Panasonic®

OPERATING INSTRUCTIONS
Basic Guide
Personal Computer

Model No. CF-D1N series
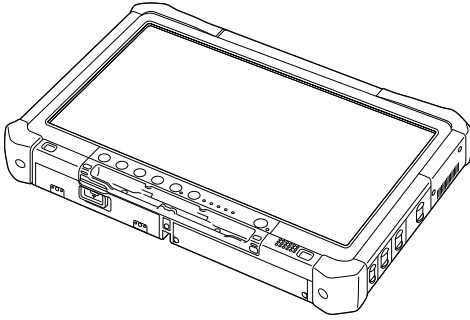
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Getting Started

Useful Information

Troubleshooting

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 10` indicates Windows 10 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.
Windows 10	
■ - [All Apps] :	Touch ■ (Start) and then touch [All Apps].
Windows 7	
(Start) - [All Programs] :	Touch (Start), and then touch [All Programs]. You may need to double-touch in some cases.
→ :	Page in these Operating Instructions or in the Reference Manual.
:	Reference to the on-screen manuals.
Enter :	Press [Enter] key.
Ctrl + **C** :	Press and hold [Ctrl] key, and then press [C] key.
•	The display of the key may be different from this manual according to the keyboard used. (e.g. "Delete" instead of "Del")

● 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 10 Pro 64-bit" as "Windows" or "Windows 10"
  • "Windows® 7 Professional 32-bit Service Pack 1" and "Windows® 7 Professional 64-bit Service Pack 1" as "Windows" or "Windows 7"
  • Circular media including DVD-ROM and CD-ROM as "discs"
  • DVD MULTI drive as "DVD drive"
  • "Multilingual User Interface" as "MUI"
● **Windows 10**
  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**

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■ On-screen Manual

For further information about the computer, you can refer to the on-screen manual.
- **Operating Instructions - Reference Manual**
  The Reference Manual contains the practical information to help you fully enjoy the computer's performance. Update it to the latest version for reference.
- **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.
- **Update the on-screen manuals**
  This describes the procedures to update the on-screen manual.
- **Operating Instructions - Connect to a network**
  This describes the connection procedures using the network devices mounted on this unit.

To access the on-screen manuals, follow the steps below.
Double-touch [Manual Selector] on the desktop, and select the on-screen manual.

Windows 10

1. Double-touch the [Panasonic PC Settings Utility] on the desktop screen, and then touch [Support] - [Manual] - [Launch Manual Selector].
2. 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

Front side

Bottom and rear side
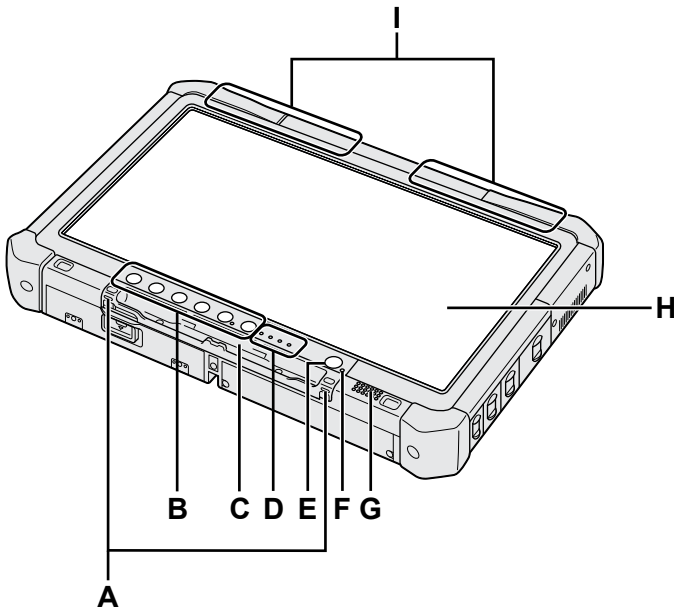
A: Tether Hooks
The tether hooks are not provided for some models.
B: Tablet Buttons
➔ 📖 *Reference Manual* "Tablet Buttons"
C: Pen Holder
D: LED Indicator
🔋 : Battery status
➔ 📖 *Reference Manual* "Battery Power"
📶 : Wireless ready
This indicator lights when wireless LAN, Bluetooth, and/or Wireless WAN are connected and ready. It does not necessarily indicate the On/Off condition of the wireless connection.
➔ 📖 Connect to a network "Wireless LAN", "Bluetooth", "Wireless WAN", "Disabling/ Enabling Wireless Communication"
🖴 : Drive status
🆂🅳 : SD Memory Card Indicator
(Blinking: During access)
➔ 📖 *Reference Manual* "SD Memory Card"
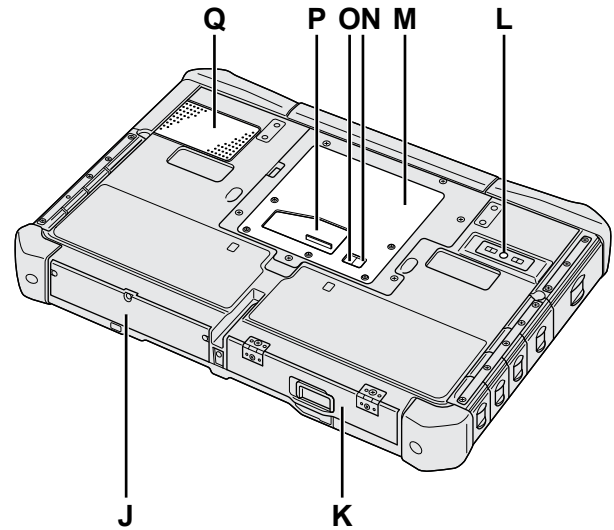**E: Power Switch**
F: Power Status
(Off: Power off/Hibernation, Green: Power on, Blinking green: Sleep, Blinking green rapidly: Cannot power on or resume due to low temperature.)
G: Speaker
H: LCD
➔ 📖 *Reference Manual* "Screen Input Operation"

I: Bluetooth Antenna
<Only for model with Bluetooth>
➔ 📖 *Connect to a network* "Bluetooth"

Wireless WAN Antenna
<Only for model with wireless WAN>
➔ 📖 *Connect to a network* "Wireless WAN"

Wireless LAN Antenna
<Only for model with wireless LAN>
➔ 📖 *Connect to a network* "Wireless LAN"
J: Hard Disk Drive
K: Battery Pack
➔ 📖 *Reference Manual* "Battery Power"
L: Rear Camera
<Only for model with rear camera>
➔ 📖 *Reference Manual* "Camera"
M: RAM Module Slot
➔ 📖 *Reference Manual* "RAM Module"
N: External Antenna Connector (CH1)
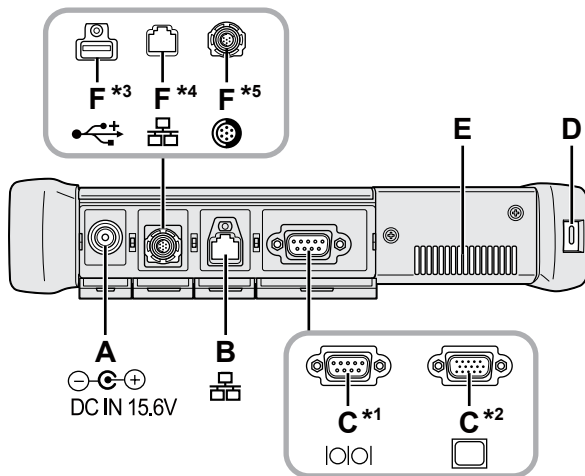**O: External Antenna Connector (CH2)**
P: Expansion Bus Connector
➔ 📖 *Reference Manual* "Cradle"
Q: Ventilation Hole (Intake)

Right side

Parts (F) illustrated below are all optional.

Left side

To set the wireless switch to ON, slide and align it to the ▽ mark.

A: DC-IN Jack

B: LAN Port

➔ 📖 *Reference Manual* "LAN"

C: Serial Port[*1] / VGA Port[*2]

[*1] <Only for model with serial port>

[*2] <Only for model with VGA port>

➔ 📖 *Reference Manual* "External Display"

D: Security Lock

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

E: Ventilation Hole (Exhaust)

F: 4th USB Port (USB2.0)[*3] / 2nd LAN Port[*4] / Rugged USB2.0 Port[*5]

[*3] <Only for model with 4th USB port (USB2.0)>

➔ 📖 *Reference Manual* "USB Devices"

[*4] <Only for model with 2nd LAN port>

➔ 📖 *Reference Manual* "LAN"

[*5] <Only for model with rugged USB2.0 port>

➔ 📖 *Reference Manual* "USB Devices"
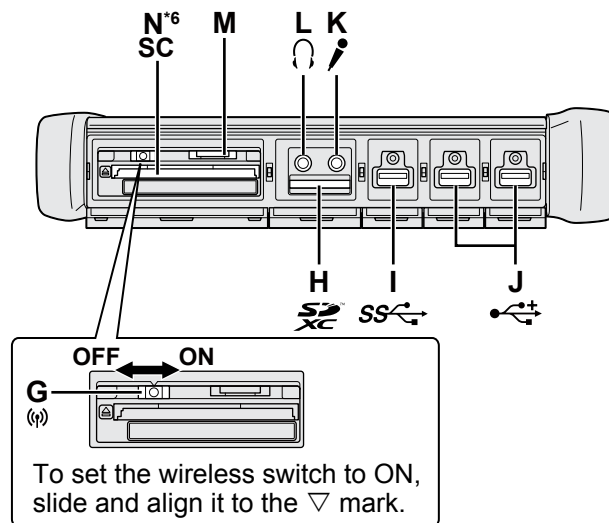
G: Wireless Switch

➔ 📖 *Connect to a network* "Disabling / Enabling Wireless Communication"

H: SD Memory Card Slot

Keep SD Memory Cards away from infants and small children.

➔ 📖 *Reference Manual* "SD Memory Card"

I: USB3.0 Port

➔ 📖 *Reference Manual* "USB Devices"

J: USB2.0 Ports

➔ 📖 *Reference Manual* "USB Devices"

K: 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.

L: Headphone Jack

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

M: SIM Card Slot

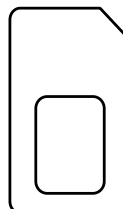<Only for model with wireless WAN>
Insert the SIM card into the SIM card slot with the contact side facing downward and with the cut corner oriented forward.

➔ 📖 *Connect to a network* "Wireless WAN"

CAUTION

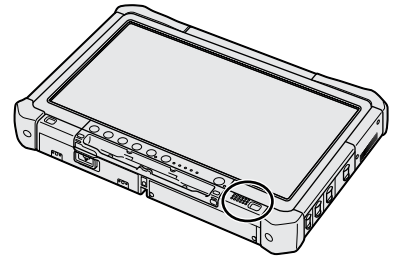● The slot accepts SIM Cards (15 mm x 25 mm).

N: Smart Card Slot[*6]

[*6] <Only for model with Smart Card slot>

➔ 📖 *Reference Manual* "Smart Card"

Description of Parts

● This computer contains a magnet and magnetic products at the location circled in the illustration at right. Avoid leaving metallic object or magnetic media in contact with this area.

■ **Attaching the stylus to the computer <Only for model with tether>**

The tether prevents the stylus (included) from falling accidentally.
Use the tether to attach the stylus to the computer so you will not lose it.
There are holes (A) to attach it.
① Pass one of the loops through the hole.
② Pass the second loop on the tether through the first one.
③ Thread the second loop through the hole (A).
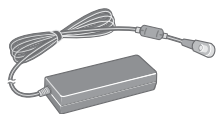④ Pass the stylus through the second loop.
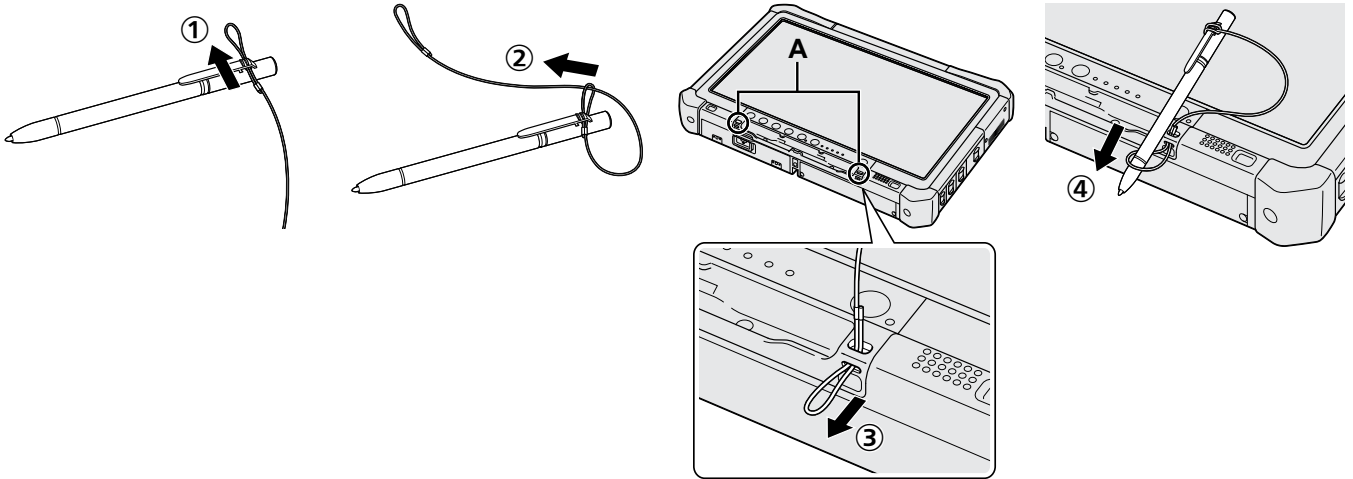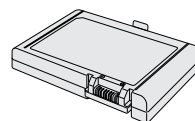
First-time Operation

■ **Preparation**

① Check and identify the supplied accessories.
  If you do not find the described accessories, contact Panasonic Technical Support.
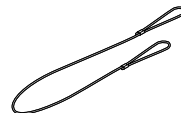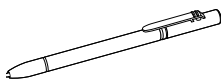
| • **AC Adaptor** . . . . . 1 | • **AC Cord** . . . . .1 | • **Battery Pack** . . . . .1 |

Model No: CF-AA5713A

Model No: CF-VZSU73U / CF-VZSU73SP

| • **Soft Cloth** . . . . 1 | • **Stylus** . . . . .1 | • **Tether** . . . . .1 |

Some models may be supplied with a stylus different from the above.
(➔ 📖 *Reference Manual* "Screen Input Operation")

Some models may not be supplied with a tether, or supplied with a tether different from the above.

• **Safety Precautions / Regulatory Information** 1

■ **Inserting the Battery Pack**
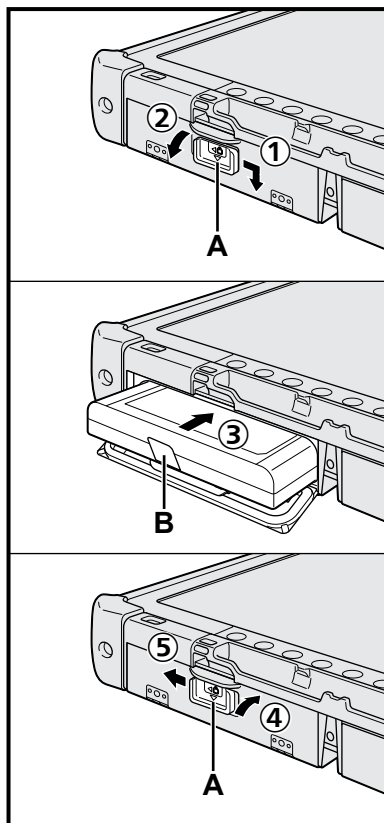
① Slide the latch (A) in the direction of the arrow.
② Open the cover.
③ Insert the battery pack until it securely fits the connector.
④ Close the cover until it clicks.
⑤ Slide the latch (A) in the direction of the arrow.

■ **To remove the battery pack**

In step ③ above, pull the tab (B) of the battery pack.

CAUTION
● Make sure the latch is securely locked. 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. 9 weeks
  • In sleep: Approx. 4 days
  • In hibernation: Approx. 8 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.
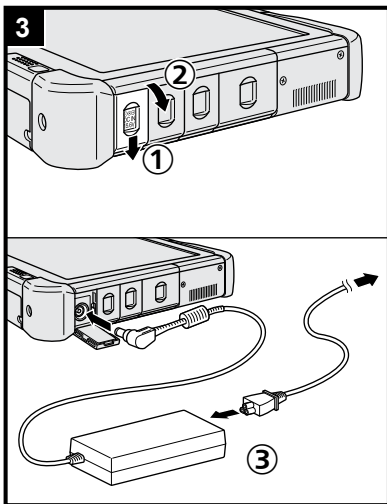
First-time Operation

| | 1 | **Inserting the Battery Pack (➔ page 7)** |

- 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 | **Attaching the stylus to the computer (➔ page 6)** |

| | 3 | **Connect your computer to a power outlet.** |

① Slide the latch in the direction of the arrow.
② Open the cover.
③ Connect the AC adaptor.
  The battery charging starts automatically.
④ Slide the latch of one of the three USB ports in the direction of the arrow.

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 (including wired LAN cable) except the battery pack, AC adaptor, external keyboard and mouse.
- **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.

| | 4 | **Turn on the computer** |
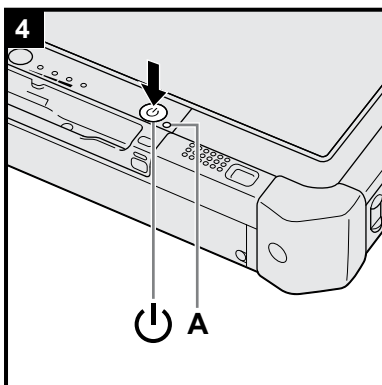
① Confirm the wireless switch (➔ page 5) is OFF.
② Press and hold the power switch ⏻ until the power indicator (A) lights.

CAUTION

- Do not press the power switch repeatedly.
- The computer will forcibly be turned off if you press and hold the power switch for 4 seconds or longer.
- Any changes from the default setting of the Setup Utility must not be made until the First-time Operation is completed.

Windows 7

| | 5 | **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.

NOTE

- You can operate with the Tablet Buttons. Follow the instructions displayed on the screen.

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

| | 6 | **Setup Windows.** |

Windows 10
Select language and touch [Next].

Windows 7
Turn on the computer.
Follow the on-screen instructions.
● The computer restarts several times. Do not touch the touchscreen, external keyboard or external mouse, and wait until the drive indicator ⊟ has turned off.
● After the computer is turned on, the screen remains black or unchanged for a while. This is not a malfunction. Wait for a moment until the Windows setup screen appears.
● During setup of Windows, use the touchscreen, external mouse, external keyboard and clicking to move the cursor and to click an item.
● 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 10 If "Let's get connected" is displayed, select [Skip this step].
   Windows 7 "Join a wireless network" screen may not appear.

CAUTION
● Wait until the drive indicator ⊟ has turned off.
● You can change the user name, password, image and security setting after setup of Windows.
● 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.
● Do not use the following words for user name: CON, PRN, AUX, CLOCK$, NUL, COM1 to COM9, LPT1 to LPT9, LPT, &, space, **Windows 7** @.
● **Windows 7**
   In particular, if you create a user name (account name) that includes the "@" mark, a password will be requested at the 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 20).
● The wallpaper for the first logon user has already been set on "*6* Setup Windows.". When using this computer under the Sun, the screen becomes easily viewable by changing the wallpaper to the white wallpaper.
   ① Long-touch on the desktop, and touch [Personalize] - [Desktop Background].
   ② Select [Solid Colors] at [Picture Location].
   ③ Select the white wallpaper and touch [Save changes].
● **Windows 7** Follow the steps below.
   ① When "Enable sensors" is displayed, touch [Enable this sensor].
   ② When the [User Account Control] screen is displayed, touch [Yes].
   ③ At the [Display Rotation Tool] confirmation screen, touch [Yes].
   The computer restarts automatically, and the setting is enabled.

7	**Windows 10** Restart the computer

① Touch ⊞ (Start).
② Touch ⏻ (Power) - [Restart].
● A portion of the Panasonic PC Settings Utility functions will be enabled after the computer restarts.

8	Update the on-screen manual

① Connect to the internet. **Windows 10** Sign in / **Windows 7** Log on to Windows as an administrator.
   For further information, refer to 📖 *OPERATING INSTRUCTIONS - Connect to a network.*
② Update the on-screen manual.
   Double-touch [Manual Selector] on the desktop.
   Windows 10 Double-touch the [Panasonic PC Settings Utility] on the desktop screen, and then touch [Support] - [Manual] - [Launch Manual Selector].
   Follow the on-screen instructions.

9

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9   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.

NOTE

- **Windows 10** **Panasonic PC Settings Utility**
  You can check the status of the computer, and change the settings. Double-touch [Panasonic PC Settings Utility] on the desktop to start the utility. (➔ 📖 *Reference Manual* "Panasonic PC Settings Utility")
- **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 touch [OK]. Then follow the on-screen instructions.
  (➔ 📖 *Reference Manual* "Checking the Computer's Usage Status")
- **Windows 10**
  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 Slide the wireless switch to ON.

Windows 10

② Touch 📄 (Notification) at the task tray, and then touch ⚙ (All settings) - [Network & Internet] - [Airplane mode].
  Set [Airplane mode] to [Off], and then;
  set [Wi-Fi] to [On] (for wireless LAN).
  set [Cellular] to [On] (for wireless WAN).
  set [GPS] to [On] (for wireless WAN).
  set [Bluetooth] to [On] (for Bluetooth).
  set [GPS\GNSS] to [On] (for GPS).

■ **About 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.

CAUTION

- **Windows 10** Do not add or delete partitions in Windows 10, as the Windows area and recovery partition must be adjacent to each other in Windows 10.

Windows 7 **To Change the partition structure**

① Touch 🔵 (Start) and long touch [Computer], then touch [Manage].
  - A standard user needs to enter an administrator password.
② Touch [Disk Management].
③ Long-touch the partition for Windows ("c" drive in the default setting), and touch [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 touch [Shrink].
  - You cannot input a larger number than the displayed size.
  - To select [Reinstall to the OS related partitions.] in reinstalling OS (➔ page 15), 70 GB or more is necessary for [Total size after shrink in MB].
⑤ Long-touch [Unallocated] (the shrunk space in the step ④) and touch [New Simple Volume].
⑥ Follow the on-screen instructions to make the settings, and touch [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, long-touch the partition and touch [Delete Volume] in step ③.

Turning On / Turning Off

Turning On

Press and hold the power switch ⏻ (➔ page 4) until the power indicator ⏻ (➔ page 4) lights.

NOTE
- Do not press the power switch repeatedly.
- The computer will forcibly be 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 tablet buttons, screen or external mouse
  - Turn on/off the wireless switch

Turning Off

Windows 10
  ① Touch ⊞ (Start) at the lower left.
  ② Touch ⏻ (Power) - [Shutdown].
Windows 7
  ① Touch 🅦 (Start) - [Shutdown].

NOTE
- Windows 10

  To turn off the computer completely, proceed as follows.
  ① Touch ⊞ (Start) at the lower left, and the touch ⚙ (Settings) - [Update & security] - [Recovery].
  ② Touch [Restart now] under "Advanced startup".
  ③ Touch [Turn off your PC].

Precaution against Starting Up/Shutting Down

- Do not do the following
  - Connecting or disconnecting the AC adaptor
  - Pressing the power switch
  - Touching the tablet buttons, screen or external mouse
  - 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 : -10 °C to 50 °C {14 °F to 122 °F} (IEC60068-2-1, 2)[1]
  Storage :   -20 °C to 60 °C {-4 °F to 140 °F}
  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 an 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.

[1] Do not expose the skin to this product when using the product in a hot or cold environment. (➔ "Safety Precautions / Regulatory Information")
  If the computer is wet in temperatures of 0 °C {32 °F} or below, freeze damage may occur. Make sure to dry off the computer in such temperatures.

- 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, 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, and other protruding objects.
  - Do not drop or hit the computer against solid objects.
  - Do not grip the display part.
- 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.
- Use only the included stylus to touch the touchscreen. 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 touchscreen when dust or dirt (e.g., oil) is on the screen. Otherwise foreign particles on the screen/stylus can scratch the screen surface or obstruct the stylus operation.
- Use the stylus only for touching the screen. Using it for any other purpose may damage the stylus and result in scratches on the screen.

■ When using peripheral devices

Follow these instructions and the Operating Instructions - 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.
  <When performing "Battery Recalibration" after shutting down Windows>
  - Full charge: Approximately 2.0 hours
  - Complete discharge: Approximately 4.0 hours
  When performing "Battery Recalibration" without shutting down Windows, it may take more time to charge / discharge.

■ PC-Diagnostic Utility

When you start the PC-Diagnostic Utility without connecting an external keyboard and an external mouse, shut down the computer by pressing and holding the power switch. Then, connect an external keyboard and an external mouse to the computer and restart the PC-Diagnostic Utility.

Maintenance

To clean the LCD panel

Use the soft cloth included with the computer. (For further information, refer to "Suggestions About Cleaning the LCD Surface". ➔ 🖳 *Reference Manual* "Screen Input Operation")

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.
- Use a soft, dry cloth to wipe droplets of water from the surface of the unit. Do not use a microwave to dry the unit. Doing so will result in malfunction or damage.

Useful Information

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.

■ **Windows 10** Reset Windows

Preparation

If the computer does not operate normally, or becomes unstable, you can reset Windows to solve the problem.
● Remove all peripherals and SD memory card, etc.
● Connect the AC adaptor and do not remove it until installation is complete.

1 Perform "Reset Windows".

① Touch ▦ (Start) - [Settings] - [Update & security] - [Recovery].
② Touch [Get Started] under "Reset Windows".
③ Select the option.
  • [Keep my files]
  Windows reinstallation can be completed in a short time (Approximately 30 minutes).
  Applications and other items that do not come with this computer will be removed.
  • [Remove everything]
    ● [Just remove my files] (Approximately 30 minutes)
    ● [Remove files and 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 50 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 "Setup Windows" (➔ page 8).

NOTE

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

3 Perform Windows Update.

4 **Windows 10** <Only for model with TPM> Clear TPM.

① Touch and hold ▦ (Start), touch [Run].
② Press ⬚ (A2) button to display Input Keyboard, then input [tpm.msc] and touch [OK].
③ Touch [Clear TPM…] under "Actions" on the right of the "TPM Manager on Local Computer" screen.
④ Touch [Restart] of the "Manage the TPM security hardware" screen.
The computer will restart.
⑤ When "TPM configuration change was requested to ..." is displayed, press **F12**.
⑥ Touch the Desktop tile, and when "TPM is ready" appears, touch [Close].

Useful Information

■ **Disk recovery**

You can reinstall the OS that was pre-installed at the time of purchase (Windows 10 or Windows 7).

CAUTION
● If the recovery partition is deleted, you cannot perform hard disk (flash memory) recovery.

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

Windows 10 If reinstallation using the method described in "Reset Windows" above is not successful, follow the steps below.

1   Start the Setup Utility.

   Windows 10
   ① Touch ▣ (Start) - [Settings] - [Update & security] - [Recovery].
   ② Touch [Restart now] under "Advanced startup".
   ③ Touch [Troubleshoot] - [Advanced options] - [UEFI Firmware Settings] - [Restart].

   Windows 7
   Turn on the computer, and touch [Click here for Setup] that appears at the top left corner of the screen while [Panasonic] boot screen is displayed.
   ● If the [Panasonic] boot screen is not displayed, as soon as the computer starts up, press ⊘ several times until the Setup Utility screen appears.
   ● If the password is requested, enter the Supervisor Password.

2   Write down all of the contents of the Setup Utility and double-touch [Load Default Values].
   At the confirmation message, select [Yes] and press **Enter**.

3   Check the [UEFI Boot] setting of the Setup Utility.
   [UEFI Boot] should be set to as follows.
   When Windows 10 is used : [Enabled]
   When Windows 7 is used   : [Disabled]

4   Touch [Exit] and double-touch [Save Values and Reboot].
   At the confirmation message, select [Yes] and press **Enter**.
   Computer will restart.

5   Press ⊘ several times while [Panasonic] boot screen is displayed.
   The Setup Utility starts up.
   ● If the password is requested, enter the Supervisor Password.

6   Touch [Exit] and double-touch [Recovery Partition].

7   Windows 10
   Touch [Recovery].
   Touch [CANCEL] to abort the operation.

   Windows 7
   Select [Reinstall Windows] and select [Next]. Use the Tablet Buttons to operate.

8   Windows 7
   At the License Agreement screen, select [Yes, I agree to the provisions above and wish to continue!] and select [Next].

9   Windows 10 Touch [Disk 0].

10   Windows 7 Select [Next].
   If the option is displayed, select the setting and touch [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 10).
   ● [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 10).
      [1] This does not appear if Windows cannot be installed to the recovery partition and the area usable by Windows.

11   Windows 7 At the confirmation message, select [YES].

12   Windows 7
   Select language and system type (32bit or 64bit) and select [OK].
   At the confirmation message, select [OK].
   To cancel the recovery procedure, select [CANCEL], and click the [x] mark that appears at the top right corner of the screen.

15

Installing Software

13 Windows 10 Touch [Recovery ALL Partitions.].

14 Windows 7 At the confirmation message, select [YES].
Installation starts according to the instructions on the screen.
- 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.

15 When Ending process screen is displayed, Windows 10 touch [Shutdown] Windows 7 select [OK] to turn off the computer.

16 Turn on the computer.
- If the password is requested, enter the Supervisor Password.

17 Perform the "Setup Windows" (➔ page 8).

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

19 Perform Windows Update.

20 Windows 10 <Only for model with TPM> Clear TPM (➔ page 14).

■ **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 (flash memory drive) may be broken.
- The recovery partition is deleted.
- Windows 7 <Only for Windows 7 downgrade model>
  To change OS from Windows 7 to Windows 10, or vice versa.

> NOTE
> - Windows 7 To change the OS from 32 bit to 64 bit or vice versa, the recovery partition must be used to install the OS. Therefore, the recovery partition must still exist on the hard disk in order to perform this operation.

Preparation
- Prepare the following items:
  - Recovery Disc (➔ 📖 *Reference Manual* "Recovery Disc Creation Utility")
  - USB DVD drive (optional) (refer to recent catalogs and other sources for information about the products available)
- Remove all peripherals and SD memory card, etc.(except for the USB DVD drive).
- Connect the AC adaptor and do not remove it until installation is complete.

1 Connect the DVD drive to the USB port.

2 Start the Setup Utility.
Windows 10
① Touch ⊞ (Start) - [Settings] - [Update & security] - [Recovery].
② Touch [Restart now] under "Advanced startup".
③ Touch [Troubleshoot] - [Advanced options] - [UEFI Firmware Settings] - [Restart].
Windows 7
Turn on the computer, and touch [Click here for Setup] that appears at the top left corner of the screen while [Panasonic] boot screen is displayed.
- If the [Panasonic] boot screen is not displayed, as soon as the computer starts up, press ⌖ several times until the Setup Utility screen appears.
- If the password is requested, enter the Supervisor Password.

3 Write down all of the contents of the Setup Utility and touch [Exit] and double-touch [Load Default Values].
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 10 is used: [Enabled]
When the recovery disc for Windows 7 is used: [Disabled]

5 Set the Recovery Disc into the DVD drive.

6 Touch [Exit] and double-touch [Save Values and Reboot].
At the confirmation message, select [Yes] and press **Enter**.
Computer will restart.

Useful Information

7 **Press ⊘ several times while [Panasonic] boot screen is displayed.**
The Setup Utility starts up.
● If the password is requested, enter the Supervisor Password.

8 **Touch [Exit] and double-touch your DVD drive in [Boot Override].**
The computer will restart.

9 **Windows 10 Touch [Recovery] and touch [Next].**

10 **Windows 7 Select [Reinstall Windows] and select [Next]. Use the Tablet Buttons to operate.**

11 **Windows 10 At the confirmation message, touch [YES].**

12 **Windows 7 At the License Agreement screen, select [Yes, I agree to the provisions above and wish to continue!] and select [Next].**

13 **Windows 10 Touch [Disk 0].**

14 **Windows 7**
Select [Next].
If the option is displayed, select the setting and select [Next].
● [Reinstall with HDD recovery partition.]
Standard recovery method.
You can use recovery from Recovery Partition.
● [Reinstall without HDD recovery partition.]
Increase usable disk 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.

15 **Windows 7 Select [Next].**
If the option is displayed, select the setting and select [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 10).
● [Reinstall Windows to the OS related 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 10).
You can keep the partition structure.
[2] This does not appear when [Reinstall with HDD recovery partition.] is selected, or if Windows cannot be installed to the recovery partition and the area usable by Windows.

16 **Windows 10 Touch [Recovery ALL Partitions.].**

17 **Windows 7 At the confirmation message, select [YES].**

18 **Windows 7**
Select language and system type (32bit or 64bit) and select [OK].
At the confirmation message, select [OK].
To cancel the recovery procedure, select [CANCEL], or click the ☒ mark that appears at the top right corner of the screen.
Installation starts according to the instructions on the screen.
● Do not interrupt installation, for example by turning off the computer.
Otherwise installation may become unavailable as Windows may not start up or the data may be corrupted.

19 **When Ending process screen is displayed, remove the Recovery Disc and DVD Drive and then Windows 10 touch [Reboot] Windows 7 select [OK].**
Follow the on-screen instructions.

20 **Perform the "Setup Windows" (➜ page 8).**

21 **Windows 10 On the "Finish Recovery Process." screen, touch [Shutdown.].**

22 **Start the Setup Utility and change the settings as necessary.**

23 **Perform Windows Update.**

24 **Windows 10 <Only for model with TPM> Clear TPM (➜ page 14).**

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**

Cannot start up. The power 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. ● 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. ● Check the [UEFI Boot] setting of the Setup Utility.[UEFI Boot] should be set to Windows 10 [Enabled] / Windows 7 [Disabled].
The power is turned on but "Warming up the system" appears.	● 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 again.
Cannot turn on the computer. The computer does not resume from sleep. (The power indicator blinks quickly in green.)	● Leave it in an environment of 5 °C or higher temperature for about an hour, then turn on the power again.
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.
It takes time for the power indicator to light up.	● 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.

You have forgotten the password.	● Supervisor Password or User Password: Contact Panasonic Technical Support.
	● Administrator password:
	  • 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.
	  • If you do not have a password reset disk, reinstall (➔ page 14) and set up Windows, and then set a new password.

"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, connect an external keyboard and 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.
Windows startup and operation is slow.	● Start the Setup Utility (➔ 📖 *Reference Manual* "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.

Troubleshooting

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■ Starting Up

The date and time are incorrect	● Make the correct settings. ① **Windows 10** Touch and hold ⊞ (Start) at the bottom left corner, and then touch [Control Panel]. **Windows 7** Touch 🪟 (Start) - [Control Panel]. ② Touch [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.	● 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.	● 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 Add a password. **Windows 10** 1. Touch ⊞ (Start) - [Settings] - [Accounts]. 2. Touch [Sign-in options], and touch [Add] under "Password". **Windows 7** 1. Touch 🪟 (Start) - [Control Panel]. 2. Touch [User Accounts and Family Safety] - [Add or remove user accounts]. ② Set up the following. **Windows 10** 1. Open the Control Panel, touch [System and Security] - [Power Options] - [Require a password on wakeup]. 2. Add a check mark for [Require a password]. **Windows 7** 1. Touch [Control Panel] - [System and Security] - [Power Option] - [Require a password when the computer wakes] and add a check mark for [Require a password].
Cannot resume.	● 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.	● Start the Setup Utility (→ 🗒 *Reference Manual* "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. ① Remove all peripheral devices including an external display. ② **Windows 10** Touch and hold ⊞ (Start) at the bottom left corner, and then touch [File Explorer]. **Windows 7** Touch 🪟 (Start) - [Computer]. ③ **Windows 10** Touch and hold [Windows (C:)], and touch [Properties]. **Windows 7** Long-touch [Local Disk (C:)], and touch [Properties]. ④ **Windows 10** Touch [Tools] - [Check]. **Windows 7** Touch [Tools] - [Check Now...]. • A standard user needs to enter an administrator password. ⑤ Follow the on-screen instructions.

Troubleshooting

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Troubleshooting (Basic)

■ **Entering Password**

Windows 7
Cannot log on to Windows. ("The user name or password is incorrect." is displayed.)
	● The user name (account name) includes an "@" mark.
	  - If another user account name exists:
	    Log on to Windows using another user account name and delete the account name that includes "@". Then create a new account name.
	  - If no other account name exists:
	    You need to reinstall Windows (➜ page 14).

■ **Shutting down**

Windows does not shut down.	● Remove the USB device. ● Wait one or two minutes. It is not a malfunction.

■ **Display**

No display.	● <Only for model with VGA port>
	The external display is selected. Change the display output destination.
	● <Only for model with VGA port>
	When using an external display,
	  • 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, touch the screen.
	● The computer entered sleep or hibernation by the power-saving function. To resume, press the power switch.

The screen is dark.	● The screen might be darker when the AC adaptor is not connected. Adjust the brightness by using **Windows 10** Panasonic PC Settings Utility / **Windows 7** Dashboard for Panasonic PC. As you increase the brightness, battery consumption increases. You can separately set the brightness for when the AC adaptor is connected and when not connected.
The screen is disordered.	● 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.
<Only for model with VGA port> <When connecting the cradle> During Simultaneous display, one of the screens becomes disordered.	● When using the Extended Desktop, use the same display colors for the external display as those used by the LCD. If you continue to experience problems, try changing the display. ① Long-touch on the desktop, and touch [Graphics Properties]. ● Simultaneous display cannot be used until Windows startup is complete (during Setup Utility, etc.).
<Only for model with VGA port> <When connecting the cradle> 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.

■ **Touchscreen**

The cursor does not work.	● When using the external mouse, connect it correctly. ● Restart the computer using the external keyboard. ● If the computer does not respond to the external keyboard commands, read "No response" (➜ page 21).
Cannot point the correct position using the included stylus.	● Perform the touchscreen calibration. (➜ 📖 *Reference Manual* "Screen Input Operation")

Troubleshooting

■ On-screen Document

Windows 7
The document of PDF format is not displayed.
	● Install Adobe Reader.
	  ① Log on to Windows as an administrator.
	  ② Press ⊜ₙ (A2) button.
	    Input Keyboard screen appears.
	  ③ Touch 🔵 (Start) and input "c:\util\reader\en\pinstall.bat" in [Search programs and files], then press **Enter**.
	  ④ Update Adobe Reader to its latest version.
	    If your computer is connected to the internet, start up Adobe Reader and touch [Help] - [Check for Updates...].

■ Others

No response.	● Press ⊘ button 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 ⊜ₙ (A2) button to display Input Keyboard screen. And touch **Alt**+**Tab** on the Input Keyboard 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 10
	    Touch and hold ▦ (Start) at the bottom left corner, and then touch [Control Panel].
	    Windows 7
	    Touch 🔵 (Start) - [Control Panel].
	  ② Touch [Programs] - [Uninstall a program].

Troubleshooting

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Contact Information: oss-cd-request@gg.jp.panasonic.com

The source code and the copyright notice are also available for free in our website below.

http://panasonic.net/avc/oss/index.html

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™ i5-6300U Processor (3 MB[*1] cache, up to 3.00 GHz with Intel® Turbo Boost Technology)
Chip Set	Built-in CPU
Video controller	Intel® HD Graphics 520 (Built-in CPU)
Main Memory[*2]	4 GB[*1], DDR3L-1600 (16 GB[*1] Max.)
Storage	Hard Disk Drive: 500 GB[*3] (Serial ATA) **Windows 10** Approx. 15 GB[*3] is used as a partition with HDD recovery tools. (Users cannot use this partition.) Approx. 740 MB[*3] is used as a partition with system tools. (Users cannot use this partition.) **Windows 7** Approx. 45 GB[*3] is used as a partition with 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	13.3 type with Touchscreen (IPS) (1366 × 768 dots) (16:9)
Internal LCD	65,536/16,777,216 colors (800 × 600 dots (**Windows 7**)) / 1024 × 768 dots / 1280 × 720 dots / 1280 × 768 dots / 1360 × 768 dots / 1366 × 768 dots)[*4]
External Display[*5]	65,536 / 16,777,216 colors (800 × 600 dots (**Windows 7**)) / 1024 × 768 dots / 1280 × 768 dots / 1366 × 768 dots / 1600 × 1200 dots / 1920 × 1080 dots / 1920 × 1200 dots)
LCD Filter	Circular Polarizer
Wireless LAN	Intel® Dual Band Wireless - AC 8260 (➔ page 25)
Bluetooth[*6]	➔ page 25
Wireless WAN[*7]	Equipped
LAN	IEEE 802.3 10Base-T / IEEE 802.3u 100BASE-TX / IEEE 802.3ab 1000BASE-T
Sound	WAVE and MIDI playback, Intel® High Definition Audio subsystem support
Security Chip[*8]	TPM (TCG V1.2 compliant)
SD Memory Card Slot[*9]	× 1
RAM Module Slot	× 2, DDR3L SDRAM, 204-pin, 1.35 V, SO-DIMM, PC3L-10600 Compliant
Interface	USB2.0 Ports[*10] × 2 / USB3.0 Port × 1 / LAN Port (RJ-45) × 1 / 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)
Pointing Device	Touchscreen (Resistive)
Button	Security, Application × 3, Function, A0
Power Supply	AC adaptor or Battery pack
AC Adaptor[*11]	Input: 100 V to 240 V AC, 50 Hz/60 Hz, Output: 15.6 V DC, 7.05 A
Battery Pack	Li-ion 10.8 V, Minimum 5800 mAh
Operating Time[*12]	Approx. 12.0 hours
Charging Time[*13]	Approx. 2.0 hours (in the OFF state) Approx. 2.0 hours (in the ON state)
Power Consumption[*14]	Approx. 35 W[*15] / Approx. 90 W (maximum when recharging in the ON state)
Physical Dimensions (W × D × H) (excluding projecting parts)	Approx. 349 mm × 244 mm × 46 mm {Approx. 13.7 " × 9.6 " × 1.8 "}
Weight	Approx. 2.2 kg {Approx. 4.85 lb.}

Appendix

■ Main Specifications

Environment	Operating	Temperature	-10 °C to 50 °C {14 °F to 122 °F} (IEC60068-2-1, 2)[16]
		Humidity	30 % to 80 % RH (No condensation)
	Storage	Temperature	-20 °C to 60 °C {-4 °F to 140 °F}
		Humidity	30 % to 90 % RH (No condensation)

■ Software

Base OS	Windows 10 Pro 64-bit
Installed OS[17]	**Windows 10** Windows 10 Pro 64-bit **Windows 7** Windows 7 Professional 32-bit Service Pack 1 (downgraded to Windows 7)[18] / Windows 7 Professional 64-bit Service Pack 1 (downgraded to Windows 7)[18]
Pre-installed Software[18]	PC Information Viewer, Intel® PROSet/Wireless Software, Intel® Wireless Bluetooth®[19] , Camera Utility[19], Manual Selector, GPS Viewer[19], Recovery Disc Creation Utility, Intel® WiDi, Microsoft Office Trial[20], Hand Writing Utility **Windows 10** Panasonic PC Settings Utility[21], Wireless Toolbox, Calibration Utility[22] **Windows 7** Adobe Acrobat Reader DC, Battery Recalibration Utility, Infineon TPM Professional Package[8][22], Wireless Switch Utility, Wireless Connection Disable Utility[22], Calibration Utility, Dashboard for Panasonic PC, Display Rotation Tool, Tablet Button Manager, Software Keyboard, Power Plan Extension Utility
	Aptio Setup Utility, Hard Disk Data Erase Utility[23], PC Diagnostic Utility

■ Wireless LAN

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 : 400 Mbps
	            VHT20 : 173.3 Mbps

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

■ Bluetooth

Bluetooth Version	**Windows 10** 4.1 / **Windows 7** 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

■ Optional Devices

Storage	SSD: 128 GB / 256 GB / 512 GB
GPS	Chip: u-blox NEO-M8N GPS/GLONASS/SBAS Support
Wireless WAN	LTE compatible
SIM Card Slot	× 1
USB 2.0 Port[10]	× 1
Rugged USB 2.0 Port[10]	× 1
Smart Card Slot	× 1
2nd LAN Port	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX
Serial Port	× 1, Dsub 9-pin male

Specifications

VGA Port	× 1
Rear Camera[*26]	1280 x 720 dots, 30fps / 2048 x 1536 dots, 15fps (Video) / max. 2592 x 1944 dots (Still), with Camera light
LCD Filter	No Circular Polarizer

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

[*5] Display may be impossible using some connected external displays.

[*6] Does not guarantee operation of all Bluetooth peripherals.

[*7] Only for model with wireless WAN. The specification may differ depending on models.

[*8] <Only for model with TPM> **Windows 7** For information on TPM, Double-touch [Manual Selector] on the desktop, and select "Installation Manual for Trusted Platform Module (TPM)".

[*9] 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] <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-1

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

[*13] Varies depending on the usage conditions, CPU speed, etc.

[*14] Approx. 0.5 W when the battery pack is fully charged (or not being charged) and the computer is off.
Even when the AC adaptor is not connected to the computer, power is consumed (Max. 0.15 W) simply by having the AC adaptor plugged into an AC outlet.

[*15] Rated power consumption.   23-E-1

[*16] Do not expose the skin to this product when using the product in a hot or cold environment. (➔ "Safety Precautions / Regulatory Information")
When using in hot or cold environment, some peripherals and battery pack may fail to work properly. Check the operation environment of the peripherals.
Using this product continuously in a hot environment will shorten the product life. Avoid use in these types of environments.
When using in low temperature environment, startup may become slow or battery operation time may become short.
The computer consumes power when the hard disk is warming up during startup. Therefore, if you are using battery power and the remaining power is low, the computer may not start up.

[*17] 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.

[*18] This system is preinstalled with Windows 7 Professional software and also comes with a license for Windows 10 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.

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

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

[*21] Panasonic PC Settings Utility includes the following functions: Battery Charge Speed / Battery Recalibration / Power Saving Settings / etc. (➔ *Reference Manual* "Panasonic PC Settings Utility")

[*22] Must be installed before use.

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

[*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.

[*26] Depending on the specification of application software, the following cases may occur. In these cases, select a smaller resolution.
• Cannot select a large resolution.
• When selecting a large resolution, an error occurs.

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