ventilation Hole (Exhaust)

Using this product wrapped in cloth or on top of bedding or a blanket can block the ventilation hole and cause heat to build up inside, possibly resulting in a fire.

Hold the Plug When Unplugging the AC Plug

Pulling on the cord may damage the cord, resulting in a fire or electric shock.

Do Not Move This Product While the AC Plug Is Connected

The AC cord may be damaged, resulting in fire or electric shock.

- If the AC cord is damaged, unplug the AC plug immediately.

Use Only the Specified AC Adaptor With This Product

Using an AC adaptor other than the one supplied (supplied with the unit or one sold separately as an accessory) may result in a fire.

Do Not Subject the AC Adaptor to Any Strong Impact

Using the AC adaptor after a strong impact such as being dropped may result in electric shock, short circuit, or fire.

Take a Break of 10-15 Minutes Every Hour

Using this product for long periods of time may have detrimental health effects on the eyes or hands.

Do Not Look into the CD/DVD Drive

Looking directly at the internal laser light source may result in damage to eyesight.

Do Not Use Discs That Are Cracked or Deformed

Because the discs rotate at high speeds, damaged discs may break apart causing injury.

- Discs that are not round and discs that have been repaired using adhesives are similarly dangerous, and so should not be used.

Do Not Turn the Volume Up to Loud When Using Headphones

Listening at high volumes that overstimulate the ear for long periods of time may result in loss of hearing.

Do Not Connect a Telephone Line, or a Network Cable Other Than the One Specified, into the LAN Port

If the LAN port is connected to a network such as the ones listed below, a fire or electric shock may result.

- Networks other than 1000BASE-T, 100BASE-TX or 10BASE-T
- Phone lines (IP phone (Internet Protocol Telephone), Telephone lines, internal phone lines (on-premise switches), digital public phones, etc.)

Do Not Use With Exposing the Skin to This Product For a Long Period of Time

Using this product with exposing the skin to the heat source of this product or AC adaptor for a long period of time can cause a low-temperature burn.

Do Not Expose Yourself to the Hot Wind from the Ventilation Hole (Exhaust) for a Long Period of Time.

Low-temperature burns may result.

Covering the ventilation hole (exhaust) with your hand or other object can cause heat to build up inside, possibly resulting in burns.

<Only for model with modem>**Use the Modem With a Regular Telephone Line**

Connection to an internal phone line (on-premise switches) of a company or business office, etc. or to a digital public phone or use in a country or area not supported by the computer may result in a fire or electric shocks.

- Do not place the computer near a television or radio receiver.
- Keep the computer away from magnets. Data stored on the hard disk may be lost.
- This computer is not intended for the display of images for use in medical diagnosis.
- This computer is not intended for a use with connection of medical equipment for the purpose of medical diagnosis.
- Panasonic shall not be liable for loss of data or other incidental or consequential damages resulting from the use of this product.

Interface Cable

Use of an interface cable longer than 3 m is not recommended.

11-E-1

Precautions (Battery Pack)

Do Not Use With Any Other Product

The battery pack is rechargeable and was intended for the specified product. If it is used with a product other than the one for which it was designed, electrolyte leakage, generation of heat, ignition or rupture may result.

Do Not Charge the Battery Using Methods Other Than Those Specified

If the battery is not charged using one of the specified methods, electrolyte leakage, generation of heat, ignition or rupture may result.

Do Not Throw the Battery Pack into a Fire or Expose It to Excessive Heat

Generation of heat, ignition or rupture may result.

Avoid Extreme Heat (Near the Fire, in Direct Sunlight, for Example)

Electrolyte leakage, generation of heat, ignition or rupture may result.

Do Not Insert Sharp Objects into the Battery Pack, Expose It to Bumps or Shocks, Disassemble, or Modify It

Electrolyte leakage, generation of heat, ignition or rupture may result.

- If this product is subjected to a strong impact, stop using it immediately.

Do Not Short the Positive (+) and Negative (-) Contacts

Generation of heat, ignition or rupture may result.

- Do not place the battery pack together with articles such as necklaces or hairpins when carrying or storing.

Do Not Use This Product With a Battery Pack Other Than the One Specified

Use only the specified battery pack (→ page 9) with your product. Use of battery packs other than those manufactured and supplied by Panasonic may present a safety hazard (generation of heat, ignition or rupture).

When the battery pack has deteriorated, replace it with a new one

Continued use of a damaged battery pack may result in heat generation, ignition or battery rupture.

CAUTION:

Risk of Explosion if Battery is replaced by an Incorrect Type.
Dispose of Used Batteries According to the Instructions.

58-E-1

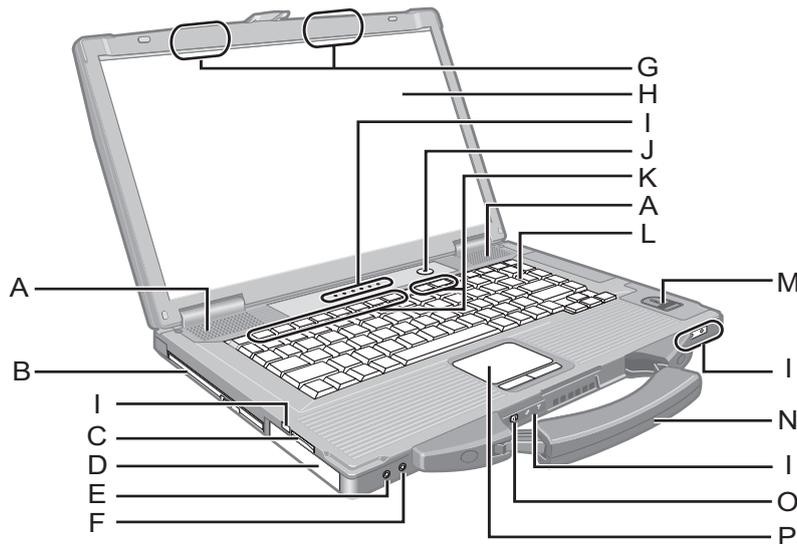
- Do not touch the terminals on the battery pack. The battery pack may no longer function properly if the contacts are dirty or damaged.
- Do not expose the battery pack to water, or allow it to become wet.
- If the battery pack will not be used for a long period of time (a month or more), charge or discharge (use) the battery pack until the remaining battery level becomes 30% to 40% and store it in a cool, dry place.
- This computer prevents overcharging of the battery by recharging only when the remaining power is less than approx. 95% of capacity.

- The battery pack is not charged when the computer is first purchased. Be sure to charge it before using it for the first time. When the AC adaptor is connected to the computer, charging begins automatically.
- Should the battery leak and the fluid get into your eyes, do not rub your eyes. Immediately flush your eyes with clear water and see a doctor for medical treatment as soon as possible.

NOTE

- The battery pack may become warm during recharging or normal use. This is completely normal.
- Recharging will not commence if internal temperature of the battery pack is outside of the allowable temperature range (0 °C to 50 °C) (→  Reference Manual "Battery Power"). Once the allowable range requirement is satisfied, charging begins automatically. Note that the recharging time varies based on the usage conditions. (Recharging takes longer than usual when the temperature is 10 °C or below.)
- If the temperature is low, the operating time is shortened. Only use the computer within the allowable temperature range.
- This computer has a high temperature mode function that prevents the degradation of the battery in high temperature environments. (→  Reference Manual "Battery Power") A level corresponding to a 100% charge for high temperature mode is approximately equivalent to an 80% charge level for normal temperature mode.
- The battery pack is a consumable item. If the amount of time the computer can be run by using a particular battery pack becomes dramatically shorter and repeated recharging does not restore its performance, the battery pack should be replaced with a new one.
- When transporting a spare battery inside a package, briefcase, etc., it is recommended that it be placed in a plastic bag so that its contacts are protected.
- Always power off the computer when it is not in use. Leaving the computer on when the AC adaptor is not connected will exhaust the remaining battery capacity (→  Reference Manual "LAN").

Description of Parts



A : Speaker

→ Reference Manual "Key Combinations"

B : CD/DVD Drive

→ Reference Manual "CD/DVD Drive"

C : SD Memory Card slot

→ Reference Manual "SD Memory Card"

D : Battery pack

Specified Battery pack: CF-VZSU71U

E : Headphone jack

You can connect headphones or amplified speakers. When they are connected, audio from the internal speakers is not heard.

F : 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.

G : Wireless LAN/Bluetooth antenna

<Only for model with wireless LAN/Bluetooth>

→ Reference Manual "Wireless LAN" "Bluetooth"

H : LCD

I : LED indicator

Caps lock

Numeric key (NumLk)

Scroll lock (ScrLk)

Drive status

Battery status

→ Reference Manual "Battery Power"

Power status

(Off: Power off/Hibernation, Green: Power on, Blinking green: Sleep, Blinking green rapidly: Cannot power on or resume due to low temperature.)

SD Memory Card status

(Blinking: During access or a password is requested)

→ Reference Manual "SD Memory Card"

Wireless ready

This indicator lights when Wireless LAN and/or Bluetooth are connected and ready. It does not necessarily indicate the On/Off condition of the wireless connection.

→ Reference Manual "Disabling/Enabling Wireless Communication" "Wireless LAN" "Bluetooth"

J : Power switch

K : Function key

→ Reference Manual "Key Combinations"

L : Keyboard

M : Fingerprint Reader

<Only for model with Fingerprint Reader>

→ Reference Manual "Fingerprint Reader"

N : Carrying handle

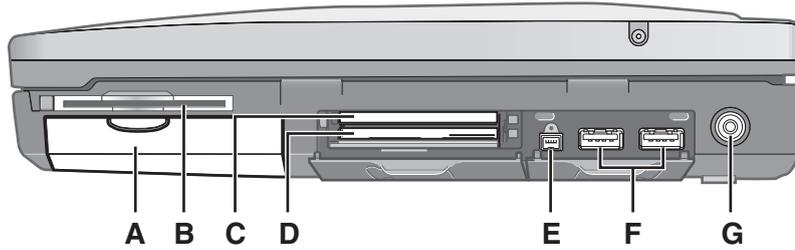
O : Wireless switch

→ Reference Manual "Disabling/Enabling Wireless Communication" "Wireless LAN" "Bluetooth"

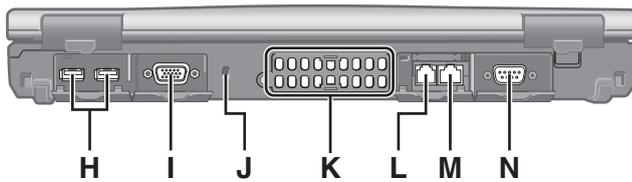
P : Touch pad

Description of Parts

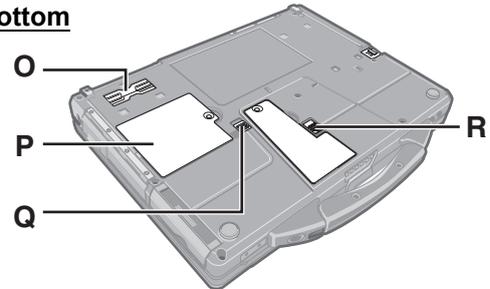
Right side



Rear side



Bottom



A : Hard disk drive

→ Reference Manual "Hard Disk Drive"

B : Smart Card slot

<Only for model with Smart Card slot>

→ Reference Manual "Smart Card"

C : ExpressCard slot

→ Reference Manual "PC Card / ExpressCard"

D : PC Card slot

→ Reference Manual "PC Card / ExpressCard"

E : IEEE 1394 interface connector

<Only for model with IEEE 1394a interface>

→ Reference Manual "IEEE 1394 Devices"

F : USB 3.0 port

→ Reference Manual "USB Devices"

G : DC-IN jack

H : USB 2.0 port

→ Reference Manual "USB Devices"

I : External display port (VGA)

→ Reference Manual "External Display"

J : Security lock

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

K : Ventilation hole (Exhaust)

L : Modem port

<Only for model with modem>

→ Reference Manual "Modem"

M : LAN port

→ Reference Manual "LAN"

N : Serial port

O : Expansion bus connector

→ Reference Manual "Port Replicator"

P : RAM module slot

→ Reference Manual "RAM Module"

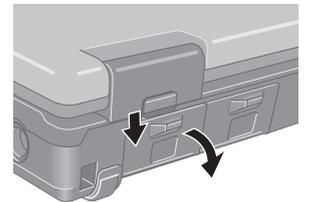
Q : Hard disk drive latch

→ Reference Manual "Hard Disk Drive"

R : Battery latch

NOTE

- When you open the covers (Example: USB port cover) of ExpressCard slot, PC card slot, IEEE 1394 interface connector*¹, USB port, External display port, Modem port*², LAN port and Serial port, push down and pull the covers.



- This computer contains a magnet and magnetic products at the locations circled in the illustration at right. Avoid leaving metallic object or magnetic media in contact with these areas.



*¹ Only for model with IEEE 1394a interface.

*² Only for model with modem.

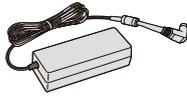
First-time Operation

■ Preparation

① Check and identify the supplied accessories.

If you do not find the described accessories, contact Panasonic Technical Support.

• AC Adaptor 1 • AC Cord 1 • Battery Pack 1



Model No: CF-AA5713A

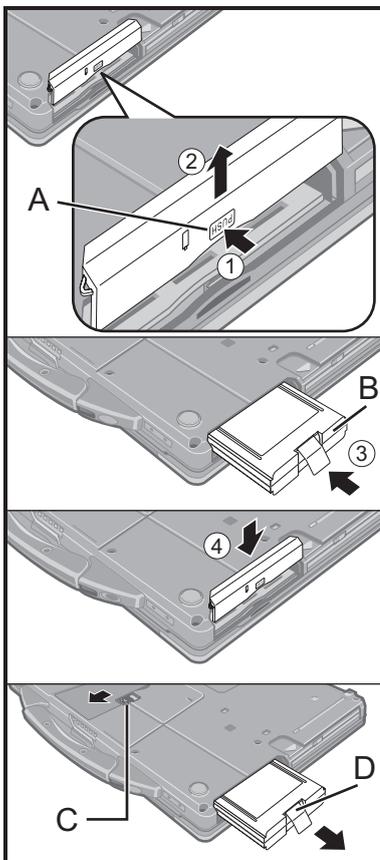


Model No: CF-VZSU71U

• OPERATING INSTRUCTIONS (This book)..... 1

② Read the LIMITED USE LICENSE AGREEMENT before breaking the seal on the computer's packaging (→ page 24).

■ Inserting the Battery Pack



- ① Reverse the computer, then press and hold the **PUSH** mark part (A).
- ② Slide and remove the cover.
- ③ Insert the battery pack (B) until it securely fits the connector.
- ④ Slide the cover back.

■ To remove the battery pack

In step ③ above, slide and hold the latch (C), and pull the tab (D) of the battery pack.

CAUTION

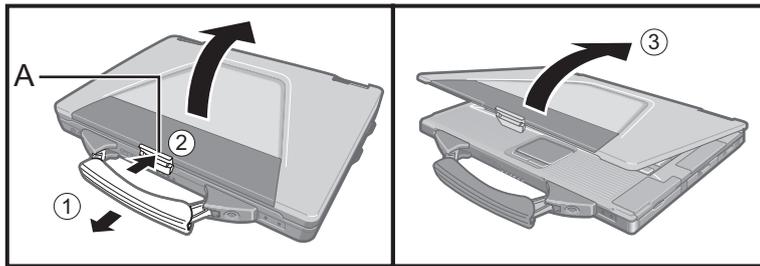
- Make sure the cover is securely attached. Otherwise the battery pack may fall when you carry the computer.

NOTE

- Note that the computer consumes electricity even when the computer power is off. If the battery pack is fully charged, the battery will fully discharge in the following period of time:
 - When power is off: Approx. 10 weeks
 - In sleep : Approx. 3.5 days
 - In hibernation: Approx. 9 days
- When the DC plug is not connected to the computer, disconnect the AC cord from your AC wall outlet. Power is consumed simply by having the AC adaptor plugged into an electrical outlet.

First-time Operation

■ Opening the Display



- ① Pull the carrying handle forward.
- ② Push the top of the latch (A) to release it.
- ③ Lift up the display to open.

1 Insert the battery pack.

- 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.
- Be sure to attach the cover for use.

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.

3 Turn on the computer.

- ① Confirm the wireless switch (→ page 9) is OFF.
- ② Press and hold the power switch  (→ page 9) until the power indicator  (→ page 9) lights.

CAUTION

- Do not press the power switch repeatedly.
- The computer will be forcibly turned off if you press and hold the power switch for four seconds or longer.
- Once you turn off the computer, wait for ten 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
 - Pressing the power switch
 - Touching the keyboard, touch pad 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.

4 <For MUI OS model> 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 (32bit or 64bit) on “Select OS” screen and click [OK].
The language setting will start by clicking [OK] on the confirmation screen. You can return to the “Select OS” screen by clicking [Cancel].
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.
- ③ Turn on the computer.

5 Setup Windows.

- ① Follow the on-screen instructions.
 - The computer restarts several times. Do not touch the keyboard or touch pad, 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 touch pad and clicking to move the cursor and to click an item.
 - Setup of Windows will take approximately 20 minutes.
Go to the next step, confirming each message on the display.
 - “Join a wireless network” screen may not appear.
You can set the Wireless Network after the setup of Windows is complete.

CAUTION

- Wait until the drive indicator  has turned off.
 - You can change the user name, password, image and security after setup of Windows.
 - Do not use the following words and characters for user name: CON, PRN, AUX, CLOCK\$, NUL, COM1 to COM9, LPT1 to LPT9, @, &, 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 log on to Windows (➔ page 21).
 - 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.
 - The wallpaper for the first logon user has already been set on “5 Setup Windows.”. When using this computer under the Sun, the screen becomes easily viewable by changing the wallpaper to the white wallpaper.
 - ① Right-click on the desktop, and click [Personalize] - [Desktop Background].
 - ② Select [Solid Colors] at [Picture Location].
 - ③ Select the white wallpaper and click [Save changes].
- <For MUI OS model>
- When setting up the keyboard, choose the appropriate one to your computer. Otherwise, input by the keyboard may become unavailable.

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 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* “Checking the Computer’s Usage Status”)

■ When Starting Up/Shutting Down

Do not do the following

- Connecting or disconnecting the AC adaptor
- Pressing the power switch
- Touching the keyboard, touch pad 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 of inactivity.
 - The computer automatically enters sleep*¹ after 20 minutes of inactivity.

*¹ Refer to  *Reference Manual* “Sleep and Hibernation Functions” about resuming from sleep

■ 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. This computer has a single partition as default setting.

- ① 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 to the first 3 partitions.] in reinstalling Windows 7 (→ page 19), 60000 MB 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.

NOTE

- 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.

On-screen Manual

You can access the following manuals on the computer screen.

■ Reference Manual

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

To access the Reference Manual:

Double-click  on the desktop.

- Alternatively click  (Start) - [All Programs] - [Panasonic] - [On-Line Manuals] - [Reference Manual].

■ Important Tips

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

To access the Important Tips:

Double-click  on the desktop.

- Alternatively click  (Start) - [All Programs] - [Panasonic] - [On-Line Manuals] - [Important Tips].

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 °C to 60 °C
 - 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.
- 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.

- When carrying the computer:
 - Turn off the computer.
 - Remove all external devices, cables, PC Cards and other protruding objects.
 - Remove a disc in the CD/DVD drive.
 - Do not drop or hit the computer against solid objects.
 - Do not leave the display open.
 - Do not grip the display part.
- 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.
- The touch pad is designed to be used by finger tip. 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 touch pad. The cursor may not work correctly.
- Be careful not to get injured by dropping or getting hit when carrying the computer.

■ 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

<Only for model with wireless LAN/Bluetooth>

- Before using wireless LAN/Bluetooth, 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.
<When performing "Battery Recalibration" after shutting down Windows>

- Full charge: Approximately 2 hours
- Complete discharge: Approximately 2 hours

When performing "Battery Recalibration" without shutting down Windows, it may take more time to charge / discharge.

Maintenance

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.

To clean the LCD panel

- Do not use water to clean the panel. Ingredients included in water may leave scratches and reduce readability of the screen.
- To remove dust or dirt, do not use a cloth to rub it off since it may leave scratch on the screen. Use a fine brush to sweep dust or dirt, then wipe with a dry soft glass-cleaning cloth.
- To clean the oily surface, use a soft gauze dipped in camera lens cleaner, and then wipe with a dry soft glass-cleaning cloth.

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.

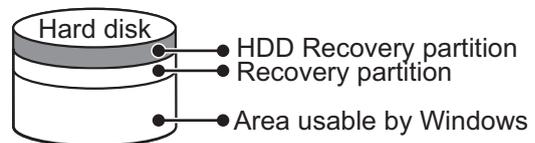
Reinstalling Software

Reinstalling software will return the computer to the default condition. When you reinstall the software, the hard disk data will be erased.

Back up important data to other media or an external hard disk before reinstallation.

CAUTION

- Do not delete the recovery partition on the hard disk.
The disk space in the partition is not available to store data.



■ Hard Disk Recovery

Preparation

- Remove all peripherals.
- Connect the AC adaptor and do not remove it until reinstallation is complete.

1 Turn on the computer, and press F2 or Del while [Panasonic] boot screen is displayed.
The Setup Utility starts up.

- 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.

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

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

3 Press F10.

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

4 Press F2 or Del while [Panasonic] boot screen is displayed.

The Setup Utility starts up.

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

5 Select the [Exit] menu, then select [Recovery Partition] and press Enter.

6 Click [Reinstall Windows] and click [Next].

The License Agreement screen appears.

7 Click [Yes, I agree to the provisions above and wish to continue!] and click [Next].

8 Select the settings and click [Next].

- [Reinstall Windows to the whole Hard Disk to factory default.]
Select this option when you want to reinstall Windows to the factory default. After reinstallation, you can create a new partition. For how to create a new partition, refer to “To change the partition structure” (→ page 14).
- [Reinstall to the System and OS partitions.]*¹
Select this option when the hard disk has already been divided into several partitions. For how to create a new partition, refer to “To change the partition structure” (→ page 14).
You can keep the partition structure.

*¹ This does not appear if Windows cannot be reinstalled to the partition containing boot files and the area usable by Windows.

9 At the confirmation message, click [YES].

10 <For model with localized OS>

Select OS (32bit or 64bit) and click [OK].

<For model with MUI OS>

Select language and OS (32bit or 64bit), then click [OK].

11 At the confirmation message, click [OK].

Reinstallation starts according to the instructions on the screen.

- Do not interrupt reinstallation, for example by turning off the computer. Otherwise reinstallation may become unavailable as Windows may not start up or the data may be corrupted.

12 When “Ending process.” is displayed, click [OK] to turn off the computer.

13 Turn on the computer.

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

14 Perform the “First-time Operation” (→ page 13).

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

16 Perform Windows Update.

■ Using Recovery Disc

Use the Recovery Disc for reinstallation in the following conditions.

- You have forgotten the administrator password.
- Reinstallation is not complete. The recovery partition may be broken.

NOTE

- To change OS from 32-bit to 64-bit, or vice versa, reinstall OS using the recovery partition in the hard disk.

Preparation

- Prepare the Recovery Disc (→  *Reference Manual* “Recovery Disc Creation Utility”)
- Remove all peripherals.
- Connect the AC adaptor and do not remove it until reinstallation is complete.

1 Turn on the computer, and press **F2** or **Del** while [Panasonic] boot screen is displayed.

The Setup Utility starts up.

- 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.

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

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

3 Press **F10**.

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

4 Press **F2** or **Del** while [Panasonic] boot screen is displayed.

The Setup Utility starts up.

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

5 Set the Recovery Disc into the CD/DVD drive.

6 Select the [Exit] menu, then select [Slimtype DVD...] in [Boot Override].

7 Press **Enter**.

The computer will restart.

8 Click [Reinstall Windows] and click [Next].

The License Agreement screen appears.

9 Click [Yes, I agree to the provisions above and wish to continue!] and click [Next].

10 Select the settings and click [Next].

- [Reinstall Windows to the whole Hard Disk to factory default.]
Select this option when you want to reinstall Windows to the factory default. After reinstallation, you can create a new partition. For how to create a new partition, refer to “To change the partition structure” (→ page 14).
- [Reinstall to the first 3 partitions.]*²
Select this option when the hard disk has already been divided into several partitions. For how to create a new partition, refer to “To change the partition structure” (→ page 14).
You can keep the partition structure.

*² This does not appear if Windows cannot be reinstalled to the partition containing boot files and the area usable by Windows.

11 At the confirmation message, click [YES].

Reinstallation starts. (It will take approximately 50-70 minutes.)

According to the screen, replace the Recovery Disc.

- Do not interrupt reinstallation, for example by turning off the computer. Otherwise reinstallation may become unavailable as Windows may not start up or the data may be corrupted.

12 When “Ending process.” is displayed, remove the Recovery Disc, and then click [OK] to turn off the computer.

13 Turn on the computer.

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

14 Perform the “First-time Operation” (→ page 13).

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

16 Perform Windows Update.

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* "Checking the Computer's Usage Status").

■ Starting Up

<p>Cannot start up. The power indicator or battery indicator is not lit.</p>	<ul style="list-style-type: none"> ● Connect the AC adaptor. ● Insert a fully charged battery. ● Remove the battery pack and the AC adaptor, then connect them again. ● Even if the AC adaptor and battery pack are correctly connected, if the battery indicator is not lit, the AC adaptor protection function may be operating. Disconnect the AC cord, wait three minutes or more, and reconnect the AC cord. ● 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 a device is connected to the ExpressCard slot, disconnect the device, or set [ExpressCard Slot] to [Disabled] in the [Advanced] menu of the Setup Utility.
<p>The power is turned on but "Warming up the system (up to 30 minutes)" appears.</p>	<ul style="list-style-type: none"> ● The computer is warming up before start up. Wait for the computer to start up (takes up to 30 minutes). If, "Cannot warm up the system" is displayed, the computer failed to warm up and does not start. In this case, turn off the computer, leave it in an environment of 5 °C or higher temperature for about an hour, and then turn on the power once more.
<p>Cannot turn on the computer. The computer does not resume from sleep. (The power indicator blinks quickly in green.)</p>	<ul style="list-style-type: none"> ● Leave it in an environment of 5 °C or higher temperature for about an hour, then turn on the power once more.
<p>After adding or changing the RAM module, the power is turned on but nothing is displayed on the screen.</p>	<ul style="list-style-type: none"> ● 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.
<p>The computer does not enter sleep mode while the screen saver is running (The screen stays black).</p>	<ul style="list-style-type: none"> ● Press and hold the power switch for four seconds or longer to shut down the computer forcibly. (Data not saved will be lost.) Then disable the screen saver.
<p>It takes time for the power indicator to light up.</p>	<ul style="list-style-type: none"> ● If the power switch is pressed immediately after the battery pack has been mounted on the computer, and while the AC adaptor is not connected, it may take about five seconds before the power indicator lights up and the computer turns on. This is because the computer is checking the remaining battery charge; it is not a malfunction.
<p>You have forgotten the password.</p>	<ul style="list-style-type: none"> ● Supervisor Password or User Password: Contact Panasonic Technical Support. ● Administrator password: <ul style="list-style-type: none"> • 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, you can reset the administrator password. Set the disk and enter any wrong password, then follow the on-screen instructions and set a new password. <p>If you do not have a password reset disk, reinstall (→ page 18) and set up Windows, and then set a new password.</p>
<p>"Remove disks or other media. Press any key to restart" or a similar message appears.</p>	<ul style="list-style-type: none"> ● 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 a device is connected to the ExpressCard slot, disconnect the device, or set [ExpressCard Slot] to [Disabled] in the [Advanced] menu of the Setup Utility. ● <Only for model with ExpressCard slot> If the problem persists after removing the disk, it may be a hard disk failure. Contact Panasonic Technical Support.

■ Starting Up

Windows startup and operation is slow.	<ul style="list-style-type: none"> ● Press F9 in the Setup Utility (→  <i>Reference Manual</i> “Setup Utility”) to return the Setup Utility settings (excluding the passwords) to the default values. Start the Setup Utility and make the settings again. (Note that the processing speed depends on the application software, so this procedure may not make Windows faster.) ● If you installed a resident software after purchase, turn off the residence.
The date and time are incorrect.	<ul style="list-style-type: none"> ● Make the correct settings. Click  (Start) - [Control Panel] - [Clock, Language, and Region] - [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.	<ul style="list-style-type: none"> ● 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.
[Enter Password] does not appear when resuming from sleep/hibernation.	<ul style="list-style-type: none"> ● Select [Enabled] in [Password On Resume] in the [Security] menu of the Setup Utility (→  <i>Reference Manual</i> “Setup Utility”). ● The Windows password can be used instead of the password set in the Setup Utility. <ol style="list-style-type: none"> ① Click  (Start) - [Control Panel] - [User Accounts and Family Safety] - [Add or remove user accounts] and select the account, and set the password. ② Click  (Start) - [Control Panel] - [System and Security] - [Power Options] - [Require a password on wakeup] and add a check mark for [Require a password].
Cannot resume.	<ul style="list-style-type: none"> ● An error may occur when the computer automatically enters the sleep or hibernation mode while the screen saver is active. In this case, turn off the screen saver or change the pattern of the screen saver.
Other startup problems.	<ul style="list-style-type: none"> ● Press F9 in the Setup Utility (→  <i>Reference Manual</i> “Setup Utility”) to return the Setup Utility settings (excluding the passwords) to the default values. Start the Setup Utility and make the settings again. ● Remove all peripheral devices. ● Check to see if there was a disk error. <ol style="list-style-type: none"> ① Remove all peripheral devices including an external display. ② Click  (Start) - [Computer] and right-click [Local Disk (C:)], and click [Properties]. ③ Click [Tools] - [Check Now...]. <ul style="list-style-type: none"> • A standard user needs to enter an administrator password. ④ Select the option in [Check disk options] and click [Start]. ⑤ Click [Schedule disk check] and restart the computer. ● Start the computer in Safe Mode and check the error details. When the [Panasonic] boot screen disappears^{*1} at startup, press and hold F8 until the Windows Advanced Options Menu is displayed. Select the Safe Mode and press Enter. <p>^{*1} When [Password on boot] is set to [Enabled] in the [Security] menu of the Setup Utility, [Enter Password] appears after the [Panasonic] boot screen disappears. As soon as you enter the password and press Enter, press and hold F8.</p>

■ Entering Password

Even after entering the password, password input screen is displayed again.	<ul style="list-style-type: none"> ● The computer may be in ten-key mode. If the NumLk indicator  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.)	<ul style="list-style-type: none"> ● The user name (account name) includes an “@” 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 18).

Troubleshooting (Basic)

■ Shutting down

Windows does not shut down.	<ul style="list-style-type: none"> ● Remove the USB device and the ExpressCard. ● Wait one or two minutes. It is not a malfunction.
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■ Display

No display.	<ul style="list-style-type: none"> ● The external display is selected. Press Fn + F3 or ⌘ + P to switch the display. Wait until the display has been switched completely before pressing Fn + F3 or ⌘ + P again. ● When using an external display, <ul style="list-style-type: none"> • Check the cable connection. • Turn on the display. • Check the settings of external display. ● 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, press the power switch.
The screen is dark.	<ul style="list-style-type: none"> ● The screen is darker when the AC adaptor is not connected. Press Fn + F2 and adjust the brightness. As you increase the brightness, battery consumption increases. You can separately set the brightness for when the AC adaptor is connected and when <u>not</u> connected. ● Press Fn + F8 to turn off the concealed mode.
The screen is disordered.	<ul style="list-style-type: none"> ● Changing the number of display colors and resolution may affect the screen. Restart the computer. ● Connecting/disconnecting an external display may affect the screen. Restart the computer. ● Resuming from sleep or hibernation may affect the screen of the external display. Restart the computer.
The external display does not work normally.	<ul style="list-style-type: none"> ● 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.

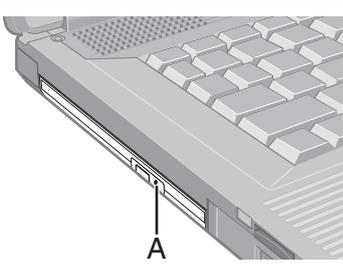
■ Touch Pad

The cursor does not work.	<ul style="list-style-type: none"> ● When using the external mouse, connect it correctly. ● Restart the computer using the keyboard. Press ⌘ and press → twice, and press ↑ to select [Restart] and press Enter. ● If the computer does not respond to keyboard commands, read "No response." (→ page 23).
Cannot input using the touch pad.	<ul style="list-style-type: none"> ● Set [Touch Pad] to [Enabled] in the [Main] menu of the Setup Utility. ● The drivers for some mice may disable the touch pad. Check your mouse's operating instructions.

■ On-screen Document

The document of PDF format is not displayed.	<ul style="list-style-type: none"> ● Install Adobe Reader. <ol style="list-style-type: none"> ① Log on to Windows as an administrator. ② Click ⊕ (Start) and input "c:\util\reader\AdbRdr1001_en_US.exe" in [Search programs and files] then press Enter. ③ Update Adobe Reader to its latest version. If your computer is connected to the internet, start up Adobe Reader and click [Help] - [Check for Updates...].
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■ CD/DVD Drive

<p>The tray does not come out although inserting a pointed object to the emergency hole.</p>	<ul style="list-style-type: none">● A pin of 1.3 mm in diameter is recommended to remove a disc using the emergency hole (A). When the diameter of the pin is smaller than this, insert the pin slightly downward.	
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■ Others

<p>No response.</p>	<ul style="list-style-type: none">● 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 four 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, click  (Start) - [Control Panel] - [Uninstall a program].
<p>Cannot enter characters correctly.</p>	<ul style="list-style-type: none">● Select the same language setting for Windows and the internal keyboard (→ page 13).

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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

Model No.		CF-52VACBYDE
CPU/Secondary cache memory		Intel® Core™ i5-3360M Processor (3 MB ^{*1} cache, up to 2.8 GHz) with Intel® Turbo Boost Technology
Chip Set		Mobile Intel® QM77 Express Chipsets
Video controller		AMD Radeon™ HD7750M
Main Memory ^{*2}		4 GB ^{*1} , DDR3L SDRAM (16 GB ^{*1} Max.)
Video Memory		512 MB ^{*1} dedicated (<32-bit> 1915 MB ^{*1} Max., <64-bit> 2283 MB ^{*1} Max./4331 MB ^{*1} with extended memory) ^{*3}
Hard Disk Drive		500 GB ^{*4} (Serial ATA) Approx. 15 GB ^{*4} is used as a recovery partition. (Users cannot use this partition.)
CD/DVD Drive		DVD MULTI Drive built-in, Buffer underrun error prevention function: Supported
Continuous Data Transfer Speed ^{*5*6}	Reading ^{*7}	●DVD-RAM ^{*8} : 5X (Max.) ●DVD-R ^{*9} : 8X (Max.) ●DVD-R DL: 8X (Max.) ●DVD-RW: 8X (Max.) ●DVD-ROM: 8X (Max.) ●+R: 8X (Max.) ●+R DL: 8X (Max.) ●+RW: 8X (Max.) ●High Speed +RW: 8X (Max.) ●CD-ROM: 24X (Max.) ●CD-R: 24X (Max.) ●CD-RW: 24X (Max.) ●High-Speed CD-RW: 24X (Max.) ●Ultra-Speed CD-RW: 24X (Max.)
	Writing ^{*10}	●DVD-RAM ^{*8} : 5X (Max.) ●DVD-R ^{*9} : 8X (Max.) ●DVD-R DL: 6X (Max.) ●DVD-RW: 6X (Max.) ●+R: 8X (Max.) ●+R DL: 6X (Max.) ●+RW: 4X (Max.) ●High Speed +RW: 8X (Max.) ●CD-R: 24X (Max.) ●CD-RW: 4X ●High-Speed CD-RW: 10X ●Ultra-Speed CD-RW: 24X (Max.)
Supported Discs/Format	Reading	●DVD-ROM (Single Layer, Dual Layer) ●DVD-Video ●DVD-R ^{*9} (1.4 GB, 3.95 GB, 4.7 GB) ^{*4} ●DVD-R DL (8.5 GB) ^{*4} ●DVD-RW (Ver.1.1/1.2 1.4 GB, 2.8 GB, 4.7 GB, 9.4 GB) ^{*4} ●DVD-RAM ^{*8} (1.4 GB, 2.6 GB, 2.8 GB, 4.7 GB, 5.2 GB, 9.4 GB) ^{*4} ●+R (4.7 GB) ^{*4} ●+R DL (8.5 GB) ^{*4} ●+RW (4.7 GB) ^{*4} ●High Speed +RW (4.7 GB) ^{*4} ●CD-Audio ●CD-ROM (XA compatible) ●CD-R ●Photo CD (multiple session compatible) ●Video CD ●CD-EXTRA ●CD-RW ●High-Speed CD-RW ●Ultra-Speed CD-RW ●CD-TEXT
	Writing	●DVD-RAM ^{*8} (1.4 GB, 2.8 GB, 4.7 GB, 9.4 GB) ^{*4} ●DVD-R ^{*9} (1.4 GB, 4.7 GB for General) ^{*4} ●DVD-R DL (8.5 GB) ^{*4} ●DVD-RW (Ver.1.1/1.2 1.4 GB, 2.8 GB, 4.7 GB, 9.4 GB) ^{*4} ●+R (4.7 GB) ^{*4} ●+R DL (8.5 GB) ^{*4} ●+RW (4.7 GB) ^{*4} ●High Speed +RW (4.7 GB) ^{*4} ●CD-R ●CD-RW ●High-Speed CD-RW ●Ultra-Speed CD-RW
Display Method		15.4 WUXGA type (TFT) (1920 × 1200 dots)
Internal LCD		65,536/16,777,216 colors (800 × 600 dots / 1024 × 768 dots / 1280 × 768 dots / 1600 × 1200 dots / 1680 × 1050 dots / 1920 × 1080 dots / 1920 × 1200 dots) ^{*11}
External Display ^{*12}		65,536 / 16,777,216 colors (800 × 600 dots / 1024 × 768 dots / 1280 × 768 dots / 1600 × 1200 dots / 1920 × 1080 dots / 1920 × 1200 dots)
Wireless LAN ^{*13}		Intel® Centrino® Advanced-N 6235 (→ page 27)
Bluetooth ^{*14}		→ page 27
LAN		IEEE 802.3 10Base-T / IEEE 802.3u 100BASE-TX / IEEE 802.3ab 1000BASE-T
Modem ^{*15}		Data: 56 kbps (V.92) FAX: 14.4 kbps
Sound		WAVE and MIDI playback, Intel® High Definition Audio subsystem support
Security Chip		TPM (TCG V1.2 compliant) ^{*16}

Specifications

■ Main Specifications

Card Slots	PC Card Slot	x 1, Type I or Type II, Allowable current 3.3 V: 400 mA, 5 V: 400 mA	
	ExpressCard Slot	x 1, ExpressCard/34 or ExpressCard/54	
	SD Memory Card Slot ^{*17}	x 1	
	Contact Smart Card Slot ^{*18}	x 1	
RAM Module Slot		x 2, DDR3L SDRAM, 204-pin, 1.35 V, SO-DIMM, PC3-10600 Compliant	
Interface		USB Ports x 4 (USB 2.0 x 2 + USB 3.0 x 2) ^{*19} / Serial Port (Dsub 9-pin male) / Modem Port (RJ-11) ^{*15} / LAN Port (RJ-45) / External Display Port (VGA) (Mini Dsub 15-pin female) / IEEE1394a Interface Connector (4-pin) ^{*20} / Microphone Jack (Miniature jack, 3.5 DIA) / Headphone Jack (Miniature jack, 3.5 DIA, Impedance 32 Ω, Output Power 4 mW × 2, Stereo) / Expansion Bus Connector (Dedicated 100-pin female)	
Keyboard / Pointing Device		87 or 88 keys / Touch Pad	
Fingerprint Reader ^{*21}		Array Size : 248 x 4 pixels, Image Size : 248 x 360 pixels, Image Resolution : 508 DPI	
Power Supply		AC adaptor or Battery pack	
AC Adaptor		Input: 100 V - 240 V AC, 50 Hz/60 Hz, Output: 15.6 V DC, 7.05 A	
Battery Pack		Li-ion 10.8 V, Typical 6750 mAh / Minimum 6300 mAh	
Operating Time ^{*22}		Approx. 4 hours	
Charging Time ^{*23}		Approx. 2 hours	
Power Consumption ^{*24}		Approx. 60 W ^{*25} / Approx. 100 W (maximum when recharging in the ON state)	
Physical Dimensions (W × D × H) (including the carrying handle)		355.7 mm × 286.8 mm × 50.7 - 51.9 mm	
Weight (including the carrying handle)		Approx. 3.4 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)

■ Software

Installed OS ^{*26}	Genuine Windows® 7 Professional 32-bit Service Pack 1 / Genuine Windows® 7 Professional 64-bit Service Pack 1
Pre-installed Software	Adobe Reader, PC Information Viewer, Intel® PROSet/Wireless Software ^{*13} , Bluetooth Stack for Windows® by TOSHIBA ^{*14} , Wireless Switch Utility, Wireless Connection Disable Utility ^{*13 *27} , Hotkey Settings, Battery Recalibration Utility, Infineon TPM Professional Package ^{*16 *27} , Protector Suite 2011 ^{*21 *27} , Aptio Setup Utility, PC-Diagnostic Utility, Roxio Creator LJB, Cyber-Link PowerDVD 10, Concealed Mode Utility, Recovery Disc Creation Utility, Hard Disk Data Erase Utility ^{*28} , Dashboard for Panasonic PC, Quick Boot Manager, Power Plan Extension utility

■ Wireless LAN*13

Data Transfer Rates	IEEE802.11a : 54/48/36/24/18/12/9/6 Mbps (automatically switched)*29 IEEE802.11b : 11/5.5/2/1 Mbps (automatically switched)*29 IEEE802.11g : 54/48/36/24/18/12/9/6 Mbps (automatically switched)*29 IEEE802.11n*30 : (HT20)GI*31 = 400ns: 150/130/115/86/72/65/57/43/28/21/14/7 Mbps (automatically switched)*29 GI*31 = 800ns: 130/117/104/78/65/58/52/39/26/19/13/6 Mbps*29 (HT40)GI*31 = 400ns: 300/270/240/180/150/135/120/90/60/45/30/15 Mbps (automatically switched)*29 GI*31 = 800ns: 270/243/216/162/135/121/108/81/54/40/27/13 Mbps*29
Standards Supported	IEEE802.11a / IEEE802.11b / IEEE802.11g / IEEE802.11n
Transmission Method	OFDM system, DS-SS system
Wireless Channels Used	IEEE802.11a : Channels 36/40/44/48/52/56/60/64/100/104/108/112/116/120/124/128/132/136/140 IEEE802.11b/IEEE802.11g : Channels 1 to 13 IEEE802.11n : Channels 1-13/36/40/44/48/52/56/60/64/100/104/108/112/116/120/124/128/132/136/140
RF Frequency Band	IEEE802.11a : 5.18 GHz - 5.32 GHz, 5.5 GHz - 5.7 GHz IEEE802.11b/IEEE802.11g : 2.412 GHz - 2.472 GHz IEEE802.11n : 2.412 GHz - 2.472 GHz, 5.18 GHz - 5.32 GHz, 5.5 GHz - 5.7 GHz

■ Bluetooth*14

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

*1 1 KB = 1,024 bytes / 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 16 GB, but the total amount of usable memory available will be less depending on the actual system configuration.

*3 A segment of the main memory is allotted automatically depending on the computer's operating status. The size of the Video Memory cannot be set by the user. The size of Video memory is allotted depending on the operating system.

*4 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.

*5 Data transfer speeds indicate values measured by Panasonic Corporation. The data transfer rate of DVD per 1X speed is 1,350 KB/s. The data transfer rate of CD per 1X speed is 150 KB/s.

*6 Performance of CD-R, CD-RW, DVD-RAM, DVD-R, DVD-R DL, DVD-RW, +R, +R DL, and +RW cannot be guaranteed depending on writing status and recording format. Also, some data cannot be played back depending on the disc, settings, and environment being used.

*7 If an unbalanced disc (e.g., a disc with which the balance has been displaced from the center) is inserted, the speed may become slower if there are large vibrations while the disc is rotating.

*8 Only non-cartridge type or removable cartridge type can be used.

*9 DVD-R is compatible with 4.7 GB (for General) playback. DVD-R (for Authoring) playback is compatible with discs recorded using Disc-at-Once recording.

*10 Depending on the disc, the writing speed may become slower.

*11 A 16,777,216 color display is achieved by using the dithering function.

*12 Display may be impossible using some connected external displays.

*13 Only for model with wireless LAN.

*14 Only for model with Bluetooth.

*15 Only for model with modem.

*16 Only for model with TPM.

For information on TPM, refer to the Installation Manual of "Trusted Platform Module (TPM)" by the following procedure. Click  (Start) and input "c:\util\drivers\tpm\index.hta" in [Search programs and files] and press **Enter**.

*17 This slot is compatible with High-Speed Mode. 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.

*18 Only for model with Smart Card slot.

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

*20 Only for model with IEEE 1394a interface.

*21 Only for model with Fingerprint reader.

*22 Measured with LCD brightness : 60 cd/m²
Varies depending on the usage conditions, or when an optional device is attached.

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

Specifications

- *24 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.
- *25 Rated power consumption. 23-E-1
- *26 Operations of this computer are not guaranteed except for the pre-installed OS and the OS which is installed by using the Recovery disc. Some parts of the software in the Recovery disc may not be installed depending on a model.
- *27 Must be installed before use.
- *28 Perform on the recovery partition. (If this software can not be performed on the recovery partition, perform from the recovery disc)
- *29 These are speeds specified in IEEE802.11a+b+g+n standards. Actual speeds may differ.
- *30 Available when set to "AES".
- *31 Only available when HT40 enabled by the computer and access point which associated supports HT40.

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 equipment within 96 working hours from time of the first planned collection to time of return delivery.

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.

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^{*1}. PANASONIC WILL NOT BE RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE OF THIS PRODUCT ARISING OUT OF THE FOREGOING USES.

^{*1} AIRCRAFT COCKPIT EQUIPMENT/SYSTEMS include Class2 Electrical Flight Bag (EFB) Systems and Class1 EFB Systems when used during critical phases of flight (e.g., during take-off and landing) and/or mounted on to the aircraft. Class1 EFB Systems and 2 EFB Systems are defined by FAA: AC (Advisory Circular) 120-76A or JAA: JAA TGL (Temporary Guidance Leaflets) No.36.

Standard Limited Warranty

Panasonic System Communications Company Europe

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.

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.

Panasonic and its suppliers makes no warranty, either express, implied or statutory, with respect to software provided with the Product and licensed to Purchaser, its quality, performance, merchantability, or fitness for a particular purpose. Panasonic does not warrant that the functions contained in the software will be uninterrupted or error free. Panasonic assumes no risk of and shall not in any case be liable for any damages, including, without limitation, any special, incidental, consequential, or punitive damages arising from breach of warranty or contract, negligence or any other legal theory, including, without limitation loss of goodwill, profits or revenue, loss of use of the Programs or Products or any associated equipment, cost of capital, cost of any substitute equipment, facilities, or services, downtime costs, or claims of any party dealing with such damages.

Some countries do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitations or exclusions may not apply to you.

This limited warranty gives you specific legal rights and you may also have other rights that vary from country to country. You must consult applicable country laws for a full determination of your rights.0

Contacts

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As an ENERGY STAR® Partner, Panasonic Corporation has determined that this product meets ENERGY STAR® guidelines for energy efficiency. By enabling available power management settings, Panasonic computers enter a low-power sleep mode after a period of inactivity, saving the user energy.

Outline of the International ENERGY STAR® Office Equipment Program

The international ENERGY STAR® Office Equipment Program is an international program that promotes energy saving through the use of computers and other office equipment. The program backs the development and dissemination of products with functions that effectively reduce energy consumption. It is an open system in which business proprietors can participate voluntarily. The targeted products are office equipment such as computers, displays, printers, facsimiles, and copiers. Their standards and logos are uniform among participating nations.

22-E-1

Importer's name & address pursuant to the EU GPSD (General Product Safety Directive) 2001/95/EC Art.5
Panasonic System Communications Company Europe, Panasonic Marketing Europe GmbH
Hagenauer Straße 43
65203 Wiesbaden
Germany

55-E-1