■ **When using the digitizer/touchscreen**

● Use the pen (included) with the computer. Do not use pencils, implements with sharp tips or hard objects for screen operations. The screen may be damaged as a result.

● Do not place any object on the surface or press down forcefully with sharp-pointed objects (e.g., nails), or hard objects that can leave marks (e.g., pencils and ball point pens).

● Do not apply pressure to the perimeter of the display panel. The cursor may move to the edge of the display.

● Do not operate the computer when such things as dust are on the screen. Do not allow contact with substances that could dirty the screen, such as oil.

● Do not apply too much pressure when operating the screen. Only a light touch is required to operate the screen. Applying too much pressure may damage the surface.

● When the screen becomes dirty, use the Soft Cloth (included) with the computer. (For more information, refer to
  📖 *Reference Manual* "Suggestions About Cleaning the LCD Surface".)

● Do not touch the screen outside of the LCD display area. The screen input area is defined by the LCD display screen. Touching the screen outside of the display area may result malfunctions or damage to the screen.

<Only for model with digitizer>

● The screen uses electromagnetic induction and may not work properly near strong electrical field or magnetic field such as:
  • Near AM radio base station or relay station antennas
  • Near CRT displays that generate strong electromagnetic field noise
    Move the screen away from such locations so it will work properly.

● The cursor cannot follow the digitizer pen or finger movement if you move the digitizer pen or finger too quickly.

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

● Windows 7
  When the screen is displayed on the External Display using Intel® Wireless Display Software, click ⌃ on the notification area, click 🖳 and click [Power saver].
  ([Power saver] for the power plan restrains performance. Accordingly, using application software or peripheral devices frequently may slow the computer processing speed.)

● Windows 7
  When Intel® Wireless Display Software is not used, click ⌃ on the notification area and click 🖳. Then click [Panasonic Power management (Better Heat Dispersion)].
  • When changing to [Panasonic Power management (Better Heat Dispersion)], the following settings will change.
    – Change to [High Speed] from [Standard] in [Fan control mode].
      Rotation of the cooling fan speeds fast and the computer can be cooled down. Note that the battery operating time will be shorter.
    – Switch the screen saver to [Prohibited].
  • When you do not frequently use CPU or the rotation noise of the fan bothers you, set [Standard] or [Low Speed] in [Fan control mode].
    ① Click ⌃ on the notification area and click 🖳.
    ② Select [Standard] or [Low Speed] in [Fan control mode].
    ➜ 📖 *Reference Manual* "Customizing the Power Setting"

● Check the following
  • If you are not using a wireless LAN, turn the wireless LAN off.
  • Windows XP
    If the computer becomes warm while the screen saver is displayed, set the screen saver to [Windows XP].
    Screen savers that use 3-D images or other complex images increase the CPU utilization rate.
  • Use recommended RAM module products. Non-recommended RAM modules may not operate properly, and may cause damage to your computer.

● Windows XP
  Double-click 📷 on the desktop and click [High speed], then click [OK].
  • When you set [High speed], rotation of the cooling fan speeds up and the computer can be cooled down. Note that the battery operating time will be shorter.
  • When you do not frequently use CPU or the rotation noise of the fan bothers you, set [Standard] or [Low speed] as necessary.

Windows XP

■ **When using commercially available USB2.0 Hub**

● A commercially available USB2.0 Hub connected to your computer may stop functioning if a USB2.0 printer is disconnected from another port. In this case, restart the computer.

Handling and Maintenance

■ **When using peripheral devices**

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

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

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

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

The AC adaptor's protection function may be working when the battery indicator does not light on even if the AC adaptor and the battery pack are correctly connected with the computer.
- Pull out the AC cord and wait for more than 1 minute to reconnect the AC cord.
- If the problem persists, contact your technical support office.

Maintenance

To clean the LCD panel

Use the Soft Cloth (included) with the computer. (For more information, refer to 🖳 *Reference Manual* "Suggestions About Cleaning the LCD Surface".)
Cleaning the display while the power is on may cause the computer to malfunction. Also, dirt on the screen is easier to see when the computer is powered off, and so is easier to clean.

To clean the touch pad

Wipe lightly with a gauze or other dry, soft cloth.

To clean areas other than the LCD panel and touch pad

Wet a soft cloth with water or a diluted kitchen cleanser (neutral), wring the cloth out thoroughly, and wipe the dirty area gently. Using a detergent other than a neutral kitchen cleanser (e.g., a weak alkali cleanser) may adversely affect painted surfaces.

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.

When Using the Computer with a Reduced Resolution

When setting the screen resolution to a resolution below the LCD's resolution, the images appearing on the screen will be stretched. As a result, the characters displayed may appear blurred. This is normal, and not indicative of a malfunction.

To display large characters with no blurring

Try the following steps while keeping the LCD in its resolution.
- **Windows 7** Click 🟦 (Start) - [Control Panel] - [Appearance and Personalization] - [Display], select except for [Smaller - 100%] and then click [Apply].
  (This function will be enabled after logging off the computer.)
- To display enlarged font sizes in applications such as Internet Explorer:
  Use the display enlargement function provided by the specific software application.
- To display enlarged desktop icons, title bar and cursor or magnify the specific part of the screen:
  Use **Windows XP** "Icon Enlarger" or "Loupe Utility".

If You Spill Water on the Keyboard

Note that repairs resulting from liquids being spilled on the computer are not free of charge, and not covered by warranty.

The keyboard on this computer incorporate a drain system (a moisture protection mechanism) that minimizes the amount of liquid reaching the inside of the computer even if water is spilled on the keyboard.
Any water that comes in contact with the keyboard is drained off through holes in the bottom of the computer, so that virtually no water is left inside the computer. However, this is not a guarantee against damage to the hard disk or other internal parts, or against the loss or deletion of data.
The drain system is incorporated into only the keyboard. It does not apply to any other components.

- If you spill water or any other liquid on the keyboard, even a small amount, be sure to perform the following steps. Failure to perform these steps may result in damage to the computer. The drain system will not provide complete protection against water entering the computer.

1   Immediately turn off the computer, and remove the AC adaptor.
2   Wipe any water droplets off of the top of the keyboard using a soft, dry cloth.

3   Slowly lift up the computer, keeping it level, and wipe any water coming out of the holes on the bottom using a soft, dry cloth.
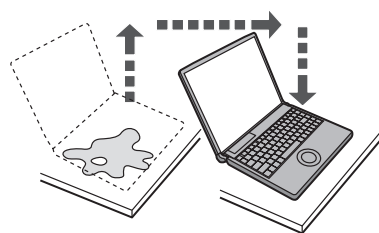If the computer is tilted during this step, liquid may seep inside the computer resulting in damage.

Incorrect

4   Keeping the computer level, move the computer to a dry place.
If the computer is placed back on the wet surface, water may seep inside the computer from the bottom.

Incorrect

5   Remove the battery pack.
6   Be sure to contact your technical support office to have the computer checked for any malfunctions.
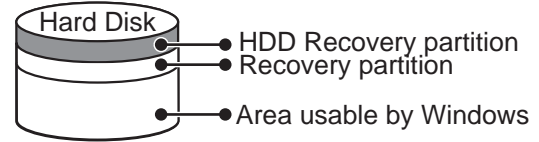
Useful Information

23

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

- You can reinstall Windows 7 only.
- Do not delete the recovery partitions on the hard disk.
  The disk space in the partition is not available to store data.

Hard Disk
- HDD Recovery partition
- Recovery partition
- Area usable by Windows

■ **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 [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.

5 **Select the [Exit] menu, then select [Repair Your Computer] 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 18)
- [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 18).
  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 massage, click [YES].**

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

11 **At the confirmation message, click [OK].**
Reinstallation starts according to the instructions on the screen. (It will take approximately 15 minutes.)
- 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 screen 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 16).**

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")
- ● Prepare CD/DVD drive (optional: Refer to recent catalogs and other sources for information about the products available) or port replicator (optional: CF-VEBC11U)
- ● Remove all peripherals (except for the CD/DVD drive and port replicator).
- ● Connect the AC adaptor and do not remove it until reinstallation is complete.

1 Turn off the computer and connect CD-DVD drive or port replicator to the computer.

2 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.

3 Write down all of the contents of the Setup Utility and press F9.
At the confirmation message, select [Yes] and press Enter.

4 Press F10.
At the confirmation message, select [Yes] and press Enter.
Computer will restart.

5 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.

6 Set the Recovery Disc into the CD/DVD drive or port replicator.

7 Select the [Exit] menu.

8 When using CD/DVD drive:
Select your CD/DVD drive in [Boot Override] and press Enter.
When using port replicator:
Select [P1: TEAC XXXXX] in [Boot Override] and press Enter.
The computer will restart.

9 Click [Reinstall Windows] and click [Next].
The License Agreement screen appears.

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

11 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 18)
- ● [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 18).
  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.

12 At the confirmation message, click [YES].
Reinstallation starts. (It will take approximately 40 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.

13 When ending screen is displayed, remove the Recovery Disc, and then click [OK] to turn off the computer.

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

15 Perform the "First-time Operation" (➔ page 16).

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

17 Perform Windows Update.

25

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 your technical support office. You can also check the computer's status in the PC Information Viewer (➔ 🖵 *Reference Manual* "Check the Computer's Usage Status").

■ **Starting Up and Sleep/Standby and Hibernation Mode**

The computer does not power on / 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. ● If an additional RAM module has been inserted, remove the RAM module and check to see if the RAM module is the recommended one. ● When the CPU temperature is high, the computer may not start up to prevent overheating of the CPU. Wait until the computer cools down, and then turn the power on again. If the computer does not power on even after cooling down, contact your technical support office.

Windows does not start up.	● Remove all peripheral devices (e.g. USB memory).
	● If the power indicator is lit, slide the power switch for four seconds or longer to turn off, then turn on again.
	● Using the following procedure, start up in Safe Mode, and check the error details.
	  ① Turn on the computer, and when the [Panasonic] boot screen disappears (after entering the password[*1] if one is set) hold down **F8**.
	  ② Release your finger when [Windows Advanced Options Menu] is displayed, and with **↑** or **↓**, select [Safe Mode], then press **Enter**.
	    Follow the on-screen instructions.
	[*1] Supervisor Password or User Password set with the Setup Utility
	● Press **F9** in the Setup Utility to return the Setup Utility settings (excluding the passwords) to the default values. Start the Setup Utility and make the settings again.

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 compliant to specification. When the RAM module has conformed to specification, install it again.

You have forgotten the password.	● Supervisor Password or User Password: Contact your technical support office.
	● Administrator password:
	  Windows 7
	  • If you have another account with Administrator authority, log-on with it, then delete the password for the problem account.
	  • If you have a password reset disk, click [Reset password] displayed after the password input error, then follow the on-screen instructions to set a new password.
	  Windows XP
	  • 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 cannot do either of the above, you will need to reinstall (➔ page 24) and setup Windows.

"Remove disks or other media. Press any key to restart" or a similar message appears.	● A floppy disk is in the floppy disk drive and it does not contain system startup information. Remove the floppy disk and press any key. ● This message may appear with some devices connected to the USB port. Remove the device or set [Legacy USB Support] to [Disabled] in the [Advanced] menu of the Setup Utility. ● If the problem persists after removing the disk, it may be a hard disk failure. Perform the reinstallation and return the hard disk to its condition at the time of purchase (➔ page 24). If the problem persists even after the reinstallation, contact your technical support office.

The date and time are incorrect.	● Make the correct settings.
	  Windows 7 Click 🟢 (Start) - [Control Panel] - [Clock, Language, and Region] - [Date and Time].
	  Windows XP Click [start] - [Control Panel] - [Date, Time, Language, and Regional Options] - [Date and Time].
	● If the problem persists, the internal clock battery may need to be replaced. Contact your technical support office.
	● 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.

Troubleshooting

■ **Starting Up and Sleep/Standby and Hibernation Mode**

[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.
The computer will not automatically enter Windows 7 sleep / Windows XP standby or hibernation.	● If you connect to a network using wireless LAN function, perform access point settings. (➔ 📖 *Reference Manual* "Wireless LAN") ● If you do not use wireless LAN function, turn off wireless LAN function. (➔ 📖 *Reference Manual* "Disabling/Enabling Wireless Communication") ● Make sure that you are not using any software that regularly accesses the hard disk.
[Enter Password] does not appear when resuming from Windows 7 sleep / Windows XP standby or 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. Windows 7 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 a check mark for [Require a password]. Windows XP ① Click [start] - [Control Panel] - [User Accounts] and select the account, ant set the password. ② Click [start] - [Control Panel] - [Performance and Maintenance] - [Power Option] - [Advanced] and a check mark for [Prompt for password when computer resumes from standby].
When logging on (e.g., resuming the computer), audio is distorted.	● Perform the following steps to change the audio settings to prevent audio output. Windows 7 ① Right-click the desktop and click [Personalize] - [Sounds]. ② Remove the check mark from [Play Windows Startup sound], and click [OK]. Windows XP ① Click [start] - [Control Panel] - [Sounds, Speech, and Audio Devices] - [Sounds and Audio Devices], and click [Sounds]. ② Set [Windows Logon] and [Windows Logoff] to [(None)].
Cannot resume.	● One of the following operations may have been carried out. • In Windows 7 sleep/ Windows XP standby mode, the AC adaptor or battery pack was disconnected, or a peripheral was connected or disconnected. • The power switch was slid for four seconds or longer to forcibly turn off the computer. Slide the power switch to turn on the computer. Data not saved will be lost.
Other startup problems.	● Check to see if there was a disk error. ① Remove all peripheral devices including an external display. ② Windows 7 Click 🔵 (Start) - [Computer] and right-click [Local Disk (C:)], and click [Properties]. Windows XP Click [start] - [My Computer] and right-click [Local Disk (C:)], and click [Properties]. ③ Click [Tools] - [Check Now…]. • A standard user needs to enter an administrator password. ④ Select the option in [Check disk options] and click [Start]. ⑤ Windows 7 Click [Schedule disk check] and restart the computer. ● Start the computer in Safe Mode and check the error details. (➔ page 26 "Windows does not start up".)

■ **Shutting Down**

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

Troubleshooting

27

Troubleshooting (Basic)

■ Password

Even after entering the pass-word, a message appears requesting to type it again.	● If 1 lights up, press **NumLk** to disable the ten-key mode, and then input. ● If A lights up, press **Caps Lock** to disable the Caps Lock mode, and then input.
Windows 7 Cannot log on to Windows. ("The user name or pass-word is incorrect." is dis-played.)	● The user name (account name) includes the "@" 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 24).

■ Display

The screen becomes black for a moment.	**Windows 7** ● When you set [Display power saving function] of Power Plan Extension Utility to [Enabled], if you do the following operations, the screen becomes black for a moment, but this is not a malfunction. You can use it. • Adjust the brightness of the screen with **Fn** + **F1** / **Fn** + **F2** or tablet button. • Remove and insert the AC adaptor. While you are using motion video playback software, benchmark software for graphic, if error screen is displayed or application software does not function normally, set [Display power saving function] to [Disabled]. **Windows XP** ● When you set [Intel video driver power saving function (Intel(R) Display Power Saving Technology)] of Power Saving Utility to [Enable], if you do the following operations, the screen becomes black for a moment, but this is not a malfunction. You can use it. • Adjust the brightness of the screen with **Fn** + **F1** / **Fn** + **F2** or tablet button. • Remove and insert the AC adaptor. While you are using motion video playback software, benchmark software for graphic, if error screen is displayed or application software does not function normally, set [Intel video driver power saving function (Intel(R) Display Power Saving Technology)] to [Disable].
No display.	● The external display is selected. Press **Fn** + **F3** (or **Windows 7** ⊞ + **P**) to switch the display. Wait until the display has been switched completely before pressing **Fn** + **F3** (or **Windows 7** ⊞ + **P**) again. ● 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 **Windows 7** sleep/ **Windows XP** standby or hibernation by the power-saving function. To resume, slide the power switch. ● The screen may become darker. Press **Fn** + **F2** or tablet button to make the screen brighter.
The screen is disordered.	● Changing the number of display colors and resolution may affect the screen. Restart the computer. ● The refresh rate of the internal LCD may be 40 hertz. Change the refresh rate of the internal LCD. ① Right-click on the desktop, and click [Graphics Properties]. ② Click [OK]. ③ If [Refresh Rate] of the Notebook is [40 Hz], change to [60 Hz] and click [OK].
The external display does not work normally.	● If the external display does not support the power saving function, it may not work nor-mally when the computer enters the power saving mode. Turn off the external display.

Troubleshooting

■ Battery

The battery indicator lights red.	● The battery level is very low (the charge is approx. 9% or less). ● Connect the AC adaptor. You can use the computer when the indicator light is orange. If you do not have an AC adaptor, save your data and power off your computer. After replacing the battery pack with a fully charged one, turn your computer on again.
The battery indicator is blinking.	● If blinking red: Quickly save your data and power off your computer. Remove the battery pack and disconnect the AC adaptor, then connect them again. If the problem persists, contact your technical support office. The battery pack or charging circuit may be defective. ● If blinking orange: • The battery indicator blinks orange several times also when you slide the battery latch, but this is not a malfunction. • Battery cannot be recharged temporarily because the internal temperature of the battery pack is outside the acceptable temperature range for recharging. Your computer can be used normally in this state. Once the range requirement is satisfied, charging begins automatically. • Software applications and peripheral devices (USB devices, etc.) are consuming too much power. Exit the software applications currently running, and remove all peripherals. Once the range requirement is satisfied, charging begins automatically.
The battery indicator is flashing.	● The battery is recharging. If [Battery Charging Indicator] in the [Main] menu of the Setup Utility is set to [Flashing], the indicator will alternately become lighter and darker.

■ Touch Pad/Screen

The cursor does not work.	● When using the external mouse, connect it correctly. ● Restart the computer by using the keyboard. **Windows 7** Press ⊕ and press → two times, and press ↑ to select [Restart] and press **Enter**. **Windows XP** Press ⊕, **U**, and **R** to select [Restart]. ● If the computer does not respond to keyboard commands, read "No response" (➔ page 30).
Cannot input using the touch pad.	● Set [Touch Pad] to [Enable] in the [Main] menu of the Setup Utility. ● The drivers for some mice may disable the touch pad. Check your mouse's operating instructions.
Cannot point the correct position using the pen (included) or finger.	● Perform the screen calibration (➔ page 17). ● If external mouse driver is installed, you may not be possible to use the touch input and pen input. Uninstall external mouse driver.
The image on the display does not rotate.	● The application program currently running may not support the image rotation. Quit the program, and then try to rotate the image. ● Install the Wireless Switch Utility, if not installed.

Troubleshooting

29

Troubleshooting (Basic)

■ **Reference Manual**

The Reference Manual is not displayed.	● Install Adobe Reader. ① Log on to Windows as an administrator. ② **Windows 7** 　Click (Start) and input "c:\util\reader\Setup.exe" in [Search programs and files] then press **Enter**. 　**Windows XP** 　Click [start] - [Run] and input "c:\util\reader\Setup.exe", then click [OK]. 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...].

■ **Others**

No response.	● Press **Ctrl**+**Shift**+**Esc** to open Task Manager and close the software application that is not responding. ● An input screen (e.g., password input screen at startup) may be hidden behind another window. Press **Alt**+**Tab** to check. ● Slide the power switch for four seconds or longer to shut down the computer, and then slide the power switch to turn it on. If the application program does not work normally, uninstall and reinstall the program. To uninstall, 　**Windows 7** 　click (Start) - [Control Panel] - [Programs] - [Uninstall a program]. 　**Windows XP** 　click [start] - [Control Panel] - [Add or Remove Programs].
<Only for model with Camera> The Camera does not operate.	● When using the Camera after the computer resumes from sleep or hibernation, wait for about 10 seconds before starting up the software.
Windows 7 <Only for model with Camera> The image of the camera flickers.	● The image of the camera might flicker when taking a picture under the fluorescent lamp. Change the setting of the anti flicker according to the following procedure. ① Click [Settings] - [Image Control...]. ② Change the setting of [PowerLine Frequency (Anti Flicker)]. 　(Set it to the power-supply frequency in the region). ③ Click [OK].
<Only for model with wireless WAN> The message "To assure compliance with RF exposure requirement, WWAN cannot be used in this direction. Do you want to rotate and disable WWAN?" appears.	● The message appears when you orient the computer so that the wireless WAN antenna is placed close to you and then try to rotate the display. Click [Yes] to turn off the wireless WAN and continue using the computer in the current orientation. If you do not want to turn off the wireless WAN, click [No]. In this case, the display will not rotate to the most suitable orientation.

Troubleshooting

LIMITED USE LICENSE AGREEMENT

THE SOFTWARE PROGRAM(S) ("PROGRAMS") FURNISHED WITH THIS PANASONIC PRODUCT ("PRODUCT") ARE LICENSED ONLY TO THE END-USER ("YOU"), AND MAY BE USED BY YOU ONLY IN ACCORDANCE WITH THE LICENSE TERMS DESCRIBED BELOW. YOUR USE OF THE PROGRAMS SHALL BE CONCLUSIVELY DEEMED TO CONSTITUTE YOUR ACCEPTANCE OF THE TERMS OF THIS LICENSE.

Panasonic Corporation has developed or otherwise obtained the Programs and hereby licenses their use to you. You assume sole responsibility for the selection of the Product (including the associated Programs) to achieve your intended results, and for the installation, use and results obtained therefrom.

LICENSE

A. Panasonic Corporation hereby grants you a personal, non-transferable and non-exclusive right and license to use the Programs in accordance with the terms and conditions stated in this Agreement. You acknowledge that you are receiving only a LIMITED LICENSE TO USE the Programs and related documentation and that you shall obtain no title, ownership nor any other rights in or to the Programs and related documentation nor in or to the algorithms, concepts, designs and ideas represented by or incorporated in the Programs and related documentation, all of which title, ownership and rights shall remain with Panasonic Corporation or its suppliers.

B. You may use the Programs only on the single Product which was accompanied by the Programs.

C. You and your employees and agents are required to protect the confidentiality of the Programs. You may not distribute or otherwise make the Programs or related documentation available to any third party, by time-sharing or otherwise, without the prior written consent of Panasonic Corporation.

D. You may not copy or reproduce, or permit to be copied or reproduced, the Programs or related documentation for any purpose, except that you may make one (1) copy of the Programs for backup purposes only in support of your use of the Programs on the single Product which was accompanied by the Programs. You shall not modify, or attempt to modify, the Programs.

E. You may transfer the Programs and license them to another party only in connection with your transfer of the single Product which was accompanied by the Programs to such other party. At the time of such a transfer, you must also transfer all copies, whether in printed or machine readable form, of every Program, and the related documentation, to the same party or destroy any such copies not so transferred.

F. You may not remove any copyright, trademark or other notice or product identification from the Programs and you must reproduce and include any such notice or product identification on any copy of any Program.

YOU MAY NOT REVERSE ASSEMBLE, REVERSE COMPILE, OR MECHANICALLY OR ELECTRONICALLY TRACE THE PROGRAMS, OR ANY COPY THEREOF, IN WHOLE OR IN PART.

YOU MAY NOT USE, COPY, MODIFY, ALTER, OR TRANSFER THE PROGRAMS OR ANY COPY THEREOF, IN WHOLE OR IN PART, EXCEPT AS EXPRESSLY PROVIDED IN THE LICENSE.

IF YOU TRANSFER POSSESSION OF ANY COPY OF ANY PROGRAM TO ANOTHER PARTY, EXCEPT AS PERMITTED IN PARAGRAPH E ABOVE, YOUR LICENSE IS AUTOMATICALLY TERMINATED.

TERM

This license is effective only for so long as you own or lease the Product, unless earlier terminated. You may terminate this license at any time by destroying, at your expense, the Programs and related documentation together with all copies thereof in any form. This license will also terminate effective immediately upon occurrence of the conditions thereof set forth elsewhere in this Agreement, or if you fail to comply with any term or condition contained herein. Upon any such termination, you agree to destroy, at your expense, the Programs and related documentation together with all copies thereof in any form.

YOU ACKNOWLEDGE THAT YOU HAVE READ THIS AGREEMENT, UNDERSTAND IT AND AGREE TO BE BOUND BY ITS TERMS AND CONDITIONS. YOU FURTHER AGREE THAT IT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE AGREEMENT BETWEEN US, WHICH SUPERSEDES ANY PROPOSAL OR PRIOR AGREEMENT, ORAL OR WRITTEN, AND ANY OTHER COMMUNICATIONS BETWEEN US, RELATING TO THE SUBJECT MATTER OF THIS AGREEMENT.

GOVERNMENT RESTRICTED RIGHTS.

The Software is provided with "RESTRICTED RIGHTS." Use duplication or disclosure by the government is subject to restrictions as set forth in FAR52.227-14 and DFAR252. 227-7013 et seq. or their successors.

Use of the Software by the government constitutes acknowledgement of Intel's proprietary rights therein.

Contractor or Manufacturer is Intel Corporation, 2200 Mission College Blvd., Santa Clara, CA 95052.

Contrat de licence d'usage limité

Le(s) logiciel(s) (les "Logiciels") fournis avec ce produit Panasonic (le "Produit") sont exclusivement concédés en licence à l'utilisateur ultime ("vous"), et ils ne peuvent être utilisés que conformément aux clauses contractuelles cidessous. En utilisant les logiciels, vous vous engagez de manière définitive à respecter les termes, clauses et conditions des présentes.

Panasonic Corporation a mis au point ou obtenu les Logiciels et vous en concède l'utilisation par les présentes. Vous assumez l'entière responsabilité du choix de ce Produit (y compris des Logiciels associés) pour obtenir les résultats escomptés, ainsi que de l'installation, de l'utilisation et des résultats obtenus.

Licence

A. Panasonic Corporation vous octroie par les présentes le droit et la licence personnels, non cessibles et non exclusifs d'utiliser les Logiciels conformément aux termes, clauses et conditions de ce contrat. Vous reconnaissez ne recevoir qu'un droit limité d'utiliser les Logiciels et la documentation les accompagnant et vous vous engagez à n' obtenir aucun droit de titre, propriété ni aucun autre droit vis-à-vis des Logiciels et de la documentation les accompagnant ni vis-à-vis des algorithmes, concepts, dessins, configurations et idées représentés par ou incorporés dans les Logiciels et la documentation les accompagnant, dont les titres, propriété et droits resteront tous à Panasonic Corporation ou à leurs propriétaires.

B. Vous ne pouvez utiliser les Logiciels que sur le Produit unique qui est accompagné par les Logiciels.

C. Vous et vos employés ou agents êtes requis de protéger la confidentialité des Logiciels. Vous ne pouvez ni distribuer ni mettre les Logiciels et la documentation les accompagnant à la disposition d'un tiers, par partage de temps ou de quelque autre manière que ce soit, sans l'autorisation écrite préalable de Panasonic Corporation.

D. Vous ne pouvez ni copier ni reproduire ni permettre la copie ni la reproduction des Logiciels ni de la documentation les accompagnant pour quelque fin que ce soit, à l'exception d'une (1) copie des Logiciels à des fins de sauvegarde uniquement pour soutenir votre utilisation des Logiciels sur le Produit unique qui est accompagné par les Logiciels. Vous ne pouvez ni modifier ni tenter de modifier les Logiciels.

E. Vous ne pouvez céder les Logiciels et en octroyer la licence à une autre partie qu'en rapport avec votre cession du Produit unique qui est accompagné par les Logiciels à cette autre partie. Au moment de cette cession, vous devez céder également toutes les copies, que ce soit sous forme imprimée ou lisible par la machine, de tous les Logiciels ainsi que de la documentation les accompagnant, à la même partie ou détruire les copies non cédées.

F. Vous ne pouvez retirer aucune marque de droits d'auteur, marque de commerce ou autre ni aucune identification de produit des Logiciels et vous devez reproduire et inclure toutes ces notices ou identifications de produit sur toutes les copies des Logiciels.

Vous ne pouvez assembler en sens inverse, compiler en sens inverse ni retracer les Logiciels ni aucune de leurs copies, de façon électronique ou mécanique, en tout ou en partie.

Vous ne pouvez utiliser, copier, modifier, altérer ni céder les Logiciels ni aucune de leurs copies, en tout ou en partie, à l'exception de ce qui est expressément stipulé dans ce contrat.

Si vous cédez la possession de toute copie ou de tout Logiciel à une autre partie, à l'exception de ce qui est autorisé au paragraphe E ci-dessus, votre licence est automatiquement résiliée.

Termes, clauses et conditions

Cette licence n'est effective que pour la durée de possession ou de crédit-bail du Produit, à moins d'une résiliation antérieure. Vous pouvez résilier cette licence à tout moment en détruisant, à vos frais, les Logiciels et la documentation les accompagnant avec toutes leurs copies, sous quelque forme que ce soit. Cette licence sera également résiliée, avec application immédiate, si les conditions de résiliation définies ailleurs dans ce contrat se sont réalisées ou si vous ne respectez pas les termes, clauses et conditions qui y sont contenues. Au moment de la résiliation, vous acceptez de détruire, à vos frais, les Logiciels et la documentation les accompagnant avec toutes leurs copies, sous quelque forme que ce soit.

Vous reconnaissez avoir lu ce contrat, en avoir compris toute la substance et avoir accepté de respecter ses termes, clauses et conditions. Vous reconnaissez en outre qu'ils sont la description complète et exclusive du contrat conclu entre nous, contrat qui remplace et annule toute proposition ou contrat précédent, écrit ou oral, et toute autre communication entre nous, relativement à l'objet du présent contrat.

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.
- Run the Setup Utility (➔ 📖 *Reference Manual* "Setup Utility") and select [Information] menu.
  [CPU Speed]: CPU speed, [Memory Size]: Memory size, [Hard Disk]: Hard disk drive size

■ Main Specifications

Model No.	CF-C1BDHAZDM	CF-C1BTFAZDM
CPU	Intel® vPro™ Technology[1]	
	Intel® Core™ i5-2520M vPro™ processor (2.50 GHz with Turbo Boost up to 3.20 GHz, Intel® Smart Cache 3 MB[2])	
Chipset	Intel® 6 Series Express Chipsets QM67	
Main Memory[2][3]	4 GB, DDR3 SDRAM (8 GB Max.)	2 GB, DDR3 SDRAM (6 GB Max.)
Video Memory[2][4]	**Windows 7** UMA(<32-bit> 1557 MB Max., <64-bit> 1696 MB Max.)	**Windows 7** UMA(<32-bit> 773 MB Max., <64-bit> 776 MB Max.) UMA(<32-bit> 1557 MB Max., <64-bit> 1696 MB Max. (When Memory is 4GB or 6GB))
Video Controller	Intel® HD Graphics 3000 (Built-in Chip Set)	
Hard Disk Drive[5]	320 GB **Windows 7** Approx. 12 GB (HDD Recovery partition) and Approx. 300 MB (Recovery partition) are as recovery partitions. (Users cannot use these partitions.)	
Display Method	12.1 WXGA type (TFT) (1280 × 800 dots)	
Internal LCD	65,536/16,777,216 colors (1280 x 800 dots)[6]	
External Display[7]	65,536/16,777,216 colors (800 x 600 dots/1024 x 768 dots/1280 x 720 dots/1280 x 768 dots/ 1280 x 1024 dots/1400 x 1050 dots/1600 x 900 dots/1600 x 1200 dots/1680 x 1050 dots/ 1920 x 1080 dots/1920 x 1200 dots)	
Simultaneous Display on LCD + External Display[7]	65,536/16,777,216 colors (800 x 600 dots/1024 x 768 dots/1280 x 720 dots/1280 x 768 dots/ 1280 x 800 dots)[6]	
Wireless LAN[8]	Intel® Centrino® Advanced-N 6205 (➔ page 34)	
Bluetooth[9]	➔ page 35	
Wireless WAN[10]	Sierra™ Wireless High-speed module	
LAN[11]	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX, IEEE 802.3ab 1000BASE-T	
Modem[12]	Data: 56 kbps (V.92) FAX: 14.4 kbps	
Fingerprint Reader[13]	Array Size: 192 x 4 pixels, Image Size: 192 x 512 pixels, Image Resolution: 508 DPI	
Camera[14]	1280 x 1024 dots (Max.), 7.5 fps	
Sound	WAVE and MIDI playback, Intel® High Definition Audio subsystem support, Monaural Speaker (built-in), Microphone arrays (built-in)	
Security Chip	TPM (TCG V1.2 compliant)[15]	
Card Slots	PC Card Slot	x 1, Type I or Type II, Allowable current 3.3 V: 400 mA, 5 V: 400 mA
	SD Memory Card Slot[16]	x 1
	Contact Smart Card Slot[17]	x 1
RAM Module Slot	x 1, DDR3 SDRAM, 204-pin, 1.5 V, SO-DIMM, PC3-10600 Compliant	
Interface	USB port x 3 (USB 2.0 x 3)[18] / Modem Port (RJ-11)[12] / LAN Port (RJ-45)[11] / External Display Port: Mini Dsub 15-pin female / Microphone Jack[19]: Miniature jack, 3.5 DIA / Headphone Jack: Miniature jack, 3.5 DIA / Port Replicator Connector[20] : Dedicated 84-pin male	
Keyboard / Pointing Device	83 keys/Touch Pad/Digitizer + Multi touch (Capacitive)	83 keys/Touch Pad/Multi touch (Resistive)
Power Supply	AC adaptor or Battery pack	
AC Adaptor[21]	Input: 100 V - 240 V AC, 50 Hz/60 Hz Output: 16 V DC, 5.0 A	

Specifications

Model No.	CF-C1BDHAZDM	CF-C1BTFAZDM
Battery Pack	Li-ion 7.4 V, 6.0 Ah (Typ.), 5.7 Ah (Min.)	
Operating Time[*22]	Approx. 6 hours (When using 2 battery packs: approx. 12 hours) (Economy Mode (ECO) – Disable)	
Charging Time[*23]	Approx. 2.5 hours (Power off)/Approx. 3 hours (Power on) (When using 2 battery packs: Approx. 3 hours (Power off) / Approx. 4 hours (Power on))	
Power Consumption[*24]	Approx. 25 W[*25] / Approx. 80 W (maximum when recharging in the ON state)	
Physical Dimensions (W × D × H)	299.2 mm × 226.5 mm × 30.6 mm (at the front)/44.3 mm (at the rear) {11.8 ” × 8.9 ” × 1.2 ”/1.7 ”}	
Weight[*26]	Approx. 1.49 kg {3.28 lb} (When using 2 battery packs: Approx. 1.69 kg {3.73 lb})	
Environment — Operation — Temperature	5 °C to 35 °C	
Environment — Operation — Humidity	30 % to 80 % RH (No condensation)	
Environment — Storage — Temperature	-20 °C to 60 °C	
Environment — Storage — Humidity	30 % to 90 % RH (No condensation)	

■ Software

Base OS	Genuine Windows® 7 Professional
Installed OS[*27]	**Windows 7** Genuine Windows® 7 Professional 32-bit Service Pack 1 / Genuine Windows® 7 Professional 64-bit Service Pack 1 **Windows XP** Genuine Windows® XP Tablet PC Edition Service Pack 3[*36]
OS[*27]	**Windows 7** Genuine Windows® 7 Professional 32-bit Service Pack 1 / Genuine Windows® 7 Professional 64-bit Service Pack 1 **Windows XP** Genuine Microsoft® Windows® XP Tablet PC Edition Service Pack 3[*28]
Pre-installed Software[*27]	Adobe Reader / Loupe Utility / Touch Pad Utility / PC Information Viewer / PC Information Popup / Display Rotation Tool / Hotkey Settings / Wireless Switch Utility / Intel® Rapid Storage Technology / Bluetooth™ Stack for Windows by TOSHIBA[*9] / Battery Recalibration Utility / Intel® PROSet/Wireless Software / Wireless Connection Disable Utility[*29] / Protector Suite[*13 *29] / Dashboard for Panasonic PC / Hand Writing Utility / Software Keyboard / Camera Utility[*14] /Infineon TPM Professional Package[*30] / Calibration Utility / Wireless Manager Mobile Edition 5.5f[*31] / Intel® Identity Protection Technology **Windows 7** Microsoft® Internet Explorer 9.0 / DirectX 11[*32] / Microsoft® Windows® Media Player 12 / Microsoft® .NET Framework 3.5.1 / Power Plan Extension Utility / Windows XP Mode / Intel® Wireless Display Software / Quick Boot Manager / Recovery Disc Creation Utility **Windows XP** Microsoft® Internet Explorer 6 Service Pack 3 / DirectX 9.0c / Microsoft® Windows® Media Player 10 / Microsoft® Windows® Movie Maker 2.1 / Microsoft® .NET Framework 3.5 SP1 / Icon Enlarger / Power Saving Utility / FAN Control Utility / Economy Mode (ECO) Setting Utility
	Aptio Setup Utility / Hard Disk Data Erase Utility[*33] / PC-Diagnostic Utility

■ Wireless LAN <Only for model with wireless LAN>

Data Transfer Rates	IEEE802.11a : 54/48/36/24/18/12/9/6 Mbps (automatically switched)[*34] IEEE802.11b : 11/5.5/2/1 Mbps (automatically switched)[*34] IEEE802.11g : 54/48/36/24/18/12/9/6 Mbps (automatically switched)[*34] IEEE802.11n : (HT20) GI = 400ns: 150/130/115/86/72/65/57/43/39/28/21/14/7 Mbps (automatically switched)[*34] GI = 800ns: 130/117/104/78/65/58/52/39/26/19/13/6 Mbps (HT40) GI = 400ns: 300/270/240/180/150/135/120/90/60/45/30/15 Mbps (automatically switched)[*34] GI = 800ns: 270/243/216/162/135/121/108/81/54/40/27/13 Mbps
Standards Supported	IEEE802.11a / IEEE802.11b / IEEE802.11g / IEEE802.11n
Transmission method	OFDM system, DS SS system
Wireless Channels Used	IEEE802.11a : Channels 36/40/44/48/52/56/60/64/100/104/108/112/116/132/136/140/149/153/157/161/165 IEEE802.11b/IEEE802.11g : Channels 1 to 11 IEEE802.11n : Channels 1-11/36/40/44/48/52/56/60/64/100/104/108/112/116/132/136/140/149/153/157/161/165

RF Frequency Band	IEEE802.11a : 5.18 GHz - 5.32 GHz, 5.5 GHz - 5.7 GHz, 5.745 GHz - 5.825 GHz
	IEEE802.11b/IEEE802.11g : 2.412 GHz - 2.462 GHz
	IEEE802.11n : 2.412 GHz - 2.462 GHz, 5.18 GHz - 5.32 GHz, 5.5 GHz - 5.7 GHz,
	5.745 GHz - 5.825 GHz

■ **Bluetooth™ <Only for model with Bluetooth>**

Bluetooth Version	2.1 + EDR
Transmission method	FHSS system
Wireless Channels Used	79 channels
RF Frequency Band	2.402 GHz - 2.480 GHz

[*1] The Intel® Active Management Technology (Intel® AMT) function must be set before use. To use Intel® Anti-Theft Technology and Intel® Identity Protection Technology (Intel® IPT), a dedicated solution provided by a service provider is required.

[*2] 1 MB = 1,048,576 bytes / 1 GB = 1,073,741,824 bytes

[*3] For 32-bit OS, the usable memory available will be less depending on the specifications (3.4 GB ~ 3.5 GB).

[*4] 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.

[*5] 1 MB = 1,000,000 bytes. 1 GB = 1,000,000,000 bytes. Your operating system or some application software will report as fewer MB/GB.

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

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

[*8] Only for model with wireless LAN.

[*9] Only for model with Bluetooth. Continua Certified, compliant design guideline version 1, with Blood Pressure Monitor, Cardiovascular and Weighing Scale device only by Bluetooth.

[*10] Only for model with wireless WAN.

[*11] Some devices cannot be used depending on the port type.

[*12] Only for model with modem.

[*13] Only for model with fingerprint reader.

[*14] Only for model with Camera.

[*15] Only for model that supports TPM.
Windows 7 For information on TPM, click (Start) and input "c:\util\drivers\tpm\README.pdf" in [Search programs and files] and press **Enter**, and refer to the "Installation Manual Trusted Platform Module (TPM)".
Windows XP For information on TPM, click [start] - [Run] and input "c:\util\drivers\tpm\README.pdf" and click [OK], and refer to the "Installation Manual Trusted Platform Module (TPM)".

[*16] Operation has been tested and confirmed using Panasonic SD Memory Card with a capacity of up to 2 GB, Panasonic SDHC Memory Card with a capacity of up to 32 GB, and **Windows 7** Panasonic SDXC Memory Card with a capacity of up to 64 GB. Operation on other SD equipment is not guaranteed.

[*17] Only for model with Smart Card Slot.

[*18] Does not guarantee operation of all USB-compatible peripherals.

[*19] Use a condenser-stereo microphone.

[*20] Only for model with port replicator connector.

[*21] <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

[*22] Measured using MobileMark™ 2007 (LCD brightness : 60 cd/m^2).
Varies depending on the usage conditions, or when an optional device is attached.
When Economy Mode (ECO) is enabled, the operating time becomes approximately 20 % shorter than when it is disabled.

[*23] When Economy Mode (ECO) is enabled, the charging time becomes approx. 5.0 hours (Power on/off). Varies depending on the usage conditions, CPU speed, etc.
It may take a long time to charge a fully discharged battery.

[*24] Approx. 0.9 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.

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

[*26] Average value. May differ depending on models.

[*27] When reinstalling Windows using the data of the recovery area on the hard disk, you can select the OS to be installed (either Windows 7 (32-bit) or Windows 7 (64-bit)). An OS that has been installed at the time of purchase or an OS that has been installed using the hard disk recovery function or the recovery disc can be supported.

[*28] The downgrade service is available only for corporate users who fulfill certain conditions.

[*29] Must be installed before use.

[*30] Only for model that supports TPM. Must be installed before use.

[*31] For information on Wireless Manager, refer to the "Supplementary Instructions for Wireless Manager mobile edition 5.5" by the following procedure.
Windows 7 Click (Start) and input "c:\util\wlprjct\Supplementary Instructions.pdf" in [Search programs and files] and press **Enter**.
Windows XP Click [start] - [Run] and input "c:\util\wlprjct\Supplementary Instructions.pdf" and click [OK].

[*32] The graphics accelerator of this computer supports up to DirectX 10.1.

[*33] Perform on the recovery partition. (If this software can not be performed on the recovery partition, perform from the recovery disc)

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

Appendix

LIMITED WARRANTY

For U.S.A.

Panasonic Solutions Company - Worldwide Product Warranties

Section 1: Limited Warranty - Hardware

Panasonic Solutions Company (referred to as "Panasonic") will repair the products listed below with new or rebuilt parts, free of charge in the U.S.A. or other Panasonic approved location for the period specified below from the date of original purchase in the event of a defect in materials or workmanship. These warranties are 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.

- Laptop Computers – 3 Years
- PDRC - LCD and Keyboard Assemblies – 3 Years
- MDWD – Mobile Computer and Wireless Display Assemblies (CF-07/CF-08) - 3 Years
- Ultra-Mobile PC (CF-U1/CF-H1) – 3 Years
- Hand-held Computers (P1/P2) – 1 Year
- Arbitrator Video Camera – 1 Year
- Arbitrator Recorder Unit – 1 Year
- Arbitrator Remote Control Panel – 1 Year
- Arbitrator Wireless Receiver Unit – 1 Year
- Arbitrator P2 Card(s) (All Sizes) – 1 Year
- Arbitrator Wireless Microphone(s) / Transmitter – 90 Days
- Arbitrator System Component Interconnect Cables – 90 Days

Battery Warranty

The battery supplied with the product is covered under the warranty for one (1) year from date of purchase, except as excluded in Section 3. Batteries purchased separately are covered under the warranty for one (1) year from the date of purchase. A battery furnished under the warranty is covered for the remaining period of the one year warranty on the original or purchased battery.

Wireless Module Warranty

Panasonic approved wireless modems installed in Panasonic brand computers and integrated by Panasonic or an Authorized Panasonic Wireless Integrator are covered under the warranty for the remaining warranty period of the computer in which the modem is installed. For computers with less than three (3) months remaining on the unit warranty, the wireless modem will be covered for a period of three (3) months from the date of installation of the modem, covering only modem replacement or modem installation related issues.

All modems must be approved by the wireless carrier prior to use. Any use or attempted use of a wireless modem not approved and activated by the carrier for use on their network is strictly prohibited and is not sanctioned or warranted by Panasonic and may result in legal action. In addition, all modems must be approved by Panasonic as compatible with the computer hardware before installation or use.

Panasonic's sole responsibility for the warranty or technical support of the software required to install or operate the modem is defined in Section 2 (Limited Software Warranty). Any attempted software installation by anyone other than a Panasonic Authorized Wireless Integrator is not covered under warranty and may result in service charges to re-image or replace the hard drive.

Installation or attempted installation by any party other than Panasonic or an Authorized Panasonic Wireless Integrator is strictly not covered under the warranty and may void the computer warranty if damage results.

Options and Accessories warranties

The below listed Panasonic brand or supplied options and accessories are covered under this limited warranty for the period specified from the date of purchase or as specifically stated:

- AC Adaptor / Power Cord – 3 Years
- Memory Card (Panasonic Brand) – 3 Years
- Car Mount Docking Station PCB or Complete Vehicle Docking Station – 3 Years
- Port Replicator / I-O Box / Device Cradle (like CF-08) – 3 Years
- Antenna Pass-through Cable – 3 Years
- Backlit or Full-sized keyboard - 3 Years or assumes warranty of the unit in which it is installed
- Integrated Panasonic supplied options and kits including, but not limited to Wireless WAN, Media Bay Drives (Floppy, CD/DVD, Combo), Camera, GPS, Bluetooth, Smartcard Reader, Magnetic Card Reader, Barcode Scanner and Fingerprint readers – 3 Years or assumes warranty period of the unit in which it is installed provided the integration was performed by Panasonic or an Authorized Options Integrator.
- Hard Drive (separately purchased) – 1 Year
- External USB Drives (CD / DVD / Floppy / Hard Drive) – 1 Year
- Optional Battery – 1 Year
- Battery Charger / Multi-Bay Battery Charger – 1 Year
- Digitizer pen or stylus – 90 Days (physical damage excluded)

Section 2 - Limited Warranty - Software

Panasonic Solutions Company (referred to as "Panasonic") warrants to you only that the disk(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 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

Panasonic's entire liability and your exclusive remedy under this warranty shall be limited to the replacement, in the United States or other Panasonic designated location, of any defective disk or other media which is returned to Panasonic's Authorized Service Center, together with a copy of the purchase receipt, within the aforesaid warranty period. The customer is responsible for ensuring that all data is backed up and made secure during normal use and before sending a unit for service.

Section 3 - Limited Warranty Exclusions

Specifically excluded from the warranty are:

- All consumable items; such as screen protection films, logo badges, labels, cleaning cloths, carry cases, manuals, cables, straps, belts, holsters, tethers, and harnesses and any other options and accessories not listed above or covered under a separate warranty.
- Failures related to the product operating system, hard drive image, software setup, software program, virus, other program(s) or file(s) on the hard drive or in any computer memory location.
- Failures due to BIOS settings or changes, as well as any cosmetic or physical damage to the unit.
- Any unit or device with a missing or altered model number or serial number label
- Damage which occurs in shipment
- Failures which are caused by products not supplied by Panasonic
- Failures which result from alteration, accident, misuse, introduction of liquid or other foreign matter into the unit, abuse, neglect, installation, maladjustment of consumer controls, improper maintenance or modification, use not in accordance with product use instructions
- Failures due to service by anyone other than a Panasonic Authorized Service Provider
- Failures caused by improper integration by any company other than Panasonic or a Panasonic Authorized Integrator.
- Damage, failure, or loss due to the unit being stolen, lost, misplaced, or used by anyone other than the original purchaser
- Damage that is attributable to acts of God

This warranty only covers failures due to defects in materials or workmanship which occur during normal use.

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

Other Limits and Exclusions: There are no other express warranties except as listed above.

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 MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE LIMITED TO THE APPLICABLE WARRANTY PERIOD SET FORTH ABOVE. Some states 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 which vary from state to state.

For technical support or to arrange for service on your Panasonic computer product, call our toll-free hotline at 1-800-LAPTOP5.

DIAL TOLL FREE: 1-800-LAPTOP5 (1-800-527-8675)
Web Site : www.panasonic.com/toughbook

LIMITED WARRANTY

For Canada

PANASONIC COMPUTER AND PERIPHERALS LIMITED WARRANTY

Coverage – Panasonic Canada Inc. ("PCI") warrants to you, the first end user customer, this computer product (excluding software media), when purchased from PCI or from a PCI authorized reseller, to be free from defects in materials and workmanship under normal use, subject to the terms set forth below, during the period of warranty coverage specified.

Scope of Coverage	Period of Coverage	Type of Failure Coverage
• Laptop Computers (except Battery) and AC Adaptor • Factory/PCI installed options including Wireless WAN, GPS, Bluetooth, Finger print reader, Backlit keyboard, Memory Card and Media Bay Drives (Floppy, CD/DVD) • Ultra-Mobile PC (CF-U1/CF-H1) • Mobile Wireless Display • PDRC – LCD and Keyboard Assemblies • Port Replicator	Three (3) Years from Date of Original End User Customer Purchase	Defective Materials or Workmanship
• Hand-held Computers • Battery • Battery charger • Auto Adaptor • External USB Drives	One (1) Year from Date of Original End User Customer Purchase	Defective Materials or Workmanship
• Digitizer pen or stylus	Ninety (90) Days from Date of Original End User Customer Purchase	Defective Materials or Workmanship
• All consumable items including protection film, cleaning cloth, carry case, tether and harness	No Coverage	

Remedy – In the event of a warranty claim, contact PCI's representatives within the applicable warranty period, identifying the nature of the defect claimed, at 1-800-668-8386 between 9:00 A.M. and 5:00 P.M., Eastern Time Zone, Mon. – Fri. (excluding holidays) for instructions on how to obtain service. A purchase receipt or other proof of date of original purchase is required before warranty service is performed. Defective parts covered by this Limited Warranty will be repaired or replaced with new or comparable rebuilt parts on an exchange basis. Warranty replacement or repair is subject to the terms of this Limited Warranty for the balance of the original period of warranty coverage.

No Coverage – This Limited Warranty does not cover products purchased outside Canada. Neither does it cover damage to, failure of, or defects in a product or accessory through mishandling, improper installation, abnormal use, misuse, neglect, accident, introduction of liquid or other foreign matter into the product, alteration or servicing by anyone not authorized by PCI, or act of God. 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[2]. PANASONIC WILL NOT BE RESPONSIBLE FOR ANY LIABILITY RESULTING FROM THE USE OF THIS PRODUCT ARISING OUT OF THE FOREGOING USES.

[2] 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

IF YOU SHIP THE PRODUCT FOR WARRANTY SERVICE

Carefully pack the product, preferably in the original carton. Include details of defect claimed and proof of date of original purchase. No liability is assumed for loss or damage to the product while in transit, if you chose your own transportation carrier.

SOFTWARE MEDIA LIMITED WARRANTY

Coverage – PCI warrants to you, the first end user customer, that the disk(s) or other media on which software program(s) is/are supplied will be free from defects in materials and workmanship under normal use in Canada for a period of sixty (60) days from date of receipt as evidenced by your purchase receipt for your Panasonic Computer product.
THIS IS THE ONLY WARRANTY THAT PCI MAKES RESPECTING THE SOFTWARE MEDIA. PCI does not warrant the software. Please refer to the software licensor's written warranty (accompanying the copy of the software) for any software warranty claim.
Claim Procedure – In the event of a defect in material or workmanship in the media during the sixty (60) days warranty period, and you return it, transportation costs prepaid, to Panasonic Canada Inc., Computer Products Marketing, 5770 Ambler Drive, Mississauga, Ontario L4W 2T3, within the warranty period, together with a copy of your purchase receipt, and an explanation of the suspected defect, PCI will replace in Canada the defective disk(s) or other media.
Remedy – PCI's entire liability, and your only remedy for any breach of this software media warranty is limited to replacement of the media only. It does not cover any other damages, including, but not limited to, loss of use or profit loss, or special, indirect or consequential damages, or other claims, whether or not of similar character.
No Coverage – This limited warranty does not apply if the disk(s) or other media has been used in other than a Panasonic product, or in environmental conditions other than those specified by PCI or the manufacturer, or if subjected to misuse, neglect, mishandling, modification or attempted modification of the program, or if damaged by accident or act of God. PCI is not responsible for damage to or loss of any program, data or removable storage media.

GENERAL

NO OTHER WARRANTIES – PCI DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE SOFTWARE, SOFTWARE MEDIA, COMPUTER PRODUCT, OPTIONS AND ACCESSORIES.
NO LIABILITY FOR CONSEQUENTIAL DAMAGES – IN NO EVENT SHALL PCI BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING FROM ANY BREACH OF THE LIMITED WARRANTIES SET OUT IN THIS DOCUMENT, OR FROM THE USE OF THE COMPUTER PRODUCT, INCLUDING, WITHOUT LIMITATION, LOSS OF DATA, BUSINESS, PROFIT OR GOODWILL.
IN ANY EVENT, PCI'S MAXIMUM LIABILITY FOR ANY BREACH SHALL NOT EXCEED THE AMOUNT ACTUALLY PAID BY YOU FOR THE COMPUTER PRODUCT.
NO ACTION, REGARDLESS OF ITS BASIS, MAY BE BEGUN AGAINST PCI MORE THAN TWO (2) YEARS AFTER THE CAUSE OF ACTION AROSE.
Statutory Warranties – Some jurisdictions do not allow these limitations or exclusions, so they may not apply to you.

GARANTIE LIMITÉE

Pour le Canada

GARANTIE LIMITÉE – ORDINATEURS ET PÉRIPHÉRIQUES PANASONIC

Couverture – Panasonic Canada Inc. (« PCI ») garantit à l'acheteur original que ce produit informatique (à l'exclusion des supports des logiciels) est, au moment de sa vente par PCI ou d'un revendeur agréé par PCI, exempt de défauts de pièces et de fabrication dans les conditions normales d'utilisation, et ce, pendant la période de couverture de la garantie, sous réserve des modalités décrites ci-dessous.

Éléments couverts	Durée de couverture	Type de couverture
• Ordinateurs blocs-notes (sauf batteries) et adaptateur secteur • Options installées en usine/par PCI incluant : WAN sans fil, GPS, Bluetooth, lecteur d'empreintes digitales, clavier rétroéclairé, carte mémoire et lecteurs (disquettes, CD/DVD) • Ordinateurs personnels ultra-portables (CF-U1/CF-H1) • Écran mobile sans fil • Ensembles PDRC – ACL et clavier • Duplicateur de port	Trois (3) ans à partir de la date d'achat original.	Défauts de pièces et de fabrication
• Ordinateurs de poche • Batterie • Chargeur de batterie • Adaptateur pour voiture • Périphériques USB	Un (1) an à partir de la date d'achat original.	Défauts de pièces et de fabrication
• Stylo pointeur standard ou pour numériseur graphique	Quatre-vingt-dix (90) jours à partir de la date d'achat original.	Défauts de pièces et de fabrication
• Tous les articles consommables incluant les pellicules protectrices, chiffons de nettoyage, étuis de transport, longes et sangles	Aucune couverture	

Recours – Pour obtenir des informations sur la marche à suivre dans le cas où une réclamation en vertu de la garantie deviendrait nécessaire, communiquez par téléphone avec un représentant de PCI au 1-800-668-8386, entre 9h00 et 17h00 (heure de l'Est) du lundi au vendredi (sauf les jours fériés), avant l'échéance de la garantie applicable, en prenant soin d'identifier la nature de la défaillance. Un reçu ou toute autre pièce justificative de la date d'achat original sera exigé avant toute réparation. Toute pièce défectueuse couverte par la présente garantie limitée sera réparée ou remplacée par une pièce neuve ou remise à neuf. Le remplacement ou la réparation sera fait conformément aux modalités de la présente garantie limitée pendant la durée restante de la période originale de la garantie.
Produits non couverts – La présente garantie limitée ne couvre pas les produits achetés à l'extérieur du Canada. Elle ne couvre pas non plus les dommages, la défaillance ou les défauts attribuables à une manutention inadéquate, une mauvaise installation, une utilisation anormale ou abusive, de la négligence, un accident, un déversement ou la pénétration d'un objet étranger, une modification, un cas fortuit ou une réparation effectuée par une personne non agréée par PCI.
CE PRODUIT N'EST PAS DESTINÉ À ÊTRE UTILISÉ, EN TOUT OU EN PARTIE, COMME SYSTÈME/ÉQUIPEMENT NUCLÉAIRE, SYSTÈME/ÉQUIPEMENT DE CONTRÔLE DU TRAFFIC AÉRIEN OU SYSTÈME/ÉQUIPEMENT DE POSTE DE PILOTAGE D'AVION[3]. PANASONIC DÉCLINE TOUTE RESPONSABILITÉ CONCERNANT L'UTILISATION DE CE PRODUIT DANS LES CAS SUSMENTIONNÉS.
[3] Les SYSTÈMES/ÉQUIPEMENTS DE POSTE DE PILOTAGE D'AVION sont dotés de systèmes OEPP (organiseur électronique de poste de pilotage) de classe 2 et de classe 1 utilisés pendant des phases critiques de vol (par exemple, pendant le décollage et l'atterrissage) et(ou) montés sur l'avion. Les systèmes OEPP de classe 1 et de classe 2 sont définis par le circulaire d'information FAA: AC (Advisory Circular) 120-76A ou le feuillet n° 36 JAA: JAA TGL (Temporary Guidance Leaflets) No 36.

EXPÉDITION DU PRODUIT POUR SERVICE SOUS GARANTIE

Emballez soigneusement le produit, de préférence dans son emballage d'origine. Joignez une description de la défaillance de même qu'une pièce justificative de la date d'achat. Panasonic Canada Inc. ne peut être tenue responsable pour tout dommage ou perte subi pendant le transport si vous avez choisi le transporteur.

GARANTIE LIMITÉE – SUPPORTS DES LOGICIELS

Couverture – Panasonic Canada Inc. (« PCI ») garantit à l'acheteur original que la ou les disquettes ou tout autre support sur lequel le ou les programmes sont fournis sont exempts de défauts de pièces et de fabrication dans des conditions normales d'utilisation au Canada, et ce, pour une période de soixante (60) jours suivant la date de réception indiquée sur la preuve d'achat.
LA PRÉSENTE GARANTIE EST LA SEULE OFFERTE PAR PCI COUVRANT LES SUPPORTS DE LOGICIELS. PCI ne garantit pas les logiciels. Reportez-vous à la garantie écrite du concédant de licence d'utilisation du logiciel (qui accompagne la copie du logiciel) pour toute réclamation en vertu de la garantie.
Réclamation – marche à suivre – Panasonic Canada Inc. remplacera toute disquette ou support défectueux si l'article en question est retourné, port payé, à son service de Marketing – produits informatiques, 5770 Ambler Drive, Mississauga (Ontario) L4W 2T3, dans les soixante (60) jours suivant la date d'achat original. Joignez à votre envoi une pièce justificative de votre achat et une description du problème.
Recours – La responsabilité de PCI - et votre seul recours - dans le cas de toute défaillance couverte par la garantie sur ce support de logiciel est limitée au seul remplacement du support. Elle ne couvre aucun autre dommage, y compris, mais non exclusivement, la perte d'usage ou de profits, ni aucun dommage spécial, indirect ou consécutif, ni aucune autre réclamation de nature similaire ou autre.
Produits non couverts – La présente garantie limitée ne s'applique pas si la ou les disquettes ou autre support ont été utilisés dans un produit d'une marque autre que Panasonic ou dans des conditions environnementales autres que celles spécifiées par PCI ou le fabricant, ou soumis à une mauvaise utilisation, à la négligence, à une manutention inadéquate ou encore si le programme a été modifié ou subi une tentative de modification ou des dommages attribuables à un accident ou à un cas fortuit. De plus, PCI n'assume aucune responsabilité pour toute perte de, ou tout dommage à, un programme, des données ou un support de sauvegarde amovible.

GÉNÉRALITÉS

PCI NE RECONNAÎT AUCUNE AUTRE GARANTIE, EXPLICITE OU IMPLICITE, Y COMPRIS, MAIS NON EXCLUSIVEMENT, LES GARANTIES IMPLICITES DE VALEUR COMMERCIALE ET D'UTILITÉ À UNE FIN QUELCONQUE, À L'ÉGARD DU LOGICIEL, SUPPORTS DE LOGICIELS, PRODUITS INFORMATIQUES, PÉRIPHÉRIQUES ET ACCESSOIRES.
SOUS AUCUNE CIRCONSTANCE PCI NE POURRA ÊTRE TENUE RESPONSABLE DES DOMMAGES SPÉCIAUX, INDIRECTS OU CONSÉCUTIFS ATTRIBUABLES À UN MANQUEMENT AUX GARANTIES LIMITÉES DÉCRITES DANS LE PRÉSENT DOCUMENT OU À L'UTILISATION DU PRODUIT INFORMATIQUE, Y COMPRIS, SANS RESTRICTION, LA PERTE DE DONNÉES, D'AFFAIRES, D'ACHALANDAGE OU DE PROFIT.
DANS TOUS LES CAS, LA RESPONSABILITÉ MAXIMALE DE PCI POUR TOUT MANQUEMENT NE POURRA EXCÉDER LE PRIX DE VENTE DU PRODUIT INFORMATIQUE.
AUCUNE RÉCLAMATION, SANS ÉGARD À SES MOTIFS, NE POURRA ÊTRE FAITE AUPRÈS DE PCI PLUS DE DEUX (2) ANS APRÈS LES FAITS INVOQUÉS À LA BASE D'UNE TELLE RÉCLAMATION.
Garantie statutaires – Certaines juridictions interdisent de telles limitations ou exclusions; aussi, pourraient-elles ne pas s'appliquer.

ENERGY STAR

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. To learn more about power management, please visit the web site:
www.energystar.gov/index.cfm?c=power_mgt.pr_power_management

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.

For information about ENERGY STAR®, refer to the following web site:
Web Site: www.energystar.gov

22-M-1