Copyright

Fujitsu PC Corporation has made every effort to ensure the accuracy and completeness of this document. However, as ongoing development efforts are continually improving the capabilities of our products, we cannot guarantee the accuracy of the contents of this document. We disclaim liability for errors, omissions, or future changes.

Fujitsu and the Fujitsu logo are registered trademarks and LifeBook is a trademark of Fujitsu Limited.

The following are registered trademarks of IBM Corporation: IBM, IBM PC AT, IBM PS/2.

The following are registered trademarks of Microsoft Corporation: MS, MS-DOS, Windows.

PCMCIA is a trademark of the Personal Computer Memory Card International Association.

Earthlink is a registered trademark of EarthLink Network, Inc.

Crusoe, LongRun, and Transmeta are trademarks of the Transmeta Corporation.

Adobe Acrobat Reader is a registered trademark of Adobe Systems, Inc.

Netscape 6.01 is a registered trademark of Netscape Communications Corporation.

PowerQuest and Drive Image are registered trademarks of PowerQuest Corporation.

InterVideo and WinDVD are trademarks of Intervideo, Inc.

SigmaTel is a registered trademark of SigmaTel, Inc.

Rage Mobility-M1 is a trademark of ATI Technologies, Inc.

McAfee is a registered trademark of Network Associates/ McAfee.com Inc.

The DVD player found in some models of the LifeBook notebook incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights users. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Dolby Headphone manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic”, and the double-D symbol are trademarks of Dolby Laboratories. Copyrights 1992-1999 Dolby Laboratories. All rights reserved.

All other trademarks mentioned herein are the property of their respective owners.

B5FH-5951-01EN-00

DECLARATION OF CONFORMITY

according to FCC Part 15

Responsible Party Name:	Fujitsu PC Corporation
Address:	5200 Patrick Henry Drive Santa Clara, CA 95054
Telephone:	(408) 982-9500
Declares that product:	Base Model Configurations: LifeBook P2110 Complies with Part 15 of the FCC Rules.

This device complies with Part 15 of the FCC rules. Operations are subject to the following two conditions: (1) This device must not be allowed to cause harmful interference, (2) This device must accept any interference received, including interference that may cause undesired operation.

Fujitsu LifeBook P2000 Notebook
Table of Contents

Starting Your LifeBook Notebook

Power Management

4

USER-INSTALLABLE FEATURES

Lithium ion Battery

External USB Floppy Disk Drive

DVD/CD-RW Combo Drive

PC Cards

Memory Upgrade Module

Device Ports

5

USING THE WIRELESS LAN

6

TROUBLESHOOTING

Troubleshooting

Restoring Your Software

7

CARE AND MAINTENANCE

Care and Maintenance

8

SPECIFICATIONS

Specifications

9

GLOSSARY

1 Preface

Preface

ABOUT THIS GUIDE

The LifeBook P Series notebook from Fujitsu PC Corporation is a small but powerful computer. It is powered by a 867MHz Crusoe™ TM5800 processor with LongRun™ Power Management from Transmeta™, has a built-in color display, a number of possible configurations, and brings the functionality of desktop personal computers (PCs) to a portable environment.

This manual explains how to operate your LifeBook notebook's hardware and built-in system software. Your notebook is compatible with the IBM® PC AT.

It comes with Microsoft Windows® 2000, Windows XP Home, or Window XP Pro pre-installed.

The LifeBook P Series notebook is a completely self-contained unit with an active-matrix (TFT) color LCD display. It has a powerful interface that enables it to support a variety of optional features.

Conventions Used in the Guide

Keyboard keys appear in brackets.
Example: [Fn], [F1], [ESC], [ENTER] and [CTRL].

Pages with additional information about a specific topic are cross-referenced within the text.
Example: (See page xx.)

On screen buttons or menu items appear in bold
Example: Click **OK** to restart your LifeBook notebook.

DOS commands you enter appear in Courier type.
Example: `Shutdown the computer?`

POINT

The point icon highlights information that will enhance your understanding of the subject material.

CAUTION

The caution icon highlights information that is important to the safe operation of your computer, or to the integrity of your files. Please read all caution information carefully.

WARNING

The warning icon highlights information that can be hazardous to you, your LifeBook notebook, or your files. Please read all warning information carefully.

FUJITSU CONTACT INFORMATION

Service and Support

You can contact Fujitsu Service and Support in the following ways:

- Toll free: 1-800-8Fujitsu (1-800-838-5487)
- Fax: 1-901-259-5700
- E-mail: 8fujitsu@fujitsupc.com
- Web site: http://www.fujitsupc.com

Before you place the call, you should have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- Product name
- Product configuration number
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Hardware configuration
- Type of device connected, if any

Fujitsu Online

You can go directly to the online Fujitsu Product catalog for your LifeBook notebook by clicking on the LifeBook Accessories Web site URL link, located in the Windows Start menu.

You can also reach Fujitsu Service and Support online by clicking on the Fujitsu Service and Support Web site URL link, located in the Service and Support Software folder of the Windows Start menu.

POINT

You must have an active internet connection to use the online URL links.

WARRANTY

Your LifeBook notebook is backed by a one year International Limited Warranty. Check the service kit that came with your notebook for warranty terms and conditions.

2

Getting to Know Your LifeBook Notebook

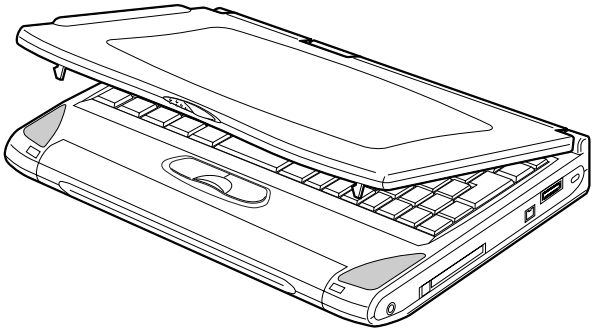


Figure 2-1 Fujitsu LifeBook P Series notebook

Overview

This section describes the components of your Fujitsu LifeBook P Series notebook. We strongly recommend that you read it before using your notebook – even if you are already familiar with notebook computers.

UNPACKING

When you receive your LifeBook notebook, unpack it carefully, and compare the parts you have received with the items listed below.

- LifeBook P Series notebook*(Figure 2-1)*
- AC adapter with AC power cord *(Figure 2-2)*
- External USB Floppy Disk Drive *(Figure 2-3)*
- Lithium ion battery
- Weight Saver
- Phone/Modem (RJ-11) telephone cable
- Mini-VGA cable
- Driver and Application Restore CD
- Getting Started Guide
- User's Guide (this document)
- International Limited Warranty Brochure
- Certification of Authenticity with operating system manual.
- Premium Care registration card and envelope
- Fujitsu Service Assistant flyer
- Fujitsu Service Assistant installation CD

Depending upon the configuration of your system, one or more of the following items may also be included:

- Modular DVD/CD-RW combo drive
- Modular 2nd battery
- High-capacity battery
- DVD Application CD
- CD-RW Application CD

Once you have checked and confirmed that your LifeBook system is complete, read through the following pages to learn about all of your notebook's components.

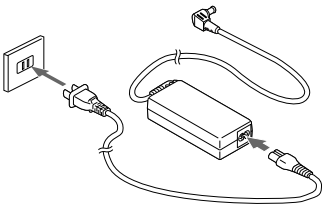


Figure 2-2 AC Adapter

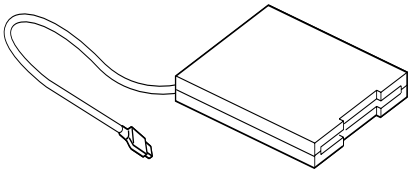


Figure 2-3 External Floppy Disk Drive

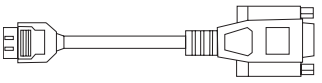


Figure 2-4 Mini-VGA Cable

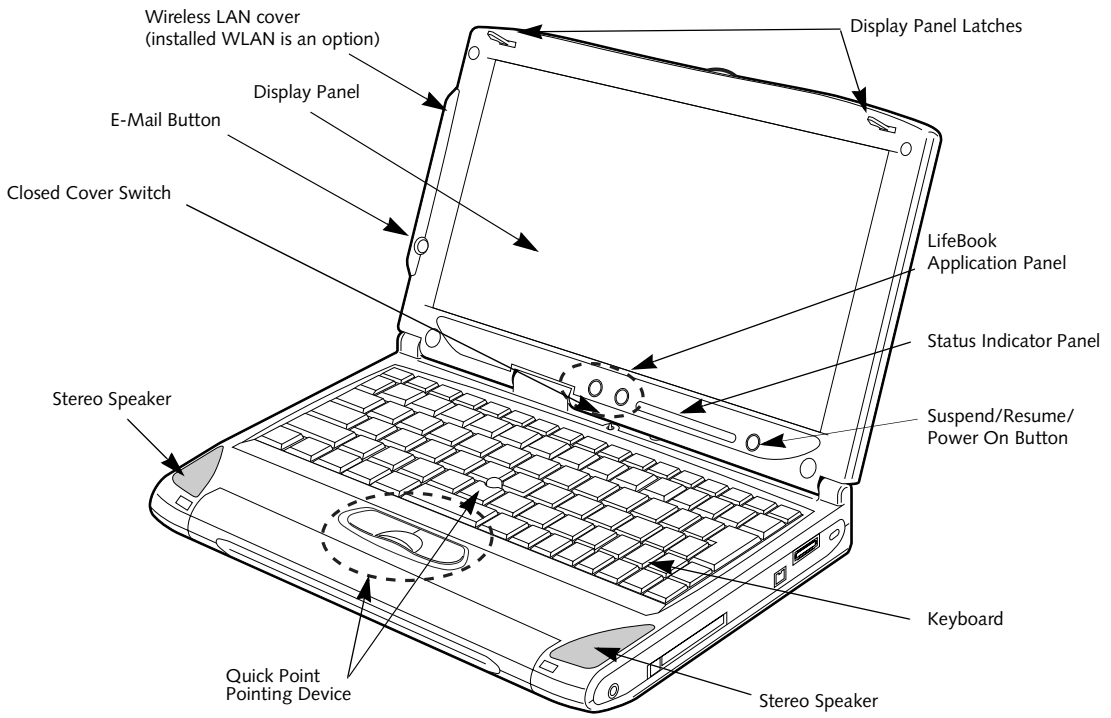


Figure 2-5 LifeBook notebook with display open

Locating the Controls and Connectors

TOP AND FRONT COMPONENTS

The following is a brief description of your LifeBook notebook's top and front components.

Display Panel Latch

The display panel latch locks and releases the display panel.

Wireless LAN Cover

The wireless LAN is an option; the wireless LAN cover is present on all models.

Display Panel

The display panel is a color LCD panel with back lighting for the display of text and graphics.

E-Mail Button

The E-Mail button helps you manage your e-mail. *(See E-mail Notification LED on page 20 for more information)*

Closed Cover Switch

The closed cover switch turns off the LCD back lighting when the display panel is closed.

Stereo Speakers

The built-in dual speakers allow for stereo sound.

Quick Point Pointing Device

The Quick Point pointing device consists of two mouse-like buttons and one cursor control button. *(See Quick Point Pointing Device on page 15 for more information)*

Keyboard

A full-size keyboard with dedicated Windows keys. *(See Keyboard on page 13 for more information)*

Suspend/Resume/Power On Button

The Suspend/Resume/Power On button allows you to suspend notebook activity without powering off, resume your LifeBook notebook from suspend mode, and power on your notebook when it has been shut down from Windows. *(See Suspend/Resume Button on page 29 for more information)*

Status Indicator Panel

The Status Indicator Panel displays symbols that correspond with a specific component of your LifeBook notebook. *(See Status Indicator Panel on page 11 for more information)*

LifeBook Application Panel

The LifeBook Application Panel provides one-touch application launch capability. *(See LifeBook Application Panel on page 20 for more information)*

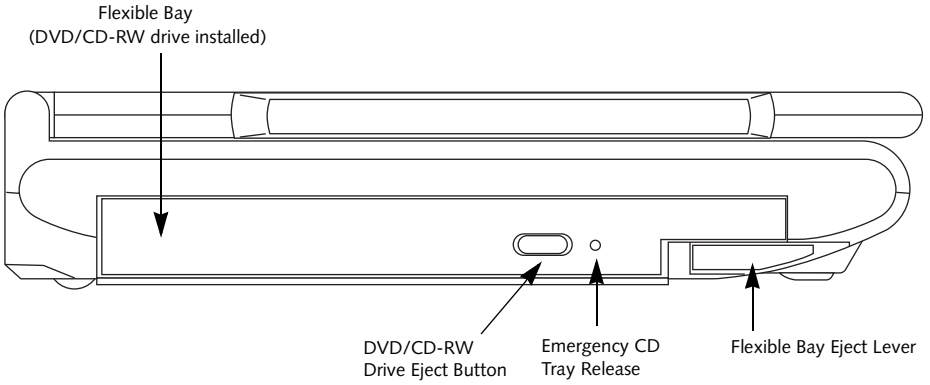


Figure 2-6 LifeBook notebook left-side panel

LEFT-SIDE PANEL COMPONENTS

The following is a brief description of your LifeBook notebook's left-side components.

Flexible Bay

The Flexible Bay can accommodate either the standard DVD/CD-RW Drive or an optional bay battery. If neither device is installed, the weight saver should be installed. *(See Flexible Bay Devices on page 18 for more information)*

Flexible Bay Eject Lever

The Flexible Bay eject lever releases the Flexible Bay device.

DVD/CD-RW Drive Eject Button

The DVD/CD-RW Drive eject button releasing the drive tray under normal circumstances.

Emergency CD Tray Release

The Emergency CD Tray Release allows you to open the CD tray without powering on your LifeBook notebook.

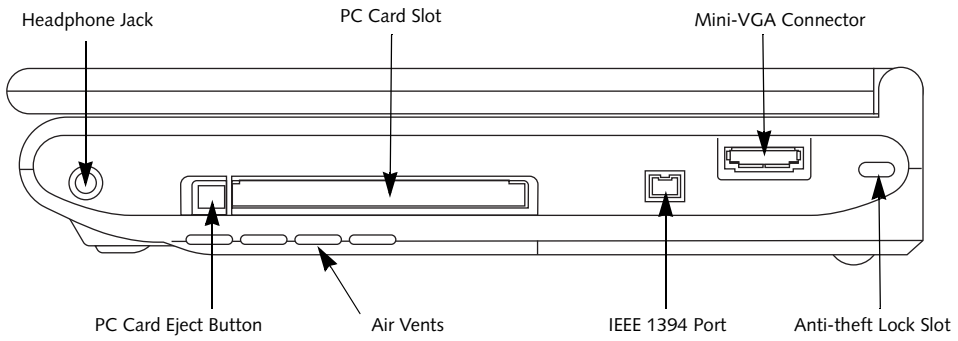


Figure 2-7 LifeBook notebook right-side panel

RIGHT-SIDE PANEL COMPONENTS

The following is a brief description of your LifeBook notebook's right-side components.

Headphone Jack

The headphone jack allows you to connect headphones or powered external speakers. *(See Headphone Jack on page 43 for more information)*

PC Card Slot

The PC Card Slot allows you to install one Type II PC Card. *(See PC Cards on page 39 for more information)*

PC Card Eject Button

The PC Card eject button allows you to remove PC Cards from the PC Card slot. *(See PC Cards on page 39 for more information)*

IEEE 1394 Jack

The 1394 jack is used to connect between your LifeBook and a peripheral such as a digital video camera.*(See IEEE 1394 Jack on page 43 for more information)*

Anti-theft Lock Slot

The anti-theft lock slot allows you to attach an optional physical lock down device.

Mini-VGA Jack

The mini-VGA jack allows you to connect your LifeBook notebook to an external monitor with an optional cable adapter. *(See Mini-VGA Port on page 44 for more information)*

Air Vents

The air vents allow for proper cooling of the system while it is operating.

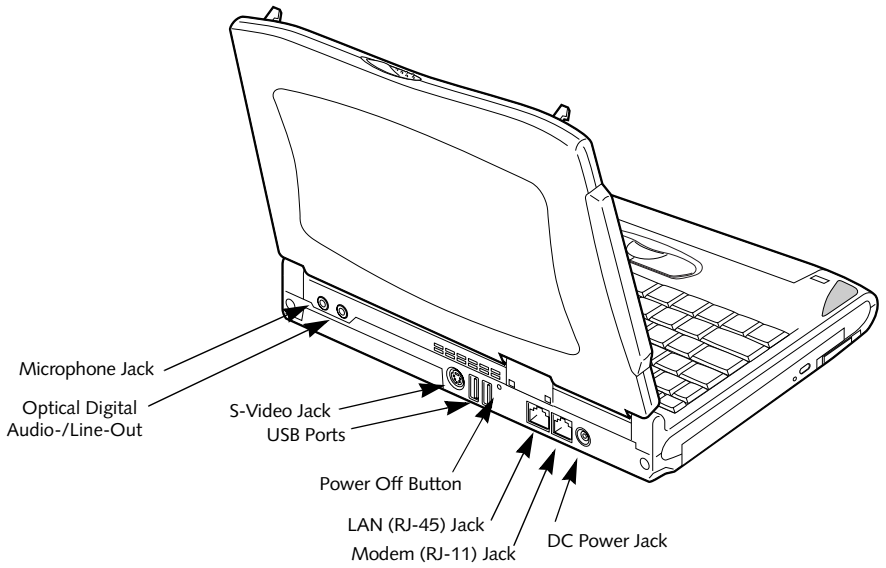


Figure 2-8 LifeBook notebook back panel

BACK PANEL COMPONENTS

Following is a brief description of your LifeBook notebook's back panel components.

Optical Digital Audio-/Line-Out Jack

The optical digital audio-/line-out jack allows you to download digital audio onto a MiniDisc recorder's SPDIF (Sony Philips Digital Interface) format or to use external speakers with your LifeBook. *(See Optical Digital Audio-Out Connector on page 44 for more information)*

Microphone Jack

The microphone jack allows you to connect an external mono microphone. *(See Microphone Jack on page 44 for more information)*

S-Video Port

The S-Video output is used to transmit the S-Video signal. The S-Video mini-DIN port is used to connect to a compatible TV or VCR. *(See S-Video Out Port on page 43 for more information)*

USB Ports

The USB ports allow you to connect Universal Serial Bus devices. *(See Universal Serial Bus Ports on page 43 for more information)*

Power Off Button

The power off button allows you to shut down the system in the event that standard methods do not work.

Modem (RJ-11) Telephone Port

The Modem (RJ-11) telephone jack is for attaching a telephone line to the internal multinational 56K modem. *(See Modem (RJ-11) Telephone Jack on page 43 for more information)*

WARNING

The internal modem is not intended for use with Digital PBX systems. Do not connect the internal modem to a Digital PBX as it may cause serious damage to the internal modem or your entire notebook. Consult your PBX manufacturer's documentation for details. Some hotels have Digital PBX systems. Be sure to find out BEFORE you connect your modem.

POINT

The internal multinational modem is designed to the ITU-T V.90 standard. Its maximum speed of 53000bps is the highest allowed by FCC, and its actual connection rate depends on the line conditions. The maximum speed is 33600bps at upload.

For additional information about the multinational modem, refer to the Fujitsu web site at: www.fujitsupc.com/modems

LAN (RJ-45) Jack

The internal LAN (RJ-45) jack is used for an internal Fast Ethernet (10/100 Base-TX) connection. *(See Internal LAN (RJ-45) Jack on page 43 for more information)*

DC Power Jack

The DC power jack allows you to plug in the AC adapter or the optional Auto/Airline adapter to power your notebook and charge the internal Lithium ion battery.

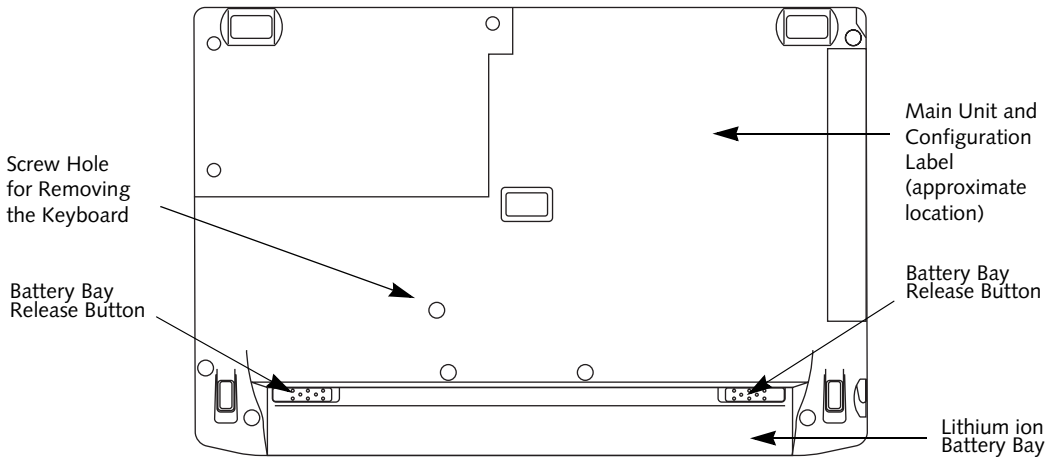


Figure 2-9 LifeBook notebook bottom panel

BOTTOM COMPONENTS

The following is a brief description of your LifeBook notebook's bottom panel components.

Lithium ion Battery Bay Lock Button

Slide this lock button to lock/unlock the internal battery.

Battery Bay Release Button

Slide the release button to release the internal battery.

Lithium ion Battery Bay

The battery bay contains the internal Lithium ion battery. It can be opened for the removal of the battery when stored over a long period of time or for swapping a discharged battery with a charged Lithium ion battery. *(See Lithium ion Battery on page 33 for more information)*

Main Unit and Configuration Label

The configuration label shows the model number and other information about your LifeBook notebook. In addition, the configuration portion of the label has the serial number and manufacturer information that you will need to give your support representative. It identifies the exact version of various components of your notebook.

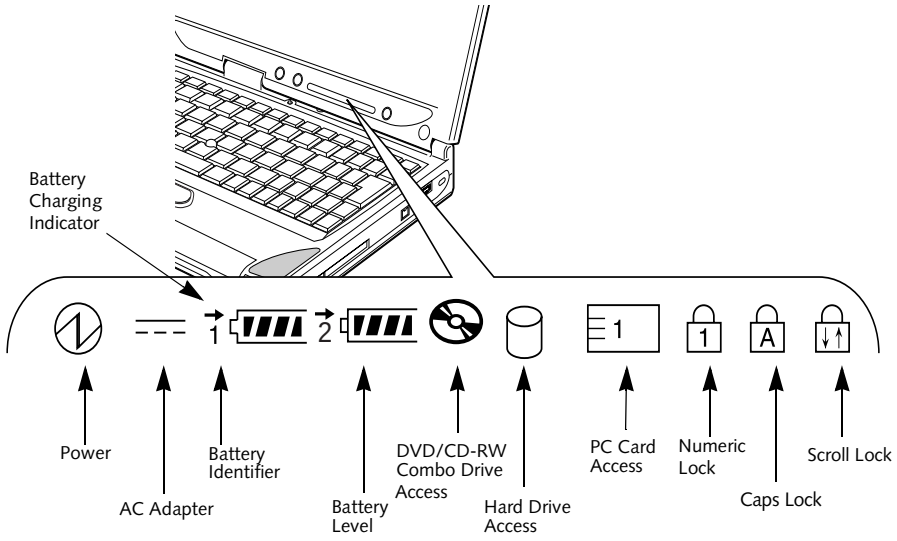


Figure 2-10 Status Indicator Panel

Status Indicator Panel

The Status Indicator displays symbols that correspond to a specific component of your Fujitsu LifeBook notebook. These symbols tell you how each of those components are operating. *(Figure 2-10)*

POWER INDICATOR

The Power indicator symbol states whether your system is operational. It has several different states, each of which tells you what mode your notebook is in at that time.

- Steady On: This means that there is power to your LifeBook notebook and that it is ready for use.
- Flashing: This means that your LifeBook notebook is in Suspend mode.
- Steady Off: This means that your system is either in Hibernation mode, or that your LifeBook notebook has been turned off with the power switch.

If you are charging your battery, the Power indicator symbol will remain on even if your notebook is shut off. The Power indicator symbol will also remain on if you have either adapter connected and are shut down from Windows, but have not turned off the power switch.

AC ADAPTER INDICATOR

The AC Adapter indicator states whether your notebook is operating from the AC adapter, the Auto/Airline adapter or the batteries. This icon has two different states that can tell you what power source your LifeBook notebook is using.

- On: This means that either of the adapters are currently in use.
- Off: Power is only coming from the batteries, and you do not have an adapter connected.

BATTERY LEVEL INDICATORS

The Battery Level indicators state whether or not the primary Lithium ion battery and/or the optional second Lithium ion battery are installed (Battery 1 refers to the primary Lithium ion battery, while Battery 2 refers to the Flexible Bay optional second battery). In addition, this symbol states how much charge is available within each installed battery. The symbol will only be displayed for a battery that is currently installed in your LifeBook notebook. *(Figure 2-11)*

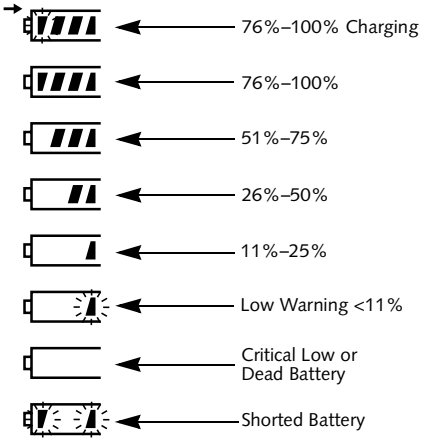


Figure 2-11 Battery Level Indicator

CAUTION

A shorted battery is damaged and must be replaced. *(Figure 2-11)*

POINT

If there is no battery activity, the power adapters are not connected, and the power switch is Off, the Battery Level indicators will also be off.

→ BATTERY CHARGING INDICATOR

Located to the left of the Battery Level indicator is a small arrow symbol. This symbol states whether the battery is charging. This indicator operates whether the power switch is in the On or Off position, and will flash if the battery is too hot or cold to charge.

CAUTION

Batteries subjected to shocks, vibration or extreme temperatures can be permanently damaged.

DVD/CD-RW DRIVE ACCESS INDICATOR

The DVD/CD-RW Access indicator tells you that the DVD/CD-RW combo drive is being accessed. If the Auto Insert Notification function is active, the indicator will flash periodically when your system is checking the DVD/CD-RW drive. If the Auto Insert Notification function is not active, the indicator will only flash when you access the DVD/CD-RW drive. The default setting is the Auto Insert Notification function active. *(See Auto Insert Notification Function on page 38 for more information)*

HARD DRIVE OR REMOVABLE MEDIA DRIVE ACCESS INDICATOR

The Hard Drive Access indicator states whether your internal hard drive is being accessed.

PC CARD ACCESS INDICATOR

The PC Card Access indicator states whether or not your notebook is accessing a PC Card. The indicator will flash if your software tries to access a PC Card, even if there is no card installed. *(See PC Cards on page 39 for more information)*

NUMERIC LOCK INDICATOR

The Numeric Lock indicator states that the internal keyboard is set in ten-key numeric keypad mode.

CAPS LOCK INDICATOR

The Caps Lock indicator states that your keyboard is set to type in all capital letters.

SCROLL LOCK INDICATOR

The Scroll Lock indicator states that your scroll lock is active.

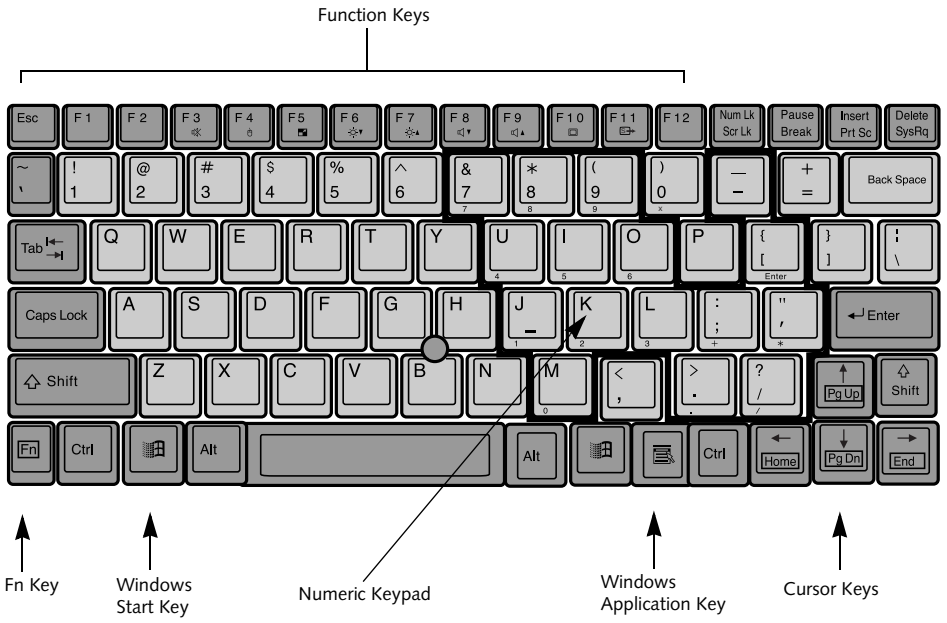


Figure 2-12 Keyboard

Keyboard

USING THE KEYBOARD

Your Fujitsu LifeBook notebook has an integral 83-key keyboard. The keys perform all the standard functions of a 101-key keyboard, including the Windows keys and other special function keys. This section describes the following keys. *(Figure 2-12)*

- Numeric keypad: Your notebook allows certain keys to serve dual purposes, both as standard characters and as numeric and mathematical keys. The ability to toggle between the standard character and numerical keys is controlled through the [NumLk] key.
- Cursor keys: Your keyboard contains four arrow keys for moving the cursor or insertion point to the right, left, up, or down within windows, applications and documents.
- Function keys: The keys labeled [F1] through [F12], are used in conjunction with the [Fn] key to produce special actions that vary depending on what program is running.
- Windows keys: These keys work with your Windows operating system and function the same as the onscreen Start menu button, or the right button on your pointing device.

NUMERIC KEYPAD

Certain keys on the keyboard perform dual functions as both standard character keys and numeric keypad keys. NumLk can be activated by pressing the [NumLk] keys. Turning off the NumLk feature is done the same way. Once this feature is activated you can enter numerals 0 through 9, perform addition (+), subtraction (-), multiplication (*), or division (/), and enter decimal points (.) using the keys designated as ten-key function keys. The keys in the numeric keypad are marked on the front edge of the key to indicate their secondary functions. *(Figure 2-12)*

WINDOWS KEYS

Your LifeBook notebook has two Windows keys, consisting of a Start key and an Application key. The Start key displays the Start menu. This button functions the same as your onscreen Start menu button. The Application key functions the same as your right mouse button and displays shortcut menus for the selected item. (Please refer to your Windows documentation for additional information regarding the Windows keys.) *(Figure 2-12)*

CURSOR KEYS

The cursor keys are the four arrow keys on the keyboard which allow you to move the cursor up, down, left and right in applications. In programs such as Windows Explorer, it moves the “focus” (selects the next item up, down, left, or right). *(Figure 2-12)*

FUNCTION KEYS

Your LifeBook notebook has 12 function keys, F1 through F12. The functions assigned to these keys differ for each application. You should refer to your software documentation to find out how these keys are used. *(Figure 2-12)*

The [Fn] key provides extended functions for the notebook and is always used in conjunction with another key.

- [Fn+F3]: Pressing [F3] while holding [Fn] will toggle the Audio Mute on and off.
- [Fn+F4]: Pressing [F4] while holding [Fn] will toggle the Quick Point feature on and off. Note that the [Fn+F4] combination only works if Manual Setting is selected in the BIOS. (See "Entering the BIOS Setup Utility" on page 27)
- [Fn+F5]: Pressing [F5] while holding [Fn] allows you to toggle between video compensation and no compensation. (Video compensation controls spacing on the display. When it is enabled, displays with less than 1024 x 768 or 800 x 600 pixel resolution will still cover the entire screen.)
- [Fn+F6]: Pressing [F6] repeatedly while holding [Fn] will lower the brightness of your display.*
- [Fn+F7]: Pressing [F7] repeatedly while holding [Fn] will increase the brightness of the display.*
- [Fn+F8]: Pressing [F8] repeatedly while holding [Fn] will decrease the volume of your LifeBook notebook.**
- [Fn+F9]: Pressing [F9] repeatedly while holding [Fn] will increase the volume of your LifeBook notebook.**
- [Fn+F10]: Pressing [F10] while holding [Fn] allows you to change your selection of where to send your display video. Each time you press the combination of keys you will step to the next choice. The choices, in order, are: built-in display panel only, both built-in display panel and external monitor or external monitor only.
- [Fn+F11]: When a television is connected via the S-Video port, pressing [F11] while holding [Fn] will toggle the display on and off.

* There are eight brightness levels.

** There are 17 audio levels.

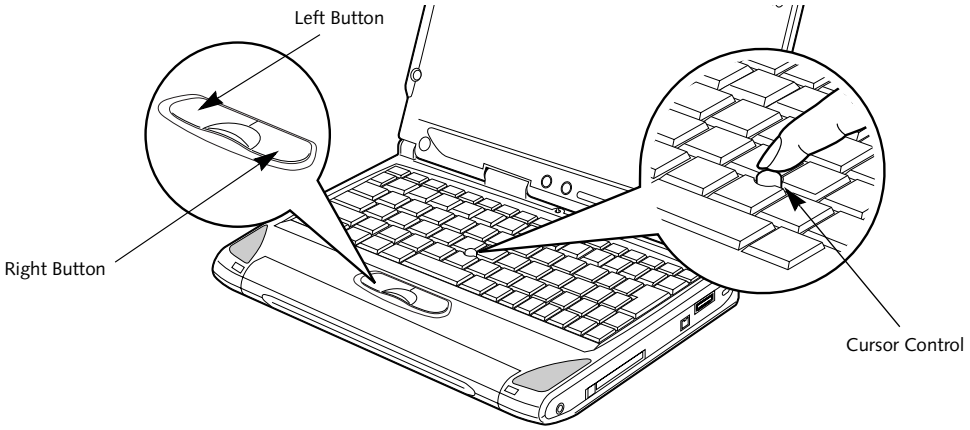


Figure 2-13 Quick Point pointing device

Quick Point Pointing Device

The Quick Point is built into your LifeBook notebook. It is used to control the movement of the cursor to select items on your display panel. The Quick Point is composed of a cursor control at the center of the keyboard and three buttons on the palm rest of your notebook. The cursor control works the same way a mouse ball does, and moves the cursor around the display. It only requires light pressure with the tip of your finger, and the more pressure you use, the faster the cursor will move. The left button functions the same as a left mouse button while the right button has the same function as a right mouse button. When used with the cursor control, the middle button allows you to scroll up and down a screen. The actual functionality of the buttons may vary depending on the application that is being used. *(Figure 2-13)*

CLICKING

Clicking means pushing and releasing a button. To left-click, move the cursor to the item you wish to select, press the top button once, and then immediately release it. To right-click, move the cursor to the item you wish to select, press the bottom button once, and then immediately release it. *(Figure 2-14)*

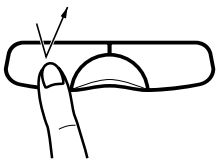


Figure 2-14 Clicking

DOUBLE-CLICKING

Double-clicking means pushing and releasing the top button twice in rapid succession. This procedure does not function with the right button. To double-click, move the cursor to the item you wish to select, press and release the top button twice. *(Figure 2-15)*

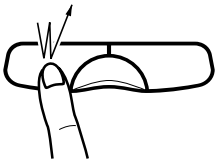


Figure 2-15 Double-clicking

POINTS

- If the interval between clicks is too long, the double-click will not be executed.
- Parameters for the Quick Point can be adjusted from the Mouse Properties dialog box located in the Windows Control Panel.

DRAGGING

Dragging means pressing and holding the top button, while moving the cursor. To drag, move the cursor to the item you wish to move. Press and hold the top button while moving the item to its new location and then release it. *(Figure 2-16)*

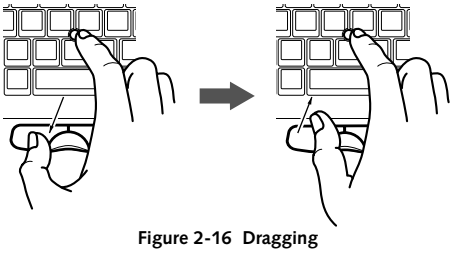


Figure 2-16 Dragging

QUICK POINT DEVICE CONTROL ADJUSTMENT

The Windows Control Panel allows you to customize your Quick Point with selections made from within the Mouse Properties dialog box. There are three aspects of Quick Point operation, which you can adjust:

- Buttons: This tab lets you set up the buttons for right or left handed operation, in addition to setting up the time interval allowed between clicks in double-clicking.
- Pointers: This tab lets you set up the scheme for the cursor depending on its functionality.
- Motion: This tab lets you set up a relation between the speed of your finger motion and the speed of the cursor. It also allows you to enable a Pointer Trail for the cursor arrow.

Volume Control

Your Fujitsu LifeBook notebook has multiple volume controls which interact with each other.

POINT

Any software that contains audio files will also contain a volume control of its own. If you install an external audio device that has an independent volume control, the hardware volume control and the software volume control will interact with each other. It should be noted that if you set your software volume to Off, you will override the external volume control setting.

CONTROLLING THE VOLUME

The volume can be controlled in several different ways:

- Volume can be set from within the Volume Control on the Taskbar.
- Volume can be controlled with the [F8] and [F9] functions keys. Pressing [F8] repeatedly while holding [Fn] will decrease the volume of your notebook. Pressing [F9] repeatedly while holding [Fn] will increase the volume of your notebook.

POINT

There are seventeen levels through which the function keys cycle.

- Volume can be controlled by many volume controls that are set within individual applications.
- Certain external audio devices you might connect to your system may have hardware volume controls.

Each source discussed above puts an upper limit on the volume level that must then be followed by the other sources.

We recommend that you experiment with the various volume controls to discover the optimal sound level.

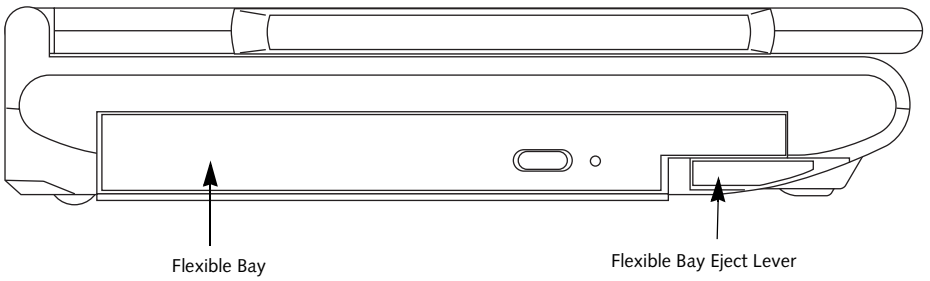


Figure 2-17 Flexible Bay

Flexible Bay Devices

Your Fujitsu LifeBook notebook contains a Flexible Bay. The Flexible Bay can accommodate a modular DVD/CD-ROM combo drive, a modular Lithium ion battery, or a weight saver. *(Figure 2-17)*

The modular DVD/CD-RW combo drive allows you to access movies, software and audio DVD/CDs, as well as the ability to write to CDs.

The modular Lithium ion battery is a rechargeable battery that can be used to power your LifeBook notebook when an adapter is not connected.

The Weight Saver is used to fill the bay when no device is needed.

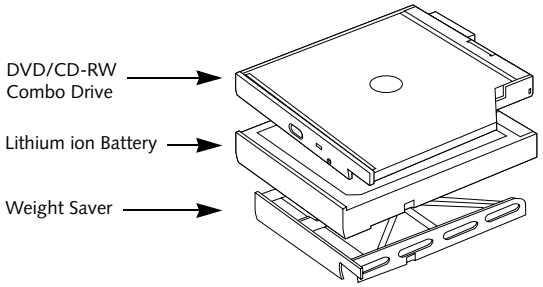


Figure 2-18 Flexible Bay Devices

REMOVING AND INSTALLING MODULAR DEVICES

To remove and install modular devices in the Flexible Bay, you can perform either a cold-swapping or hot-swapping of the device. Cold-swapping means swapping devices while your LifeBook notebook is powered off. Hot-swapping occurs when your system is powered on with a charged main battery or AC Adapter.

CAUTION

You should never leave your Flexible Bay empty when the notebook is in operation. If left empty, dust or foreign matter may accumulate inside the notebook.

Cold-swapping

To cold-swap modular devices in your Flexible Bay follow these easy steps: *(Figure 2-19)*

1. Close any open files.
2. Shut down your LifeBook notebook.
3. Pull out the Flexible Bay eject lever. This will push your device out slightly, allowing you to remove the device.
4. Slide your device out until it is clear of the bay. This will require light force.

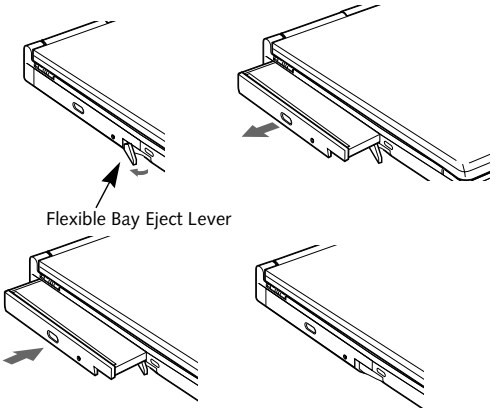


Figure 2-19 Removing/Installing a device in the Flexible Bay

CAUTION

Be careful when aligning and seating devices in the bay. If the fit is incorrect, you may damage the bay or the device. If the device does not move easily in the bay, remove it, and check for dirt or foreign objects. It will require a firm push to latch the device in place.

5. Slide the device you are installing into your notebook until it clicks into place.
6. It is now safe to turn your notebook back on.
7. You can now access and use the device.

Your LifeBook notebook will automatically detect the new device and activate it within your system. The drive letters associated with the device will be created and listed under My Computer and Windows Explorer.

Hot-swapping

To hot-swap Flexible Bay devices while the system is powered on, follow these steps:

1. Prior to performing the hot-swap, make sure you have a charged **main** battery installed, or an **AC Adapter** is powering the system.
2. If your system is in Suspend mode, press the Suspend/Resume button to resume operation.
3. Click the Unplug or Eject Hardware icon (Windows 2000 Professional) or the Safely Remove Hardware icon (Windows XP) in the lower right-hand corner of the screen.
4. From the list that appears, click the device you want to remove.
5. Pull out the Flexible Bay eject lever. This will push your device out slightly, allowing you to remove the device.
6. Slide your device out until it is clear of the bay. This will require light force.

CAUTION

Be careful when aligning and seating devices in the bay. If the fit is incorrect, you may damage the bay or the device. If the device does not move easily in the bay, remove it, and check for dirt or foreign objects. It will require a firm push to latch the device in place.

7. Slide the device you are installing into your notebook until it clicks into place.
8. It is now safe to turn your notebook back on.
9. You can now access and use the device.

Your LifeBook notebook will automatically detect the new device and activate it within your system. The drive letters associated with the device will be created and listed under My Computer and Windows Explorer.

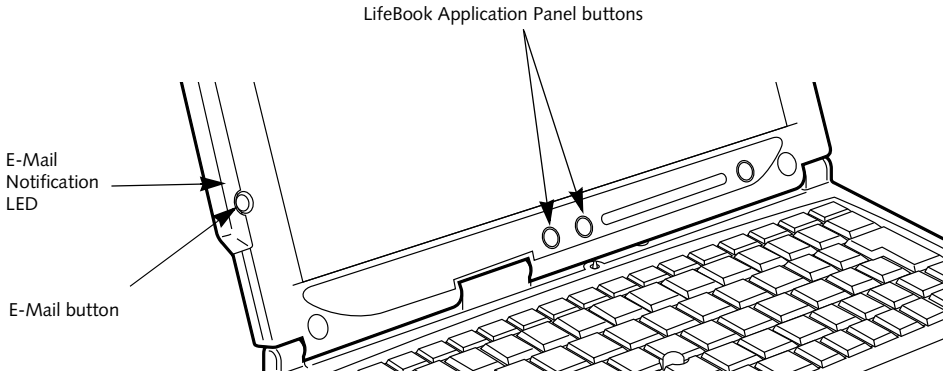


Figure 2-20 LifeBook Application Panel

LifeBook Application Panel

One of the unique features of your LifeBook is the LifeBook Application Panel. This panel allows you to launch applications with the touch of a button when your system is actively running or in suspend mode.

Your LifeBook is pre-installed with software utilities that you use to operate and configure your LifeBook Application Panel. These utilities are found in the Start menu, under Settings -> Control Panel -> Application Panel. (For Windows XP users, it's in Start -> Control Panel -> Application Panel.) They include Application Panel Setup, E-mail LED Setup, and Internet Setup. The LifeBook Application Panel makes your LifeBook more than just another notebook computer.

The panel consists of the following elements:

APPLICATION LAUNCH BUTTONS

There are two application launch buttons. When these are selected, user-defined applications will be launched. You can customize these buttons to open whichever applications you want when they are pressed. Note that although there is an Internet Setup tab in the Application Panel Setup window, there is no Internet-assigned button in this LifeBook model.

E-MAIL NOTIFICATION LED

By setting up the E-mail LED notification in conjunction with your E-mail button setup, you can connect to your ISP, check for and retrieve new mail, terminate connection, and activate the E-mail LED to notify that new mail has arrived.

POINT

The E-mail button can be configured to launch any application you wish, not just an e-mail program.

To use the E-mail LED notification, you must have access to a POP3 Server with no Security Password Authentication. Contact your service provider to determine if they support POP3 without Security Password Authentication.

DESKTOP CONTROL PANEL

To configure your LifeBook Application Panel with the Application Panel Setup:

1. Click on **Start**.
2. *(Windows 2000 only)* Click on **Settings**.
3. Click on **Control Panel**.
4. Click on **Application Panel**.

The Application Panel Setup utility will appear. There are tabs that correspond to the application buttons on the LifeBook Application Panel. When you receive your notebook, these buttons are pre-configured to launch specific applications. For a list of the default applications associated with each button, refer to *(See Application Launcher Defaults on page 86 for more information)*.

POINT

The tabs in Application Panel Setup may not be in the same order as the buttons on your LifeBook. Please carefully select the tab you wish to change.

To change an application associated with the Application A, Application B, or E-mail buttons, click on the tab for the button you would like to reconfigure – for example, Application A. Click on Go To Start Menu, scroll down the list of applications, click on the application you wish to launch with this button, and then click OK. The button will now launch the new application.

When you have finished with Application Panel Setup click on OK, and the new settings will take effect. You

can reconfigure your LifeBook Application Panel as often as you like.

POINT

The E-mail button can be configured to launch any application you wish, not just an e-mail program.

Enabling/disabling Application Launcher button

In the center of each application setup page is a Specify the Button Action field. When you click on the drop-down arrow, you are offered two choices: Start a Program, and Never Use a Button. The first will enable the button, and the second will disable the button. You can enable/disable either of these functions simply by clicking on the option.

At the bottom of each setup page are two check boxes:

- Keep this button active even on Standby
- Keep this button active even on Hard Drive Timeout

The first will enable/disable the button when your system is in Standby mode, and the second will enable/disable the button when your hard drive has timed out.

POINT

If you choose to have the buttons work when the notebook is in standby or off, they will function even if hit accidentally. This will turn on your notebook even if you are not present or using your notebook. This could deplete your battery, and you will need to recharge it before using the notebook. As a precaution, close the lid when you are away from your notebook.

USING THE E-MAIL NOTIFICATION LED

POINT

To use the E-mail LED notification, you must have access to a POP3 Server with no Security Password Authentication. Contact your service provider to determine if they support POP3 without Security Password Authentication.

To configure the E-mail Notification LED:

1. Click on **Start**.
2. *(Windows 2000 only)* Click on **Programs**.
3. Click on **Control Panel**.
4. Click on **Application Panel**.
5. Click on the **E-mail** tab.
6. The E-mail Setup screen will appear. Click on the **E-Mail Account Settings** button. The **E-Mail Account Settings** window appears.

Based upon the configuration of your system and the method you plan to use for connecting, enter the information in the requested fields. If you are unsure of the information requested, click on the field and press the [F1] button. If you are still unsure, consult your Service provider.

After you have filled in the requested information for each of the E-Mail Account Settings tabs, click **OK** to return to the Application Panel window.

Configure the E-mail button to launch the mail software you want to use (i.e., Outlook Express, Netscape Messenger, etc.) by either browsing to the application using the **Browse** button, or opening the Start Menu using the **Go to Start Menu** button.

After the setup (Dial Up Networking/E-mail/E-mail LED) is completed, you are ready to retrieve mail. When you press the E-mail button, your system will establish connection with your provider, check for and retrieve new mails, terminate the connection, and activate the blinking LED to alert you of new mail.

USING THE CD PLAYER

Your LifeBook Application Panel utility includes a desktop media player panel. You may use this panel to operate as a CD Player.

To use the desktop CD player panel:

1. Click on **Start**.
2. Click on **Programs**.
3. Click on **Lifebook Application Panel**.
4. Click on **CD Player**.

The desktop control panel will appear in the upper left corner of your screen.

To close the panel, click on the "**x**" button.

To minimize the panel, click on the "-" button.

You can select from four appearances for your desktop control panel. Simply double click on the track display area of the panel, and a menu will appear which will allow you to select from a pull down menu. On the same pop-up are three other options: "Always on top", "Continuous Play", and "Disable Stop/Eject button for CD removal". If you click on "Always on top" the desktop controls will always be seen on your screen, no matter what other application you are running. If you click on "Continuous Play," your CD Player will automatically start over at the beginning as soon as it finishes the last track.

If you click "Disable Stop/Eject button for CD removal," the Stop/Eject button on the CD player toolbar is either enabled or disabled.

You can move the desktop control panel to anywhere on your desktop. Drag it by clicking on the display, holding it down, and dragging the control panel. When you have

placed it where you would like, release the mouse button.

POINTS

- If you have your display set to 256K colors the basic display will appear no matter which one you select. You will need to set your display colors to more than 256K in order to select other display appearances.
- When you close the CD Player's desktop control panel, it will stop the audio CD Player.

System Requirements and Precautions

System Requirements

- Operating System: Microsoft Windows
- Memory: 32MB or more
- Hard drive: 2MB or more free space

Precautions

- LifeBook Application Panel uses the date and time settings of your LifeBook. If the date and time are off, you can adjust this setting in the Windows Control Panel.
- If you insert an audio CD which has both audio and data tracks into the CD Player, the CD Player may fail to play the first audio track.
- The Volume Up, Volume Down and Mute controls for the CD Player desktop control panel adjusts the volume of the CD audio line only. It does not adjust your notebook's master software volume control or the manual volume on the LifeBook notebook.
- The CD Player desktop control panel is designed to be displayed in High Color (16-bit) or in True Color (24-bit or more). If you have your notebook's display set for 256 colors or less, the CD Player control panel will display in a "basic" mode.

3
Getting Started

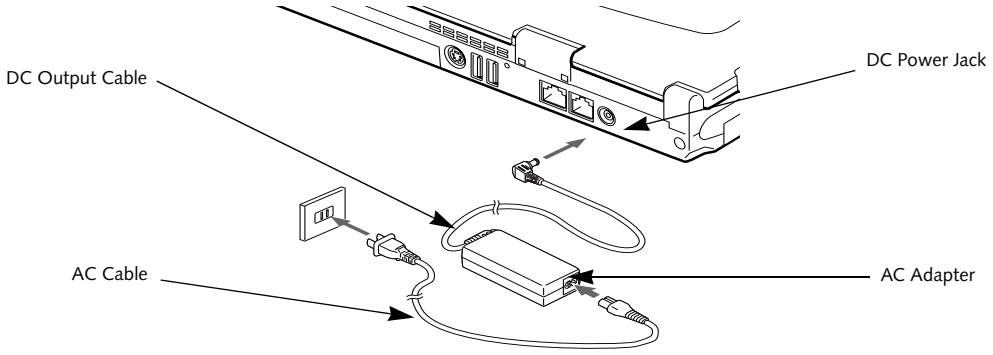


Figure 3-1 Connecting the AC Adapter

Power Sources

Your Fujitsu LifeBook notebook has five possible power sources: a primary Lithium ion battery, an optional high-capacity Lithium ion battery, an optional modular Lithium ion battery, an AC adapter, or an optional Auto/Airline adapter.

CONNECTING THE POWER ADAPTERS

The AC adapter or optional Auto/Airline adapter provides power for operating your notebook and charging the batteries.

Connecting the AC Adapter

1. Plug the DC output cable into the DC power jack of your LifeBook notebook.
2. Plug the AC adapter into an AC electrical outlet. *(Figure 3-1)*

Connecting the Optional Auto/Airline Adapter

1. Plug the DC output cable into the DC power jack on your notebook.
2. Plug the Auto/Airline adapter into the cigarette lighter of an automobile with the ignition key in the On or Accessories position.

   OR
3. Plug the Auto/Airline adapter into the DC power jack on an airplane seat.

Switching from AC Adapter Power or the Auto/Airline Adapter to Battery Power

1. Be sure that you have at least one charged battery installed.
2. Remove the AC adapter or the Auto/Airline adapter.

POINT

The Lithium ion battery is not charged upon purchase. Initially, you will need to connect either the AC adapter or the Auto/Airline adapter to use your notebook.

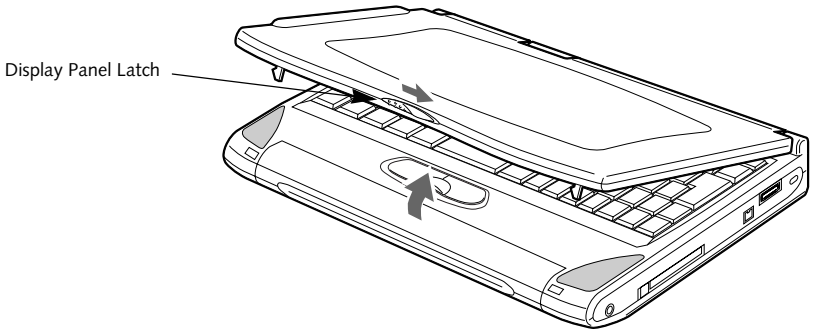


Figure 3-2 Opening the Display Panel

Display Panel

Your Fujitsu LifeBook notebook contains a display panel that is backlit for easier viewing in bright environments and maintains top resolution through the use of active-matrix technology.

OPENING THE DISPLAY PANEL

1. Slide the Display Panel latch to the right. This releases the locking mechanism and raises the display slightly.
2. Lift the display backwards, being careful not to touch the screen, until it is at a comfortable viewing angle. *(Figure 3-2)*

ADJUSTING DISPLAY PANEL BRIGHTNESS

Once you have turned on your LifeBook notebook, you may want to adjust the brightness level of the screen to a more comfortable viewing level. There are two ways to adjust the brightness, by using the keyboard or the power management utility.

Using the Keyboard

Adjusting the brightness using the keyboard changes the setting only temporarily.

- [Fn+F6]: Pressing repeatedly will lower the brightness of your display.
- [Fn+F7]: Pressing repeatedly will increase the brightness of the display.

Using the Power Management Utility (Windows 2000 only)

Adjusting the brightness using the Power Management changes the setting permanently.

1. Double-click the Battery icon in the lower right corner of your display. This will open the BatteryAid Properties dialog box.
2. Select the Power Control tab and adjust your LCD Backlighting to the desired level.
3. Click **OK** or **Apply** to permanently change the settings.

You may need to readjust the brightness level periodically depending on your operating environment.

POINT

The higher the brightness level, the more power the notebook will consume and the faster your batteries will discharge. For maximum battery life, make sure that the brightness is set as low as possible.

CLOSING THE DISPLAY PANEL

1. Holding the edge of your display panel, pull it forward until it is flush with the body of your LifeBook notebook.
2. Push down until you hear a click. This will engage the locking mechanism and prevent your display panel from opening unexpectedly.

Starting Your LifeBook Notebook

POWER ON

Suspend/Resume/Power On button

The Suspend/Resume/Power On button is used to turn on your LifeBook notebook from its off state. Once you have connected your AC adapter or charged the internal Lithium ion Battery, you can power on your notebook. *(See figure 2-8 on page 9 for location)*

POINT

When you turn on your LifeBook notebook be sure you have a power source. This means that at least one battery is installed and charged, or that the AC or Auto/Airline adapter is connected and has power.

Press the Suspend/Resume/Power On button, which is located below the display on the right. When you are done working you can either leave your LifeBook notebook in Suspend mode, *(See Suspend Mode on page 29 for more information)*, or you can turn it off. *(See Power Off on page 30 for more information)*

CAUTION

Do not carry your LifeBook notebook around with the power on or subject it to shocks or vibration, as you risk damaging your notebook.

When you Power On your LifeBook notebook, it will perform a Power On Self Test (POST) to check the internal parts and configuration for correct functionality. If a fault is found, your LifeBook notebook will emit an audio warning and/or an error message will be displayed. *(See Power On Self Test Messages on page 74 for more information)* Depending on the nature of the problem, you may be able to continue by starting the operating system or by entering the BIOS setup utility and revising the settings.

After satisfactory completion of the Power On Self Test (POST), your notebook will load your operating system.

POINT

Never turn off your LifeBook notebook during the Power On Self Test (POST) or it will cause an error message to be displayed when you turn your LifeBook notebook on the next time. *(See Power On Self Test Messages on page 74 for more information)*

BOOT SEQUENCE

The procedure for starting-up your notebook is termed the Bootup sequence and involves your notebook's BIOS. When your LifeBook notebook is first turned on, the main system memory is empty, and it needs to find instructions to start up your notebook. This information is in the BIOS program. Each time you power up or restart your notebook, it goes through a boot sequence which displays a Fujitsu logo until your operating system is loaded. During booting, your notebook is performing a standard boot sequence including a Power On Self Test (POST). When the boot sequence is completed without a failure and without a request for the BIOS Setup Utility, the system displays the operating system's opening screen.

The boot sequence is executed when:

- You turn on the power to your LifeBook notebook.
- You restart your notebook from the Windows Shut Down dialog box.
- The software initiates a system restart. Example: When you install a new application.
- You reset the system by pressing the three keys [CTRL+ALT+DEL].

BIOS SETUP UTILITY

The BIOS Setup Utility is a program that sets up the operating environment for your LifeBook notebook. Your BIOS is set at the factory for normal operating conditions, therefore there is no need to set or change the BIOS' environment to operate your notebook.

The BIOS Setup Utility configures:

- Device control feature parameters, such as changing I/O addresses and boot devices.
- System Data Security feature parameters, such as passwords.

Entering the BIOS Setup Utility

To enter the BIOS Setup Utility do the following:

1. Turn on or restart your LifeBook notebook.
2. Press the [F2] key once the Fujitsu logo appears on the screen. This will open the main menu of the BIOS Setup Utility with the current settings displayed.
3. Press the [RIGHT ARROW] or [LEFT ARROW] key to scroll through the other setup menus to review or alter the current settings.

BIOS Guide

A guide to your notebook's BIOS is available online. Please visit our service and support Web site at **www.fujitsupc.com**. Once there, select Support, then select Notebooks under User's Guides. Select LifeBook BIOS Guides from the pull-down menu for your LifeBook series. If you are unsure of your notebook's BIOS number, refer to your packing slip.

BOOTING THE SYSTEM

We strongly recommend that you not attach any external devices and do not put a DVD/CD in your drive until you have gone through the initial power on sequence.

When you turn on your LifeBook notebook for the first time, it will display a Fujitsu logo on the screen. If you do nothing the system will load the operating system, and then the Windows Welcome will begin.

Designed to accommodate the needs of many users, in many different countries, Windows needs to be configured the first time you use them. Windows has three parts:

- Getting Started: You have the opportunity to enter custom information for your configuration file and setup your modem so that your LifeBook notebook will be prepared to dial out.
- Registration: Easy online registration for Windows with Microsoft, and for your LifeBook notebook with Fujitsu.
- Windows License Agreement and Final Settings: You have the opportunity to review the Windows License Agreement.

POINT

You may click Cancel at any time within this process to shut down Windows. You may restart this process at any time in the future, but you must complete it in order to use your computer.

Getting Started

Read the instructions on the screens carefully and fill in the information as directed. You will be asked for such items as the language you wish to use, the country in which you live, your first and last name, and about how you dial out from where you will be using your LifeBook notebook. For the modem settings, enter your current location information where you will be using your LifeBook notebook. If you are not connected to a phone line and plan to register at a later time, you may click the **Skip** button, and you will go directly to the condition of use page.

Once you have set up your LifeBook notebook to dial out, Windows will make a free telephone call to test the settings. If the call is unsuccessful, you will be returned to the phone settings page where you may try to fix them. If you are unable to fix the settings please contact Fujitsu Service and Support. *(See Fujitsu Contact Information on page 1 for more information)* If you would simply like to move on, and register at a later time, you may click the **Skip** button, and you will go directly to the Condition of Use page.

Windows Registration

If your connection is successful, you will go to a Registration Confirmation page. Enter the requested information, then check the box at the bottom to register your copy of Windows with Microsoft. Once you have finished, click the **Next** button to continue.

Final Settings

The first part of your final settings is the Windows End User License Agreement. Read the agreement carefully. When you finish reading you must accept or reject the terms of the agreement and then click on the **Next** button.

POINTS

- If you reject the terms of the license agreement you will be asked to review the license agreement for information on returning Windows or to shut down your LifeBook notebook.
- You cannot use your LifeBook notebook until you have accepted the License Agreement. If you stop the process your notebook will return to the beginning of the Windows Welcome Process, even if you shut your notebook down and start it up again.

REGISTERING YOUR LIFEBOOK NOTEBOOK

What are the benefits of registering?

You will receive an identification label for your LifeBook notebook, which, if your notebook is ever lost, may help in getting it returned to you. You will also receive technical support access and useful product mailings.

How do I register my LifeBook notebook?

There are several ways to register your LifeBook notebook.

Complete the pre-printed registration form and submit it by either of the following methods:

- **Fax:** 1-800-577-9989
- **Mail:** Fujitsu PC Corporation
  750 139th Ave.
  San Leandro, CA 94578
  Attn: Warranty Department

You can also register your LifeBook by:

- **Web site**: www.fujitsupc.com/support

  You will need to be set up with an Internet Service Provider (ISP) to use the last option.

INSTALLING CLICK ME!

The first time you boot up your system, you will see an icon called Click Me! on the desktop (Windows 2000) or in the Start folder (Windows XP). When you click the Click Me! icon, your system will automatically build the icon tray in the bottom right of the screen. These icons provide links to utilities that you will frequently access.

Power Management

Your Fujitsu LifeBook notebook has many options and features for conserving battery power. Some of these features are automatic and need no user intervention, such as those for the internal modem. However, others depend on the parameters you set to best suit your operating conditions, such as those for the display brightness. Internal power management for your notebook may be controlled from settings made in your operating system, pre-bundled power management application, or from settings made in BIOS setup utility.

Besides the options available for conserving battery power, there are also some things that you can do to prevent your battery from running down as quickly. For example, you can create an appropriate power saving profile, put your notebook into Suspend mode when it is not performing an operation, and you can limit the use of high power devices. As with all mobile, battery powered computers, there is a trade-off between performance and power savings.

SUSPEND/RESUME BUTTON

When your LifeBook notebook is active, the Suspend/Resume button can be used to manually put your notebook into Suspend mode. Push the Suspend/Resume button when your notebook is active, but not actively accessing anything, and immediately release the button. You will hear two short beeps and your system will enter Suspend mode. *(See figure 2-5 on page 6 for location)*

If your LifeBook notebook is suspended, pushing the Suspend/Resume button will return your notebook to active operation. You can tell whether or not your system is in Suspend mode by looking at the Power indicator. *(See figure 2-5 on page 6)* If the indicator is visible and not flashing, your notebook is fully operational. If the indicator is both visible and flashing, your notebook is in Suspend mode. If the indicator is not visible at all, the power is off or your notebook is in Hibernation mode.

SUSPEND MODE

Suspend or Standby mode in Windows saves the contents of your LifeBook notebook's system memory during periods of inactivity by maintaining power to critical parts. This mode will turn off the CPU, the display, the hard drive, and all of the other internal components except those necessary to maintain system memory and allow for restarting. Your notebook can be put in Suspend mode by:

- Pressing the Suspend/Resume button when your system is turned on.
- Selecting Standby from the Windows Shut Down menu.
- Timing out from lack of activity.
- Allowing the battery to reach the Dead Battery Warning condition.

Your LifeBook notebook's system memory typically stores the file(s) on which you are working, open application(s) information, and any other data required to support the operation(s) in progress. When you resume operation from Suspend mode, your notebook will return to the point where it left off. You must use the Suspend/Resume button to resume operation, and there must be an adequate power source available, or your notebook will not resume.

POINTS

- If you are running your LifeBook notebook on battery power, be aware that the battery continues to discharge while your notebook is in Suspend mode, though not as fast as when fully operational.
- Disabling the Suspend/Resume button prevents it from being used to put your LifeBook notebook in Suspend or Hibernation mode. The resume function of the button cannot be disabled.
- If your LifeBook notebook is actively accessing information when you enter the Suspend or Hibernation mode, changes to open files are not lost. The files are left open and memory is kept active during Suspend mode or the memory is transferred to the internal hard drive during Hibernation mode.

CAUTION

The Suspend or Hibernation mode should not be used with certain PC Cards. Check your PC Card documentation for more information.

When PC Cards or external devices are in use, Hibernation mode cannot return to the exact state prior to suspension, because all of the peripheral devices will be re-initialized when the system restarts.

HIBERNATION FEATURE

The Hibernation feature saves the contents of your LifeBook notebook's system memory to the hard drive as a part of the Suspend/Resume mode. You can enable or disable this feature.

Enable or Disable the Hibernation Feature

The default settings is not enabled. To enable or disable the Hibernation feature follow these easy steps:

1. From the **Start** menu, select **Settings**, and then select **Control Panel**.
2. From the **Control Panel** select **Power Options**.
3. Select the **Hibernation** tab. Select the box to enable or disable this feature.

Using the Hibernation Feature

1. From the **Start** menu, select **Settings**, and then select **Control Panel**.
2. From the **Control Panel** select **Power Options**.
3. Select the **Advanced** tab. Select **Hibernate** from the pull down menu for Power buttons.

DISPLAY TIMEOUT

The Video Timeout is one of the power management parameters. This feature saves power by turning off the display if there is no keyboard or pointer activity for the user selected timeout period. Any keyboard or pointer activity will cause the display to restart automatically. This feature is independent of the Suspend/Resume button and can be enabled and disabled in Windows and BIOS setup utility.

HARD DISK TIMEOUT

The Hard Disk Timeout is another one of the power management parameters. This feature saves power by turning off the hard drive if there is no hard drive activity for the user selected timeout period. Any attempt to access the hard drive will cause it to restart automatically. This feature is independent of the Suspend/Resume button and can be enabled and disabled in Windows and BIOS setup utility.

WINDOWS POWER MANAGEMENT

Power Management

The Power Management icon located in the Windows Control Panel allows you to configure some of the power management settings. For example, you can use the Power Management to set the timeout values for turning off the display and hard disks whether you are running the notebook on battery power or one of the adapters. The settings may also be changed in the BIOS.

RESTARTING THE SYSTEM

If your system is on and you need to restart it, be sure that you use the following procedure.

1. Click the **Start** button, and then click **Shut Down**.
2. Select the **Restart** option from within the Windows Shut Down dialog box.
3. Click **OK** to restart your notebook. Your notebook will shut down and then reboot.

POINT

Turning off your LifeBook notebook without exiting Windows or turning on your notebook within 10 seconds of the notebook being shut off may cause an error when you start the next time.

POWER OFF

Before turning off the power, check that the Hard Drive, DVD, CD-ROM, CD-RW, PC Card and the Floppy Disk Drive Access indicators are all Off. *(See figure 2-5 on page 6)* If you turn off the power while accessing a disk or PC Card there is a risk of data loss. To ensure that your notebook shuts down without error, use the Windows shut down procedure.

CAUTION

Be sure to close all files, exit all applications, and shut down your operating system prior to turning off the power with the power switch. If files are open when you turn the power off, you will lose any changes that have not been saved, and may cause disk errors.

Using the correct procedure to shut down from Windows allows your notebook to complete its operations and turn off power in the proper sequence to avoid errors. The proper sequence is:

1. Click the **Start** button, and then click **Shut Down**.
2. Select the **Shut Down** option from within the Windows Shut Down dialog box.
3. Click **OK** to shut down your notebook.
4. Move the power switch to the off position.

If you are going to store your notebook for a month or more see Care and Maintenance Section.

4 User-Installable Features

Lithium ion Battery

Your Fujitsu LifeBook notebook has a Lithium ion battery that provides power for operating your notebook when no external power source is available. The battery is durable and long lasting, but should not be exposed to extreme temperatures, high voltages, chemicals or other hazards.

The Lithium ion battery operating time may become shorter if it is used under the following conditions:

- When used at temperatures that exceeds a low of 5°C (41°F) or a high of 35°C (95°F). Extreme temperatures not only reduce charging efficiency, but can also cause battery deterioration. The Charging icon on the Status Indicator panel will flash when you try to charge a battery that is outside its operating temperature range. *(See Battery Charging Indicator on page 12 for more information)*
- When using a high current device such as a modem, DVD/CD-RW drive, or the hard drive, using the AC adapter will conserve your battery life.

POINTS

- Actual battery life will vary based on screen brightness, applications, features, power management settings, battery condition and other customer preferences.DVD, CD-RW, CD-ROM, or hard drive usage may also have a significant impact on battery life. The battery charging capacity is reduced as the battery ages. If your battery is running low quickly, you should replace it with a new one.
- Under federal, state, or local law it may be illegal to dispose of batteries by putting them in the trash. Please take care of our environment and dispose of batteries properly. Check with your local government authority for details regarding recycling or disposing of old batteries. If you cannot find this information elsewhere, contact your support representative at 1-800-8Fujitsu (1-800-838-5487)

CAUTION

Do not leave a faulty battery in your LifeBook notebook. It may damage your AC adapter, optional Auto/Airline adapter, another battery or your notebook itself. It may also prevent operation of your notebook by draining all available current into the bad battery.

RECHARGING THE BATTERIES

If you want to know the condition of the primary Lithium ion battery, check the Battery Level indicator located on the Status Indicator panel. The indicator changes as the battery level changes.

The Lithium ion battery is recharged internally using the AC adapter or Auto/Airline adapter. To recharge the battery make sure the battery that needs to be charged is installed in your LifeBook notebook and connect the AC or Auto/Airline adapter.

POINT

Make sure that the Battery Charging indicator and the percentage charge is shown inside the Battery Level icon on the Status Indicator Panel.

There is no memory effect on the Lithium ion battery therefore you do not need to discharge the battery completely before recharging. The charge times will be significantly longer if your notebook is in use while the battery is charging. If you want to charge the battery more quickly, put your notebook into Suspend mode, or turn it off while the adapter is charging the battery. *(See Power Management on page 29 for more information on Suspend mode and shutdown procedure)*

CAUTION

Using heavy current devices such as Modem or frequent DVD/CD-RW/CD-ROM accesses may prevent charging completely.

Low Battery State

When the battery is running low, a low battery notification message will appear. If you do not respond to the low battery message, the batteries will continue to discharge until they are too low to operate. When this happens, your notebook will go into Suspend mode. There is no guarantee that your data will be saved once the notebook reaches this point.

CAUTIONS

- Once the low battery notification message appears, you need to save all your active data and put your LifeBook notebook into Suspend mode until you can provide a new power source. You should provide a charged battery, an AC power adapter, or Auto/Airline adapter as soon as possible.
- When you are in Suspend mode there must always be at least one power source active. If you turn off the power with the power switch, or remove all power sources while your LifeBook notebook is in Suspend mode, any data that has not been saved to the hard drive will be lost.

Dead Battery Suspend mode shows on the Status indicator just like the normal Suspend mode. Once your notebook goes into Dead Battery Suspend mode you will be unable to resume operation until you provide a source of power either from an adapter, or a charged battery. Once you have provided power, you will need to press the Suspend/Resume button to resume operation. In the Dead Battery Suspend mode, your data can be maintained for some time, but if a power source is not provided promptly, the Power indicator will stop flashing and go out, meaning that you have lost the data that was not stored. Once you provide power, you can continue to use your notebook while an adapter is charging the battery.

Shorted Batteries

The Status Indicator panel uses a symbol inside the battery outline of the Battery Level indicator to display the operating level available in that battery. *(See figure 2-11 on page 11)* If this display shows a Shorted Battery, it means that the battery is damaged and must be replaced so it does not damage any other parts of your LifeBook notebook.

REPLACING THE BATTERY

With the purchase of an additional battery, you can have a fully charged spare to swap with one that is not charged. There are two ways to swap batteries, cold-swapping and warm-swapping:

Cold-swapping Batteries

To cold-swap batteries in your battery bay follow these easy steps: *(Figure 4-1)*

1. Have a charged battery ready to install.
2. Shut down your notebook and disconnect the AC adapter.
3. Slide the battery bay release buttons to open the bay.
4. Remove the battery from the bay.
5. Slide the new battery into the bay.
6. Close the bay and slide the battery bay release button back.
7. Plug in the AC adapter and turn the power on.

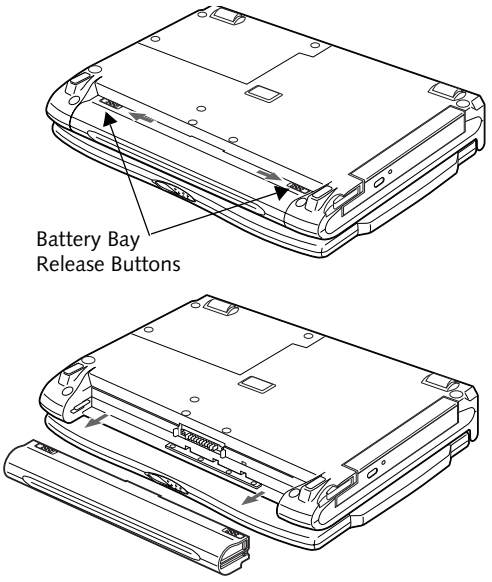


Figure 4-1 Replacing the Battery

Warm-swapping Batteries

To warm-swap batteries in your battery bay follow these easy steps: *(Figure 4-1)*

1. Close any open files.
2. Put your notebook into suspend mode
3. Plug in an AC Adapter to ensure power is supplied to the system, or install a fully charged modular battery in the Flexible Bay.
4. Slide the battery bay release buttons to open the bay.
5. Remove the battery from the bay.
6. Slide the new battery into the bay.
7. Close the bay and slide the battery bay release button back.
8. Press the Suspend/Resume button to return your notebook to normal operation.

POINT

If the Lithium ion battery connector is not fully seated, you may not be able to use your notebook or charge your battery.

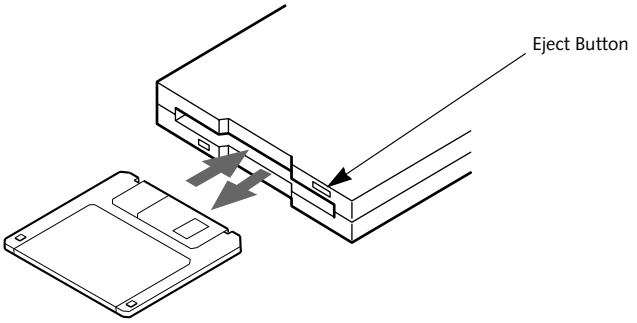


Figure 4-2 Loading/Ejecting a 3.5" Floppy Disk

External USB Floppy Disk Drive

Your LifeBook notebook has an external USB floppy disk drive which can read and write information on removable 1.44MB and 720KB floppy disks.

POINT

Your LifeBook notebook is preconfigured to boot from a USB floppy drive. Reference the BIOS manual for further information on changing the default boot drive.

LOADING A DISK

To load a disk into your disk drive, follow these easy steps:

1. Orient the disk so that its label is facing upwards and the shutter side is pointing towards the drive. *(Figure 4-2)*
2. Push the disk into the drive until the Eject button pops out and you hear a click.

POINT

When there is no disk in the drive, the Eject button is flush with your notebook.

EJECTING A DISK

To eject a disk from the disk drive, follow these easy steps:

1. Check that the Floppy Disk Drive Access indicator is inactive.
2. Press the Eject button. This will push your disk partially out of the drive.
3. Remove the disk.

CAUTION

If you eject the disk while the Floppy Disk Drive Access indicator is active, there is a risk of damaging the data on the disk, the disk itself or even the disk drive.

PREPARING A DISK FOR USE

Before you can use a new disk, it needs to be prepared so your LifeBook notebook knows where to store information. This preparation is called formatting or initializing a disk. You will need to format new disks, unless they are preformatted. *(Please refer to your operating system manual for step-by-step instructions on formatting a disk)*

To prevent accidental erasure of the data stored on a disk, slide the "write protect" tab until a small hole is exposed. This sets the disk into a protected state where nothing can be added or removed. If you want to add or remove data on a protected disk, slide the "write protect" tab to close the small hole. *(Figure 4-3)*

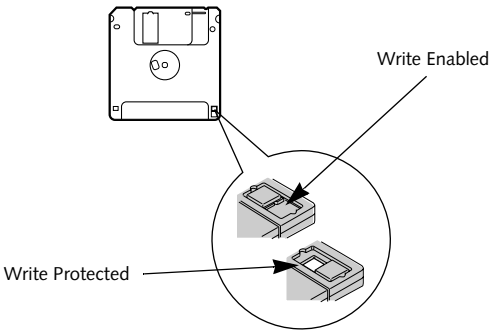


Figure 4-3 Floppy Disk Write Protect

CAUTION

Formatting a floppy disk that already contains data will erase all of the information on the disk.

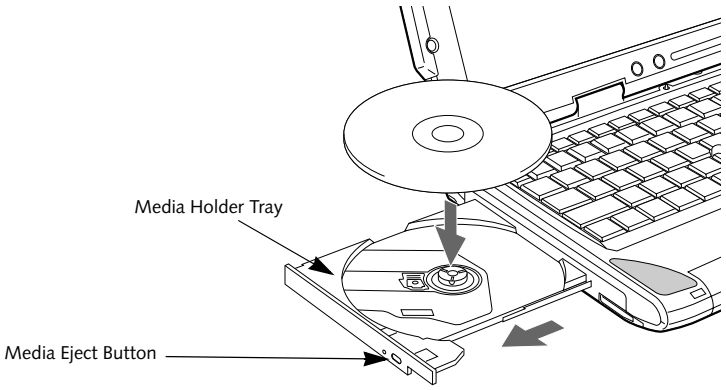


Figure 4-4 DVD/CD-RW Combo Drive

DVD/CD-RW Combo Drive

Your Fujitsu LifeBook notebook may contain a DVD/CD-RW combo drive. A DVD player gives you access to movie, software, and audio DVD/CDs. A CD-RW player allows you to access software or audio CDs, and to write data onto recordable CDs.

DVD/CD-RW COMBO DRIVE SOFTWARE

With the DVD/CD-RW drive and DVD/CD-RW drive software you can play DVD movies on your notebook. The DVD/CD-RW includes controls which allow you to take full advantage of the features of a DVD movie, as well as standard features such as fast forward, fast reverse, pause, etc. With the CD-RW drive, you can read audio CDs, and write data onto a recordable CD-R or CD-RW disc.

POINTS

- **Prior to using your DVD/CD-RW Combo Drive, you must install the DVD/CD-RW drive software.** Refer to the applicable readme file on the Applications CD-ROM for instructions on installing you DVD/CD-RW Combo Drive software.
- You should periodically check the Fujitsu Web site at www.fujitsupc.com for current updated drivers.

CAUTION

Do not operate your DVD/CD-RW drive unless your LifeBook notebook is sitting on a flat surface. Using a drive when the system is not level may damage the drive or prevent proper operation.

POINT

Prolonged use of the DVD/CD-RW drive, such as watching a DVD movie, will substantially reduce your battery life.

LOADING A DVD, CD, CD-R, OR CD-RW ("MEDIA")

To load a disc into your DVD/CD-RW drive, follow these steps *(Figure 4-5)*:

1. Push and release the eject button on the front of the DVD/CD-RW drive to open the holder tray. The tray will come out of the notebook a short distance.
2. Gently pull the tray out until a media disc can easily be placed in the tray.

CAUTION

There may be a protective sheet in the tray from when it was shipped; make sure it is removed before operating the drive, otherwise you may damage the drive.

3. Place the media into the tray, label side up, with the hole in the center of the disc. Snap the disc onto the raised circle in the center of the tray.
4. Gently push the holder tray back in until you hear a click.

POINT

If you have disabled the Auto Insert Notification Function, you will have to start the drive from your desktop, since your notebook will not automatically recognize that media has been loaded.

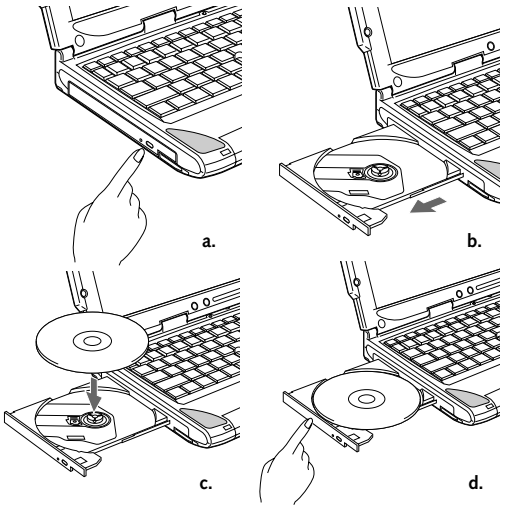


Figure 4-5 Loading/Removing Media

REMOVING MEDIA

1. Push and release the eject button on the front of the DVD/CD-RW drive. This will stop the drive and the holder tray will come out of the notebook a short distance.
2. Gently pull the tray out until the disc can easily be removed from the tray.
3. Carefully remove the media disc from the holder tray.
4. Gently push the holder tray back in until you hear a click.

USING THE DVD/CD-RW DRIVE SOFTWARE

POINTS

- **Prior to using your DVD/CD-RW Combo Drive, you must install the DVD/CD-RW drive software.** Refer to the applicable readme file on the Applications CD-ROM for instructions on installing you DVD/CD-RW Combo Drive software.
- For details on using your DVD/CD-RW drive, refer to the Help file that comes with the application.

Starting a DVD Movie

1. Insert the DVD movie into the DVD/CD-RW drive of your notebook. If the CD AutoRun feature activates, skip Step 2.

2a. *Windows 2000 only:* From the **Start** menu, select **Programs**, then select **InterVideo WINDVD** and click **InterVideo WINDVD** or double-click on the **InterVideo WINDVD** icon on the desktop. This will launch the DVD movie.

2b. *Windows XP only:* The first time you insert a movie into the DVD/CD-RW tray, you will be prompted to select what you want the system to do when discs are inserted (e.g., start automatically or wait for a prompt). Until you make a selection, you will receive the same prompt whenever you insert a disc.

3. Click **OK** to close the About DVD Player Performance dialog box and the movie will begin.

Opening the DVD/CD-RW Drive Control Panel

With most DVD-ROMs, you have the option of altering how the movie should play and what you wish to view. You can do this by using the DVD/CD-RW Combo Drive control panel and the mouse.

1. Right-click on the movie screen to open a dropdown menu for options.
2. Select **View,** then **Player** for all the controls available. This will open the control panel into the bottom of the screen.

Using the DVD/CD-RW Drive Control Panel

The DVD/CD-RW Combo Drive software allows you to watch the movie much like a VCR player. You have the option to pause, rewind, fast-forward and stop the movie at any point.

1. To Pause the movie, click the ⏸ button.
2. To Rewind the movie, click the ⏪ button to rewind to a specific portion of the movie, or the ⏮ button to return to the opening screen.
3. To Fast-forward the movie, click the ⏩ button to forward to a specific portion of the movie, or the⏭ button to jump to the ending credits.
4. To Stop the movie, click the ■ button.

Exiting the DVD/CD-RW Application

1. Click on the ✕ located in the upper right corner of the title bar. This will open a DVD/CD-RW drive dialog box.
2. Click Yes to stop and exit the movie, or No to close the DVD/CD-RW drive dialog box and return to the movie.

USING DOLBY™ HEADPHONE

The Dolby Headphone utility lets you enjoy multi-channel sound sources, such as movies, with realistic surround sound using your *conventional* stereo headphones.

Dolby Headphone is a signal processing system that enables your stereo headphones to realistically portray the sound of a five-speaker playback system.

POINTS

- Media discs which do not have the Dolby Surround 5:1 symbol will not support Dolby Headphone.
- After making changes to the Dolby Headphone feature and clicking OK, wait at least ten seconds before making another change in order to allow the system to stabilize.

To use the Dolby Headphone feature, perform the following steps:

1. Double click the InterVideo WinDVD icon on your desktop.
2. On the toolbar that appears, click the Properties button (the fourth button from the left, with the image of a wrench).
3. On the Properties window, select the Dolby Headphone tab.
4. To enable Dolby Headphone, check the Enable Dolby Headphone box. To change the type of surround sound, select one of the radio buttons listed under Room Filter Setting.
5. Click OK. The Dolby Headphone feature will now be enabled until you disable it by unchecking Enable Dolby Headphone.

USING THE DVD/CD-RW DRIVE ON BATTERY POWER

Since a DVD/CD-RW drive consumes a lot of power, your overall battery life will be shorter when operating the drive continuously (such as watching a DVD movie) than during standard operation. Many movies run-times are longer than your LifeBook notebook can support on a single battery. If you are watching a DVD movie on battery power you may need to swap in an additional, charged battery or attach AC power during the movie to view it in its entirety.

POINT

- Prolonged use of the DVD/CD-RW drive, such as when watching a DVD movie, will substantially reduce your notebook's battery life. Many movie run-times are longer than your system can support on a single battery. If you are watching a DVD movie on battery power you may need to swap in an additional, charged battery or attach AC power during the movie to view it in its entirety.
- An additional fully-charged battery is highly recommended if you will be watching DVD movies on battery power. If you don't have an additional battery, you may purchase one either on-line at www.fujitsupc.com or call 1-877-372-3473.

To Watch a Movie on Battery Power:

1. Have an additional full-charged battery or your AC adapter ready for use.
2. Start watching your DVD movie.
3. When the low battery warning occurs, immediately stop the movie and exit the DVD/CD-RW drive.

CAUTION

If you do not stop the DVD/CD-RW drive quickly and the LifeBook notebook attempts to auto-suspend (critical battery low state) the notebook will shut down improperly. If this occurs, you will need to install a fresh power source (either a charged battery or AC Adapter).

4. Connect an AC Adapter to your system, or install a fully charged battery in the Flexible Bay prior to removing the main battery.
5. Manually place your notebook into suspend mode by depressing the Suspend button and replace the discharged battery with an additional fully-charged battery.
6. Resume your notebook by pressing the Suspend button again. This step is not required if you attached AC power without entering suspend mode.
7. Restart your DVD/CD-RW drive, locate and skip to the chapter of the movie you were last watching.
8. Continue watching your DVD movie.

POINT

Some shorter DVD movies may not require you to swap batteries or attach AC power to complete them. However, it is best to be prepared since actual battery life while operating the DVD/CD-RW drive cannot be guaranteed.

AUTO INSERT NOTIFICATION FUNCTION

The Auto Insert Notification function allows your LifeBook notebook to automatically start a DVD/CD as soon as it is inserted in the DVD/CD-RW drive and the tray is closed. Your notebook will begin playing an audio DVD/CD or will start an application if the DVD/CD includes an auto run file.

To prevent a CD from playing automatically as soon as it is inserted, refer to the related help file for your specific operating system.

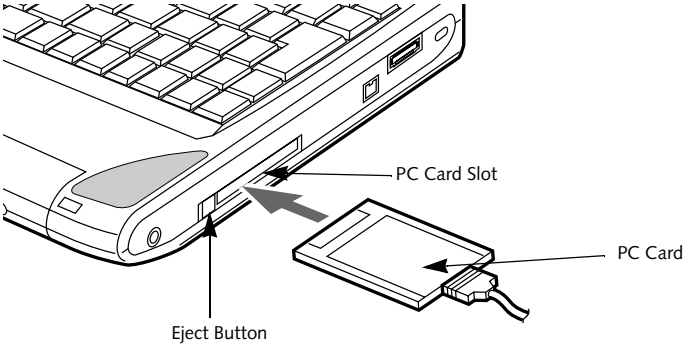


Figure 4-6 Installing/Removing PC Cards

PC Cards

Your Fujitsu LifeBook notebook supports Type I and II PC Cards, which can perform a variety of functions.

Some available PC Cards:

- Fax/data modem cards
- Local area network (LAN) cards
- IDE solid-state disk cards
- SCSI cards
- Wireless LAN (802.11b) cards
- Other PC Cards that conform to PCMCIA 2.1 or CardBus standards

For further information, refer to the instructions supplied with your PC Card.

INSTALLING PC CARDS

PC Cards are installed in the PC Card slot. To install a PC Card, follow these easy steps: *(Figure 4-6)*

WARNINGS

- Installing or removing a PC Card during your LifeBook notebook's shutdown or bootup process may damage the card and/or your notebook.
- Do not insert a PC Card into a slot if there is water or any other substance on the card as you may permanently damage the card, your LifeBook notebook, or both.

1. See your PC Card manual for specific instructions on the installation of your card. Some PC Cards may require your notebook to be Off while installing them.
2. Make sure there is no PC Card currently in the slot. If there is, see Removing PC Cards.
3. Insert your PC Card into the slot, with the product label facing up.
4. Push the card into the slot firmly until it is seated in the opening. You will hear a click and the Eject button will pop away from your notebook.

REMOVING PC CARDS

To remove a PC Card, follow these easy steps:

CAUTION

Windows has a shutdown procedure for PC Cards that must be followed before removing a card. (Please review your operating system manual for the correct procedure).

1. See your PC Card manual for specific instructions on removing your card. Some PC Cards may require your notebook to be in Suspend Mode or Off while removing them.

POINT

If the dialog box states that the device cannot be removed, you must save all of your open files, close any open applications and shut down your notebook. Once your notebook has been shut down, you must turn Off the power using the power switch.

2. Push the Eject button in until it is flush with the notebook. This will push the PC Card slightly out of the slot allowing you to remove the card.

CAUTION

If the PC Card has an external connector and cable, do not pull the cable when removing the card.

Memory Upgrade Module

Your Fujitsu LifeBook notebook comes with 256MB of on-board high speed Synchronous Dynamic RAM (SDRAM) factory installed. To increase your LifeBook notebook's memory capacity, you may install an additional memory upgrade module. The memory upgrade must be a dual-in-line (DIMM) SDRAM module. To ensure 100% compatibility, purchase the SDRAM module only from the Fujitsu web store at www.fujitsupc.com.

CAUTION

The memory upgrade module can be severely damaged by electrostatic discharge (ESD). Be sure you are properly grounded when handling and installing the module.

INSTALLING A MEMORY UPGRADE MODULE

To install a memory upgrade module follow these steps:

WARNING

You must turn off power and remove any modem connection before installing the memory upgrade module.

1. Turn off power to your LifeBook notebook, and remove any power adapter (AC or auto/airline), battery pack, and modem connection.
2. Place your LifeBook notebook with the bottom facing up on a clean work surface.
3. Using a Phillips screwdriver, remove the screw from the hole indicated. *(Figure 4-3)*

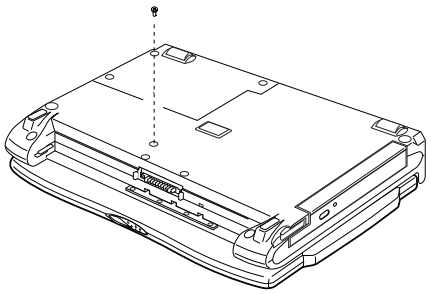


Figure 4-3 Removing screw from bottom

4. Turn the system over and open the top cover all the way, so that it is lying flat on the work surface.
5. Pry the spacer panel in front of the keyboard away from the system. *(Figure 4-4)*

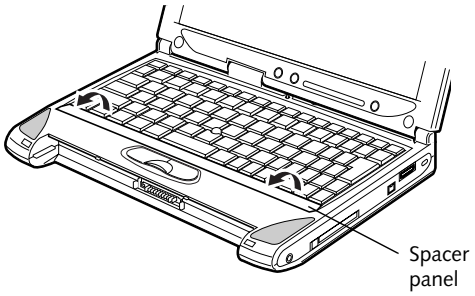


Figure 4-4 Lifting the spacer panel

6. Slide the keyboard forward slightly until it disengages and can be lifted freely. *(Figure 4-5)*

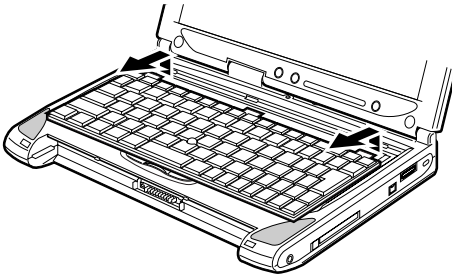


Figure 4-5 Sliding the keyboard

CAUTION

Be very careful when pivoting the keyboard below. The keyboard is connected with fragile flat cables.

7. Carefully pivot the front of the keyboard away from the laptop until it is lying on the display. *(Figure 4-6)*

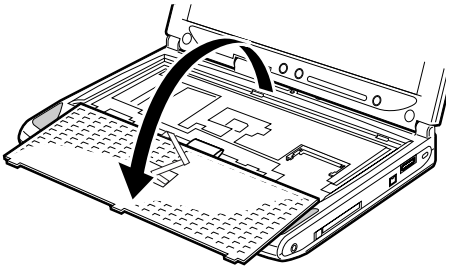


Figure 4-6 Folding the keyboard back

8. Align the connector edge of the memory upgrade module, chip side up, with the connector slot in the compartment. *(Figure 4-7)*

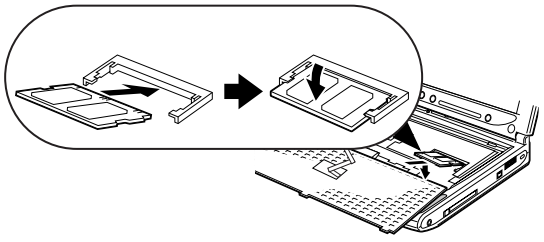


Figure 4-7 Inserting a new memory module

9. Insert the memory upgrade module at a 45° angle and press it firmly onto the connector.
10. Press the memory upgrade module down into the compartment until it locks underneath the retaining clip. You will hear a click when it is properly in place. *(Figure 4-7)*
11. Carefully flip the keyboard back into its original position, and slide it towards the front of the unit until it is seated. *(Figure 4-8)*

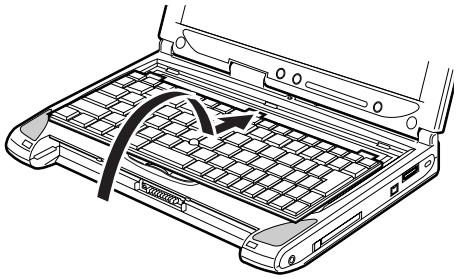


Figure 4-8 Reinstalling the keyboard

12. Replace the spacer panel you removed in step 4. *(Figure 4-9)* Installation of the new memory module is now complete.

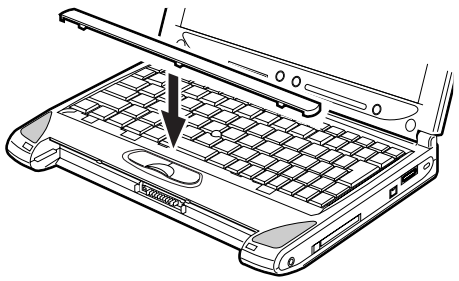


Figure 4-9 Replacing the spacer panel

13. Replace the screw you removed in step 3.

POINT

The memory upgrade module is not something you routinely remove from your LifeBook notebook. Once it is installed, you should leave it in place unless you want to increase system memory capacity.

REMOVING A MEMORY UPGRADE MODULE

1. Perform steps 1 through 7 of Installing a Memory Upgrade Module.
2. Pull the clips sideways away from each side of the memory upgrade module at the same time. *(Figure 4-10)*

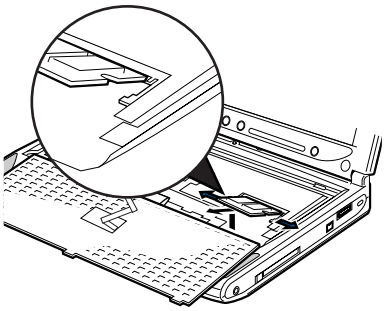


Figure 4-10 Removing a memory module

3. While holding the clips out, remove the module from the slot by lifting it up and pulling towards the back of your LifeBook notebook.
4. Store the memory upgrade module in a static guarded sleeve.
5. Replace the keyboard by following steps 10 and 11 of Installing a Memory Upgrade Module.

CHECKING THE COMPUTER RECOGNITION OF NEW MEMORY CAPACITY

Once you have changed the system memory capacity by either adding or removing a memory upgrade module, be sure to check that your LifeBook notebook has recognized the change.

You can check the memory capacity by looking at the main menu of the BIOS setup:

1. Turn on the power to your LifeBook notebook using the power switch.
2. Allow the system to start booting and press the F2 key once the Fujitsu logo appears on the screen. This will open the main menu of the BIOS setup with the current settings displayed. *(See BIOS Setup Utility on page 27 for more information)* Use the right arrow key to select **Info** in the BIOS Setup menu.

The System Memory and the Extended Memory capacity, as detected by your LifeBook notebook during the Power On Self Test (POST), are displayed at the bottom of the Info menu screen. The chart below shows you the possible displays that can be shown on the main menu screen.

POINT

If the total memory displayed is incorrect, check that your memory upgrade module is properly installed. (If the module is properly installed and the capacity is still not correctly recognized, see the Troubleshooting section starting on page 65)

Installed			Displayed	
On Board	**Slot 1**	**Total RAM Installed**	**System Memory**	**Extended Memory***
256MB	0	256MB	640K	240MB
256MB	128MB	384MB	640K	368MB

* Transmeta CPU uses 16MB of RAM for Code Morphing Software (CMS). For more information on CMS, click on the Technology link on the refer to the Transmeta web site at: www.transmeta.com.

Device Ports

Your Fujitsu LifeBook notebook comes equipped with multiple ports to which you can connect external devices including: disk drives, keyboards, modems, printers, etc.

MODEM (RJ-11) TELEPHONE JACK

The modem (RJ-11) telephone jack is used for an internal modem. To connect the telephone cable follow these easy steps: *(See figure 2-7 on page 8 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Plug the other end of the telephone cable into a telephone outlet.

The modem sound is deactivated by default, to activate modem sound follow these easy steps:

1. Right click on the Speaker icon in your system tray.
2. Select **Open Volume**.
3. Select **Option/Properties**.
4. Under "Show the following volume controls", click on **Phone** and click **OK**.
5. Uncheck the Mute box under Phone Balance.

WARNING

The internal modem is not intended for use with Digital PBX systems. Do not connect the internal modem to a Digital PBX as it may cause serious damage to the internal modem or your entire LifeBook notebook. Consult your PBX manufacturer's documentation for details. Some hotels have Digital PBX systems. Be sure to find out BEFORE you connect your modem.

POINTS

- The internal modem is designed to the ITU-T V.90 standard. Its maximum speed of 53000bps is the highest allowed by FCC, and its actual connection rate depends on the line conditions. The maximum speed is 33600bps at upload.
- The internal modem on all Fujitsu LifeBook notebooks from Fujitsu are certified for use in the United States and Canada. The modem may be certified in other countries.

INTERNAL LAN (RJ-45) JACK

The internal LAN (RJ-45) jack is used for an internal Fast Ethernet (10/100 Base-T/Tx) connection. If your notebook has been configured with internal LAN capability you will need to configure your notebook to work with your particular network. (Please refer to your network administrator for information on your network configuration.) To connect the LAN cable follow these easy steps: *(See figure 2-8 on page 9 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Plug the other end of the cable into a LAN outlet.

IEEE 1394 JACK

The 1394 port allows you to connect devices that are compliant with IEEE standard 1394. This port is effectively a very fast communications port. In order to connect a 1394 device, follow these steps: *(See figure 2-7 on page 8 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

* Some digital devices - such as digital cameras - use IEEE 1394 ports for fast transfer of digital files and data.

S-VIDEO OUT PORT

The S-Video port allows you to connect and use directly any S-Video device, such as a VCR or television. The S-Video standard provides for a higher quality picture than NTSC or PAL. In order to connect an S-Video device, follow these easy steps: *(See figure 2-8 on page 9 for port location)*

1. Align the connector with the port opening.

2. Push the connector into the port until it is seated.

When S-Video is connected, you can toggle the S-Video device on and off by pressing the [F11] key while holding down the [Fn] key.

UNIVERSAL SERIAL BUS PORTS

The Universal Serial Bus ports (USB) allow you to connect USB devices such as external game pads, pointing devices, keyboards and/or speakers. In order to connect a USB device follow these easy steps: *(See figure 2-8 on page 9 for port location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

HEADPHONE JACK

The headphone jack allows you to connect headphones or powered external speakers to your notebook. Your headphones or speakers must be equipped with a 1/8" (3.5 mm) stereo mini-plug. In order to connect headphones or speakers follow these easy steps: *(See figure 2-7 on page 8 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

POINT

If you plug headphones into the headphone jack, the built-in stereo speakers will be disabled.

MICROPHONE JACK

The microphone jack allows you to connect an external mono microphone. Your microphone must be equipped with a 1/8"(3.5 mm) mono mini-plug in order to fit into the microphone jack of your notebook. In order to connect a microphone follow these easy steps: *(See figure on page 8 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.

MINI-VGA PORT

The mini-VGA port allows you to connect an external monitor. In order to connect an external monitor follow these easy steps:

1. Take the mini-VGA cable out of the accessory package that came with your system.
1. Align the connector with the port opening.
2. Push the connector into the port until it is seated. *(Figure 4-11)*

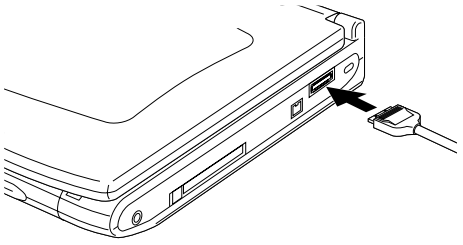


Figure 4-11 Installing the Mini-VGA Cable

POINT

Pressing the [Fn] + [F10] keys allows you to change your selection of where to send your display video. Each time you press the key combination, you will step to the next choice, starting with the built-in display panel only, moving to the external monitor only, finally moving to both the built-in display panel and an external monitor.

OPTICAL DIGITAL AUDIO-OUT CONNECTOR

The optical digital audio-out connector allows you to download digital audio to MiniDisc recorders. It uses SPDIF (Sony Philips Digital Interface) format. Use the following setting when using the digital audio-out connector. *(See figure 2-7 on page 8 for location)*

POINTS

- Before using the SPDIF function, make sure that WinDVD software is installed on your system.
- Certain older CDs and DVDs will not work in conjunction with the SPDIF connector.

1. Connect the MiniDisc recorder or external speaker to the Optical Digital Audio-Out Connector.
2. Insert the disk you want to play in the DVD/CD-RW tray.
3. Click on **Start** --> **Programs** --> **InterVideo WinDVD**. (In Windows XP systems, you can go directly from **Start** to **InterVideo WinDVD**.)
4. When the WinDVD interface appears, click on the Properties icon in the bottom of the display (it looks like a wrench).
5. Click on the Audio tab and select Enable S/PDIF output.
6. Click on the Apply button.

WARNING

Do not look into the connector. There may be a beam coming out from the SPDIF connector, so do not look into the connector when inserting the cable, or you can damage your eyesight.

POINTS

- The frequency of the digital sound output from the SPDIF output connector is fixed to 48KHz. If a sampling rate convertor is not installed in your connecting digital electronic device (e.g., MD player), recording is not possible. Please see the user manuals for the electronic devices for further details.
- The sound recorded through connecting a digital electronic device (e.g., MD player) to the SPDIF output connector cannot be used as digital output. All output data from the SPDIF output connector has copyright protection information included.
- Please be careful, as there are several types of cables for connecting a digital electronic device (e.g., MD player) to the digital audio-out connector, depending on the connector type. The connector on your computer is an Optical Mini Plug (3.5mm diameter mini plug)

5

Using the Integrated Wireless LAN

FCC REGULATORY INFORMATION

Please note the following regulatory information related to your wireless LAN device.

Regulatory Notes and Statements

Wireless LAN, Health and Authorization for use

Radio frequency electromagnetic energy is emitted from Wireless LAN devices. The energy levels of these emissions, however, are far much less than the electromagnetic energy emissions from wireless devices such as mobile phones. Wireless LAN devices are safe for use by consumers because they operate within the guidelines found in radio frequency safety standards and recommendations. The use of Wireless LAN devices may be restricted in some situations or environments, such as:

- On board an airplane, or
- In an explosive environment, or
- In situations where the interference risk to other devices or services is perceived or identified as harmful.

In cases in which the policy regarding use of Wireless LAN devices in specific environments is not clear (e.g., airports, hospitals, chemical/oil/gas industrial plants, private buildings), obtain authorization to use these devices prior to operating the equipment.

Regulatory Information/Disclaimers

Installation and use of this Wireless LAN device must be in strict accordance with the instructions included in the user documentation provided with the product. Any changes or modifications made to this device that are not expressly approved by the manufacturer may void the user's authority to operate the equipment. The Manufacturer is not responsible for any radio or television interference caused by unauthorized modification of this device, or the substitution or attachment of connecting cables and equipment other than those specified by the manufacturer. It is the responsibility of the user to correct any interference caused by such unauthorized modification, substitution or attachment. The Manufacturer and its authorized resellers or distributors will assume no liability for any damage or violation of government regulations arising from failure to comply with these guidelines.

Federal Communications Commission statement

This device complies with Part 15 of FCC Rules.

Operation is subject to the following two conditions: (1) This device may not cause interference, and, (2) This device must accept any interference, including interference that may cause undesired operation of this device.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

1. Reorient or relocate the receiving antenna.
2. Increase the distance between the equipment and the receiver.
3. Connect the equipment to an outlet on a circuit different from the one the receiver is connected to.
4. Consult the dealer or an experienced radio/TV technician for help.

FCC Radio Frequency Exposure statement

This Wireless LAN radio device has been evaluated under FCC Bulletin OET 65C and found compliant with the requirements as set forth in CFR 47 Sections 2.1091, 2.1093, and 15.247 (b) (4) addressing RF Exposure from radio frequency devices. The radiated output power of this Wireless LAN device is far below the FCC radio frequency exposure limits. Nevertheless, this device shall be used in such a manner that the potential for human contact during normal operation is minimized. When using this device, a certain separation distance between antenna and nearby persons must be maintained to ensure RF exposure compliance. In order to comply with RF exposure limits established in the ANSI C95.1 standards, the distance between the antennas and the user should not be less than 20 cm (8 inches).

Export restrictions

This product or software contains encryption code which may not be exported or transferred from the US or Canada without an approved US Department of Commerce export license. This device complies with Part 15 of FCC Rules., as well as ICES 003 B / NMB 003 B. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation. Modifications not expressly authorized by Fujitsu PC Corporation may invalidate the user's right to operate this equipment.

BEFORE USING THIS DEVICE

Thank you for purchasing a Fujitsu LifeBook with an Integrated Wireless LAN. This manual describes the basic operating procedures for the Wireless LAN (referred to as the "device" in this manual) and how to set up a wireless LAN network. Before using this device, read this manual carefully to ensure correct operation of the device. Keep this manual in a safe place for reference while using the device.

Characteristics of the Device

This device consists of a wireless LAN card that is attached to the computer via a mini-PCI slot.

The main characteristics are as follows:

- It uses the power saving communications system in the 2.4 GHz band, and does not require any license for radio communication.
- It uses Direct Sequence Spread Spectrum (DS-SS), which is resistant to noise.
- This device complies with Wi-Fi, and is able to communicate at the maximum transfer rate of 11 Mbps.
- The maximum communication range is approximately 80 feet (25 meters) inside a building. The range may be shorter depending upon the installation factors, such as walls and columns.
- Unauthorized access can be prevented with the use of SSID and encryption key.

Wireless LAN Modes Using this Device

AdHoc Mode

The "AdHoc Mode" refers to the network connecting two computers using wireless LAN cards. This connection is called an "AdHoc network."

Using an AdHoc network, you can obtain a network connection easily and at a low cost.

In the AdHoc mode, you can use the function supported by Microsoft Network, such as File and Print Sharing to exchange files and share a printer or other peripheral devices.

To use the AdHoc Mode, you must set the same SSID and the same encryption key for all the computers that are connected. All connected computers can communicate with each other within the communication range.

Infrastructure Mode

If a number of computers are connected simultaneously in the AdHoc mode, the transfer rate may be reduced, communications may become unstable, or the network connection could fail. This is because all wireless LAN cards are using the same radio frequency in the network.

To improve this situation, you can use a wireless LAN access point, which is sold separately. The wireless LAN network is in the "Infrastructure mode" when it uses an access point, and such a connection is called the "Infrastructure Network."

By using an access point, you can set and use a different communication channel for each network group. Each channel is given a different radio frequency, and it eliminates the collision of communications and provides a more stable communications environment. Infrastructure mode is most suitable when you are configuring multiple wireless LAN networks on the same floor.

To connect a wireless LAN network to a wired LAN, you need an access point.

How to Handle This Device

The Integrated Wireless LAN device is already installed in your LifeBook computer. Under normal circumstances, it should not be necessary for you to remove or re-install it. The LAN has been configured to support the operating system with which your system shipped.

CONNECTING WINDOWS 2000 SYSTEMS

This chapter describes how to set the wireless LAN connection for computers running Windows 2000.

POINT

When you receive your LifeBook, the integrated wireless LAN device and drivers have already been installed. This procedure outlines the steps for setting the device parameters.

Updated drivers and/or utilities may become available after this manual is printed; see any addenda or fliers that may be included in the system packaging.

Workflow

The proper setup of the wireless LAN requires several steps which must be performed in the proper order. Following is a general outline of the steps that must be performed. Each step is detailed later in this procedure.

1. Setting parameters
   - Setting the profile
   - Setting the encryption
2. Network settings
   - Setting the protocol and checking the network
   - Setting file and printer sharing
   - Checking the connection

Setting Parameters

1. Click [Start]-> [Settings] -> [Control Panel].
2. Double-click the [PRISM Settings] icon. The [PRISM Wireless Settings] appears.
3. Set the profile as specified in Table 3. Ask your network administrators to check the setting.
4. When you finish your entry, click [Apply].

Item	Description
Profile	Enter the system file name in which the parameter information is to be saved.
Mode	*Ad Hoc Network:* Click the down arrow and select "802.11 AdHoc". *Infrastructure Network:* Click the down arrow and select "Infrastructure".
SSID	Enter the network name to which you want to connect
Transmit Rate	Obtain the information from your network administrator. If you do not have a network administrator, select "Fully Automatic".
Power Save Enabled	Not supported.
AdHoc Channel	*AdHoc Network:* Select the same channel, 1-11, for all connected computers. If there is more than one wireless LAN nearby (such as on the same floor), we recommend that the channels for each LAN be 5 numbers apart (e.g., if there are two other LANs nearby, the channels used should be 1, 6, and 11). *Infrastructure Network:* Not an option.

Table 3: Profile Parameters

5. Click the [Encryption] tab.
6. Set the encryption items in accordance with Table 4.
   - AdHoc Network: Specify the same value for all the computers for which the encryption key is used for connection.
   - Infrastructure Network: Specify the identical encryption keys to the encryption keys set for the access point. For instructions on how to check the encryption keys set for the access point, refer to the access point manual.

POINT

Make sure that you specify the encryption keys. If you do not specify the keys, any computer with a wireless LAN card can be connected. This presents a risk that your data may be stolen or destroyed.

Item	Description
Encryption (WEP)	Click the down arrow and select an encryption option. ▪ *Disable:* Disables the encryption. In this case, "Create keys with Passphrase" and subsequent items are greyed out, and you cannot enter anything. ▪ *40 bit*:* The encryption is set. Select either "Create keys with Passphrase", "Create keys manually", or "ASCII Input", and enter the encryption keys. ▪ *104 bit*:* The encryption is set. Select either "Create keys with Passphrase", "Create keys manually", or "ASCII Input", and enter the encryption keys.
Create Keys with Passphrase	Not supported.
Passphrase	Not supported.
Create Keys Manually (Hexadecimal Input)	Select this to use hexadecimal character codes to set the encryption keys (Keys 1 - 4). Enter a 10-digit value when you have selected [40 bit]* for the encryption. Enter a 26-digit value when you have selected [104 bit]* for encryption. Select if the network contains a card that is set with the encryption key using the character code. Specify the encryption keys with the same value used for other wireless LAN cards that are already set.
ASCII Input	Select to use the ASCII codes to set encryption keys (Keys 1 - 4). Select this if network does not contain other wireless LAN cards that are set with encryption key using character codes. Enter a 5-digit value when you have selected [40 bit]* for the encryption. Enter a 13-digit value when you have selected [104 bit]* for encryption. You can use the following characters: 0 - 9, A - Z, a - z, _ (underscore). For example, to set "ABC12" for the encryption key, enter "ABC12."
Default Key	Click the down arrow, and select a key from Keys 1 - 4.

Table 4: Encryption Key Setup

7. When you finish your entry, click [Apply].
8. Click [OK]. [PRISM Wireless Settings] closes.

You have completed the parameter settings.

POINT

When using ADSL (PPPoE) with the infrastructure network to connect to the Internet, you must change the computer's MTU size set. To change MTU size, refer to the manual that comes with the access point.

* 40 bit and 104 bit encryption is the wireless LAN equivalent of 64 bit and 128 bit encryption, as set by Microsoft and wireless LAN manufacturers. This is the same encryption rate that is used by the Windows XP operating system, and was selected in order to align it closer to the wireless LAN standard. For consistency, the Windows 2000 utilities reflect the same modes.

Outside of wireless LAN environments, encryption is generally set at either 64 bit or 128 bit. However, the wireless LAN standard requires that 24 bits be reserved for fixed data. As a result, the user can only use 40 bits (64 minus 24) or 104 bits (128 minus 24) for encryption. This requirement also fixes the number of characters used for 128 bit encryption to 13 which is calculated as (13 x 8 bits = 104).

NETWORK CONNECTION: WINDOWS 2000

The section describes how to set the network connection for a computer with Windows 2000.

Network Settings

In this section, you set "TCP/IP Settings," and complete "Checking Computer Name and Workgroup," required for the network connection.

TCP/IP Settings

1. Click [Start] -> [Settings] -> [Control Panel].
2. Double-click the [Network and Dial-up Connections] icon. The [Network and Dial-up Connections] window appears.
3. Right click the [Local Area Connection], then click [Properties] from the menu that appears. The [Local Area Connection Properties] window appears.

POINT

More than one network adapter is installed in your system if more than one [Local Area Connection] entry is displayed. In this case, select the [Local Area Connection] entry with [Intersil PRISM Wireless LAN PCI Card] displayed under [Device Name].

4. Perform the following steps.
   - Click [Internet Protocol (TCP/IP)].
   - Click [Properties]. The [Internet Protocol (TCP/IP) Properties] window appears.
5. Set an IP address as indicated in Table 5. Ask your network administrator to check the setting.

Item	Description
For AdHoc Network	Set the IP address and subnet mask: Click [Use the following IP address], and enter a value for [IP address] and [Subnet mask]. Refer to "Setting IP Addresses" on page 60 to set an IP address and subnet mask.
For Infrastructure Network	Select [Obtain an IP address automatically]: For the DNS server, select [Obtain DNS server address automatically]. For the IP address, DNS server, and default gateway, follow the network administrator's instructions, if any.

Table 5: Setting an IP Address

6. Click [OK]. The [Local Area Connection Properties] window appears again.
7. Click [OK]. When a message appears prompting you to restart the computer, click [Yes].

Checking the full computer name and workgroup

1. Click [Start] -> [Settings] -> [Control Panel].
2. Double-click the [System] icon. [System Properties] appears.
3. Click the [Network Identification] tab.
4. Check [Full computer name] and [Workgroup]. Ask your network administrator and check the setting.

Item	Description
Full Computer Name	A name to identify the computer on the network. You can specify any name to each computer. For easier identification, use the model name or user name.
Workgroup	A name for the network group: ▪ *AdHoc Network:* Specify the same name to all computers within the same network. ▪ *Infrastructure Network:* Specify a workgroup name to connect to. To change the setting, click [Properties], and follow the instructions on the screen. [System Properties] appears again.

Table 6: Checking computer name and workgroup

5. Click [OK]. When a message appears prompting you to restart the computer, click [Yes].

Sharing

In this section, you set sharing of the drive, folder, and printer.

You only need to set this when you are sharing files or a printer with other computers on the network.

When you share a drive, folder, or printer, you can use them from any computer on the network.

Setting [File and Printer Sharing for Microsoft Networks]

1. Click [Start] -> [Settings] -> [Control Panel].
2. Double-click the [Network and Dial-up Connections] icon. The [Network and Dial-up Connections] windows appears.
3. Right click the [Local Area Connection], then click [Properties] from the menu that appears. [Local Area Connection Properties] appears.

POINT

More than one network adapter is installed in your system if more than one [Local Area Connection] entry is displayed. In this case, select the [Local Area Connection] entry with [Intersil PRISM Wireless LAN PCI Card] displayed under [Device Name].

4. If [File and Printer Sharing for Microsoft Networks] is displayed in the list, make sure that it is checked. If it is not checked, check it and click [OK]. You do not have to perform the following steps. Go to the next section, entitled "Sharing Files."

   If [File and Printer Sharing for Microsoft Networks] is **not** found in the list, click [Install], and perform Step 5 and subsequent steps. When you click

[Install], the [Select Network Component Type] window appears.

5. Perform the following steps.
   - Click [Service].
   - Click [Add]. The [Select Network Service] window appears.
6. Perform the following steps.
   - Click [File and Printer Sharing for Microsoft Networks].
   - Click [OK]. You will go back to [Local Area Connection Properties], and [File and Printer Sharing for Microsoft Networks] is added to the list.
7. Click [OK].

POINT

If you have changed the setting, [Close] is shown instead. Click [Close].

Sharing Files

The following example shows how to set sharing the "Work" folder on the c: drive.

1. On the desktop, double-click [My Computer]-> C: drive.
2. Right-click the "Work" folder, then click [Sharing] from the menu. The [Work Properties] window appears.
3. Click [Share this folder] and set necessary items, as indicated in the following table.

Item	Description
Share name	You can specify a share name for the drive or folder that you want to share.
Comment	You can enter the description for the drive or folder that you want to share.
User limit	Specifies the limit for the number of sharing users.
Permissions	Specifies the folder access privileges.
Caching	Specifies the caching for the folder.

Table 7: Sharing files

4. Click [OK]. The folder is set shared, and the "Work" folder icon changes.

Printer Sharing

1. Click [Start] -> [Settings] -> [Printers]. The Printers window appears, showing the printers that are connected.
2. Right click the printer that you want to share, then click [Sharing] from the menu that appears.
3. Click [Sharing], and select necessary items.

Item	Description
Not Shared	Disables printer sharing.
Shared As	Enables printer sharing.
Share Name	Specifies a share name of the printer to be shared.
Comment	Enter the description of the printer to be shared.
Passwords	If you specify a password, you need to enter it when using the printer.

Table 8: Printer Sharing

4. Click [OK]. The printer sharing is set, and the icon changes.

Checking the Connection

After the network setting is completed, access the shared drive on another computer to check the connectivity of the wireless LAN network.

Accessing Another Computer

1. Double-click the [My Network Places] icon on the desktop. [My Network Places] appears.
2. Double-click [Computers near me]. The computers that are connected to the network are displayed.
3. Double-click the computer that you want to access. The drive that you set with "Sharing" are displayed.
4. Double-click the drive that you want to access. The drive is displayed showing its contents and made available to you. If you have any questions or problems, refer to "Troubleshooting Table" on page 57.

Checking the Connectivity

1. Click [Start] -> [Settings] -> [Control Panel].
2. Double-click the [PRISM Settings] icon. [PRISM Wireless Settings] appears.
3. Check the connectivity on the [Link] tab. The current condition of connection is displayed.

Item	Description
State	Shows the current condition of connection. The MAC address of the other computer to which you are connected is displayed when the connection is successful. If you are connected to more than one computer, the computer that has the best connectivity is displayed.
Current Channel	Shows the current channel used for the connection.
Current Tx Rate	Shows the current transfer rate in Mbits/sec.
[Radio Off]/ [Radio On]	Click [Radio Off] to disconnect. Click [Radio On] to connect to the network.
[Rescan] button	Click this button to search for others to connect to.
Throughput (Bytes/sec)	Shows the actual transfer rate of the data transfer for send (Tx) and receive (Rx).
Link Quality	Shows either [Excellent], [Good], [Fair], [Poor], or [Not Connected], depending on the link quality. Not shown for AdHoc connection.
Signal Strength	Shows either [Excellent], [Good], [Fair], [Poor], or [Not Connected], depending on the signal strength. Not shown for AdHoc connection.

Table 9: Checking connectivity

CONNECTING WINDOWS XP SYSTEMS

This chapter describes how to set up the wireless LAN connection for computers that are running Windows XP.

POINT

When you receive your LifeBook, the integrated wireless LAN device and drivers have already been installed. This procedure outlines the steps for setting the device parameters.

Updated drivers and/or utilities may become available after this manual is printed; see any addenda or fliers that may be included in the system packaging.

Workflow

The proper setup of the wireless LAN connection requires that several steps be performed in the proper order. Following is a general outline of the steps to be performed. Each step is detailed later in this procedure.

1. Setting parameters
   - Setting the profile
   - Setting the encryption
2. Network settings
   - Setting the protocol and checking the network
   - Setting file and printer sharing
   - Checking the connection

Setting Parameters

1. Click [Start] -> [Control Panel].
2. Click [Network and Internet connection].
3. Click [Network connection]. A list of networks that are currently installed is displayed.
4. Right click [Intersil PRISM Wireless LAN PCI Card] in the list, and click [Properties] from the menu that is displayed. [Wireless Network Connection 2 Properties] appears.
5. Click the [Wireless Networks] tab. The [Wireless Networks] tab appears.
6. Perform the following steps.
   - Make sure that [Use Windows to configure my wireless network settings] is checked.
   - Click [Add] under [Preferred networks]. [Wireless Network Properties] appears.
7. Set parameters.
   - For the AdHoc network, specify the same value to all the computers, for which the encryption key is used for connection.
   - For the infrastructure network, specify the encryption key (network key) with the same value to the encryption key of the access point. For how to check the encryption keys set for the access point, refer to the manual supplied with the access point.

POINT

Be sure to specify the encryption keys. If you do not specify the keys, any computer with a wireless LAN card can be connected. This presents a risk that other users may steal or destroy your data.

Item		Description
Network Name SSID	Enter the network name to which you want to connect. This is a required item. For the network name, ask your LAN administrator. *AdHoc network:* Set the same name for all of the computers that are to be connected. *Infrastructure network:* Specify the same name as that specified on the access point that is to be connected. For access point instructions, refer to the manual that comes with the access point.	
Key Format	Click the down arrow and select the input for the Network key.	
	ASCII characters	Select this when using ASCII characters for the Network Key. Characters that can be used follow: 0-9, A-Z, a-z, and _ (underscore) *Example:* To set the key to "ABC12", input "ABC12".
	Hexa-decimal characters	Select this when using hexadecimal characters for the Network Key. Use this if there is a wireless LAN card in the network that has the Network Key set to a character code. In 'Network Key', input the same value as the other wireless LAN card.

Table 10: Setting parameters

8. When you finish your entry, click [OK]. [Wireless Network Connection 2 Properties] appears again.
9. Make sure the network name you specified for the SSID in Step 7 is added under [Preferred networks].

Network Connection

The section describes how to set the network connection for a computer running Windows XP.

Network Settings

In this section, you set "TCP/IP Settings," and complete "Checking Computer Name and Workgroup" required for the network connection.

TCP/IP Settings

1. On [Wireless Network Connection Properties], click [General].

POINT

If [Wireless Network Connection 2 Properties] is not displayed, click [Start] -> [Settings] -> [Control Panel], and double-click the [Network Connection] icon.

Right click the [Wireless Network Connection], and then click [Properties] from the menu that appears.

2. Perform the following steps.
   - Click [Internet Protocol (TCP/IP)].
   - Click [Properties]. [Internet Protocol (TCP/IP) Properties] appears.
3. Set an IP address. Ask your network administrator and check the setting.

Item	Description
AdHoc Network	Set the IP address and subnet mask. Click [Use the following IP address]. Enter a value for [IP address] and [Subnet mask]. See "Setting IP Addresses" on page 60 to set IP address and subnet mask.
For Infrastructure Network	Select [Obtain an IP address automatically]. For the DNS server, select [Obtain DNS server address automatically]. For the IP address, DNS server, and default gateway, follow the network administrator's instructions, if any.

Table 11: Setting an IP address

5. Click [OK].

POINT

If you have changed the setting, [Close] is shown instead. Click [Close].

6. Close [Network Connection].

Checking the Full Computer Name and Workgroup

1. Click [Start] -> [Control Panel]. Make sure the Classic View is selected.
2. Double-click the [System] icon. [System Properties] appears.
3. Click the [Computer Name] tab.

4. Check [Full computer name] and [Workgroup]. Ask your network administrator and check the setting.

Item	Description
Computer Name	A name to identify the computer on the network. You can specify any name to each computer. Use up to 15 single-byte characters. For easier identification, use the model name or user name.
Workgroup	A name of the network group. Use up to 15 single-byte characters. *AdHoc Network:* Specify the same name to all computers within the same network. *Infrastructure Network:* Specify workgroup name to connect to.

Table 12: Setting computer name and workgroup

To change the setting, click [Change], and follow the instructions on the screen. [System Properties] appears again.

5. Click [OK]. When a message appears prompting you to restart the computer, click [Yes].

Sharing

In this section, you set sharing of the drive, folder, and printer.

You need to set this only when you are sharing files or a printer with other computers on the network.

When you share a drive, folder, or printer, you can use these from any computer on the network.

Setting [File and Printer Sharing for Microsoft Networks]

1. Click [Start] -> [Control Panel]. Make sure the Classic View is selected.
2. Double-click the [Network Connection] icon.
3. Right click the [Wireless Network Connection], and then click [Properties] from the menu that appears. [Wireless Network Connection Properties] appears.
4. If [File and Printer Sharing for Microsoft Networks] is displayed in the list:

   Make sure that it is checked. If it is not checked, check it, and click [OK]. You do not have to perform the following steps. Go to the next section, "Sharing Files."

   If [File and Printer Sharing for Microsoft Networks] is **not** found in the list, click [Install], and perform Step 5 and the subsequent steps. When you click [Install], [Select Network Component Type] appears.
5. Perform the following steps.
   - Click [Service].
   - Click [Add]. [Select Network Service] appears.
6. Perform the following steps.
   - Click [File and Printer Sharing for Microsoft Networks].
   - Click [OK]. You will go back to [Wireless Network Connection 2 Properties], and [File and Printer Sharing for Microsoft Networks] is added to the list.
7. Click [Close].

Sharing Files

The following example shows how to set sharing the "Work" folder on the c: drive.

1. Click [Start] -> [My Computer].
2. Double-click the [Local Disk (c:)] icon.
3. Right click the "Work" folder, and then click [Sharing and Security] from the menu that appears. [Work Properties] appears.
4. Click [If you understand the security risks but want to share files without running the wizard, click here].

POINT

If you have already clicked [If you understand the security risks but want to share files without running the wizard, click here], this window does not appear.

In the [Work Properties] window, the description under [Network Sharing and security] changes.

5. Check [Share this folder on the network]. Uncheck [Allow network users to change my files], if the shared folder is for read only.
6. Click [OK]. The folder is set shared, and the "Work" folder icon changes.

Printer Sharing

1. Press [Start]->[Control Panel] (or [Settings], if viewing in Classic mode)-> [Printers and Faxes]. The Printers and Faxes display will appear and the connected printers will be displayed.
2. Right-click the printer to be shared, and click [Sharing] from the menu that appears. The properties of the printer to be shared will be displayed. Set printer sharing.

On the display, the printer sharing setting is recommended by the Network Setup Wizard, but for the wireless LAN network, security is maintained by network name (SSID) or network key. The following steps allow

you to set up printer sharing without using the Network Setup Wizard.

3. Click 'If you understand the security risks but want to share printers without running the wizard, click here. 'Enable Printer Sharing' will be displayed.
4. Select 'Just enable printer sharing'.
5. Click 'OK'. The printer properties will be indicated.
6. Select 'Share this printer'.
7. Enter the sharing printer name in 'Share name'.
8. Click OK. The printer will be shared, and the printer icon will become a sharing icon.

Checking the Connection

After the network setting is completed, access the shared drive on another computer to check the connectivity of the wireless LAN network.

Accessing Another Computer

1. Click [Start] -> [My Computer].
2. From the left menu in [Other Places], click [My Network Places].
3. From the left menu in [Network Tasks], click [View workgroup computers]. The workgroup in which you are participating will appear.
4. Double click the computer to which you want to connect. The drive that you set in [Computer Sharing] appears.
5. Double click the drive to which you want to connect. The contents of the drive will appear, and is available for use.

If you have a question or problem, refer to "Trouble-shooting Table" on page 57.

Checking the Connectivity

1. Click [Start] -> [Control Panel].
2. Double-click the [PRISM Settings] icon. [PRISM Wireless Setting] appears.
3. Check the connectivity on the [Link] tab. The current condition of connection is displayed

Item	Description
State	Shows the current condition of connection. The MAC address of the other computer that you are connected to is displayed, when the connection is successfully made. If you are connected to more than one computer, the computer that has the best connectivity is displayed.
Current Channel	Shows the current channel used for the connection.
Current Tx Rate	Shows the current transfer rate in Mbits/sec.
Radio Off/ Radio On	Click [Radio OFF] to disconnect. Click [Radio On] to connect to the network.
Rescan	Click this button to search for others to connect to.
Throughput (Bytes/sec)	Shows the actual transfer rate of the transfer data for send (Tx) and receive (Rx).
Link Quality	Shows the link quality. This is not shown for the AdHoc connection.
Signal Strength	Shows the signal strength. This is not shown for the AdHoc connection.

Table 13: Checking connectivity

TROUBLESHOOTING

This section contains troubleshooting information, including causes and actions, for problems you may find while using this device.

Troubleshooting Table

Problem	Possible Cause	Possible Solution
An exclamation mark (!) or cross (x) is attached to [Intersil PRISM Wireless LAN PCI Card].	A failure to recognize the device.	Restart the computer.
	A failure in installing the driver.	Restart the computer.
Other computers are not displayed when the [Network Computer] icon is double-clicked.	The network has not been set up correctly.	Check the setting for the protocol, workgroup, and sharing. To check this, you need a different procedure, depending upon the operating system that you use. Refer to the appropriate section of this chapter.
	It takes time before the network is searched and the computer connected is displayed.	Perform the following steps to search for the computer. ▪ Click [Start] -> [Search] -> [Other Computers]. ▪ Enter the computer name that you are connecting to in [Name], and click [Search]. ▪ Double-click the icon of the computer that has been searched.
	A failure in installing the driver.	Make sure that the driver is correctly installed.
	The TCP/IP protocol is not installed, or, the IP address is not set correctly.	Make sure that the TCP/IP protocol is installed. To check this, you need a different procedure, depending on the operating system that you use. Refer to the appropriate section of this manual.
	The TCP/IP protocol is not installed, or, the IP address is not set correctly.	If the TCP/IP protocol is installed, do the following to check the IP address: 1. Windows 2000: Click [Start] -> [Programs] -> [Accessories] -> [Command Prompt]. Windows XP: Click [Start] -> [All Programs] -> [Accessories] -> [Command Prompt]. 2. Enter "IPCONFIG" command, and press [Enter]. (If your hard disk is C drive, enter C:\>ipconfig) Check that the IP address is correctly displayed under the IP Address. Example: IP address: 10.0.1.3 Subnet Mask: 255.255.255.0 Default Gateway: 10.0.1.1
	No communication due to poor radio signal.	Shorten the distance between computers or remove visible obstacles between them, and retry the connection.

Problem	Possible Cause	Possible Solution
IP packet isn't reaching its destination	Run the PING command to check the connection	Perform the following steps to run the PING command to check if the IP packet is correctly delivered to the destination. To run the PING command, the TCP/IP protocol must be installed. First you will determine your IP address, then you will make sure your IP address can respond, and then you will make sure other computers can be addressed. 1. Windows 2000: Click [Start] -> [Programs] -> [Accessories] -> [Command Prompt]. Windows XP: Click [Start] -> [All Programs] -> [Accessories] -> [Command Prompt]. 2. Type: ipconfig > *directory\filename* where *directory* and *filename* represent the location at which you want to store the IP address. 3. Click [Enter], then go to the location you specified above. The IP address for your system will be contained in the file. 4. To check that your IP address is functioning properly, go back to the DOS prompt and type: ping *<IP address>*, then press [Enter]. You will receive several replies, followed by the PING statistics (similar to below). 5. To check that your system is communicating with other systems, go to the DOS prompt and type: \>ping XXX.XXX.XXX.XXX. (With the destination IP address in place of XXX.XXX.XXX.XXX). Example: if the destination IP address is 10.0.1.3: C:\>ping 10.0.1.3 A message similar to the following appears if the connection is successful. Pinging 10.0.1.3 with 32 bytes of data: Reply from 10.0.1.3: bytes=32 time=1ms TTL=32 Reply from 10.0.1.3: bytes=32 time<10ms TTL=32 Reply from 10.0.1.3: bytes=32 time=4ms TTL=32 Reply from 10.0.1.3: bytes=32 time<10ms TTL=32 If the connection fails, [Request timed out], [Destination host unreachable], or a similar message appears. In this case, refer to the "Other computers are not displayed" portion of this chapter.
Cannot connect to the network	There are several possible causes, as listed to the right. Refer to the specific section of this manual or your user's manual.	The following causes are possible. Check each one of them. ▪ The network name or encryption key is not right. ▪ The driver has not correctly started. ▪ The destination computer is not turned on. ▪ You do not have the access privilege to the destination computer. ▪ The card has failed. ▪ Hardware conflict.

Problem	Possible Cause	Possible Solution
I want to remove the driver (Windows 2000)		**Windows 2000:** When removing the driver, make sure that the device is attached to the computer. If you try to remove the driver while the device is detached from the computer, the driver is not removed. 1. Right click the [My Computer] icon on the desktop, and then click [Properties] from the menu that appears. [System Properties] appears. 2. Click the [Hardware] tab. 3. Click [Device Manager...]. The [Device Manager] window appears. 4. Click [+] beside [Network adapters]. 5. Right click [Intersil PRISM Wireless LAN PCI Card], and click [Uninstall] from the menu that is displayed. [Confirm Device Removal] appears. 6. Click [OK]. 7. Close [System Properties]. Make sure that the icon has disappeared from the task tray in the lower right corner of the screen. 8. Click [Start] -> [Settings] -> [Control Panel]. 9. Double-click [Add/Remove Programs]. [Add/Remove Programs] appears. 10. Perform the following steps. ▪ Click [PRISM 11Mbps Wireless LAN for Windows]. ▪ Click [Change/Remove]. 11. A window appears asking you if you really want to remove the driver. 12. Click [Yes]. When the driver is removed, a window appears showing that the driver has been removed. 13. Click [OK]. 14. Close [Add/Remove Programs] and [Control Panel]. 15. Shut down Windows, and turn off the computer.

Problem	Possible Cause	Possible Solution
I want to remove the driver (Windows XP)		**Windows XP:** When removing the driver, make sure that the device is attached to the computer. If you try to remove the driver while the device is detached from the computer, the driver is not removed. 1. Click [Start], right click [My Computer], and then click [Properties] from the menu that appears. [System Properties] appears. 2. Click the [Hardware] tab. 3. Click [Device Manager]. 4. Click [+] beside [Network adapters]. 5. Right click [Intersil PRISM Wireless LAN PCI Card], and click [Uninstall] from the menu that is displayed. [Confirm Device Removal] appears. 6. Click [OK]. 7. Close [System Properties]. 8. Make sure that the icon has disappeared from the task tray in the lower right corner of the screen. 9. Click [Start] -> [Control Panel]. [Control Panel] appears. 10. Double-click [Add/Remove Programs]. [Add/Remove Programs] appears. 11. Perform the following steps. ▪ Click [PRISM 11Mbps Wireless LAN for Windows]. ▪ Click [Change/Remove]. A window appears asking you if you really want to remove the driver. 12. Click [Yes]. When the driver is removed, a window appears showing that the driver has been removed. 13. Click [OK]. 14. Close [Add/Remove Programs] and [Control Panel]. 15. Shut down Windows, and turn off the computer.

ABOUT IP ADDRESSES

Setting IP Addresses

If you are not sure how to set the IP address, refer to the following procedure.

If you have an access point (DHCP server) on the network, set the IP address as follows:

Windows 2000: [Obtain an IP address automatically]

Windows XP: [Obtain an IP address automatically]

POINT

A DHCP server is a server that automatically assigns IP addresses to computers or other devices in the network. There is no DHCP server for the AdHoc network.

If the IP address is already assigned to the computer in the network, ask the network administrator to check the IP address to be set for the computer.

If no access point is found in the network:

An IP address is expressed with four values in the range between 1 and 255.

Set the each computer as follows: The value in parentheses is a subnet mask.

<Example>

Computer A: 192.168.100.2 (255.255.255.0)

Computer B: 192.168.100.3 (255.255.255.0)

Computer C: 192.168.100.4 (255.255.255.0)

:

:

Computer X: 192.168.100.254 (255.255.255.0)

SPECIFICATIONS

Technical Specifications for Integrated Wireless LAN Device

Item	Description
Network Type	IEEE 802.11b
Transfer Rate	11/5.5/2/1Mbps (auto change)
Frequency Range	2,400 - 2,473 MHz
Channels	One of 11 channels is used
Card Type	Non-intelligent
VCC	Class B
Security	Network name, encryption key
Supported Operating Systems	Windows 2000, Windows XP
Power Current	Max: 350mA
Maximum number of units recommended for wireless LAN (AdHoc network)	10 or less

6 Troubleshooting

Troubleshooting

Your Fujitsu LifeBook notebook is sturdy and subject to few problems in the field. However, you may encounter simple setup or operating problems that you can solve on the spot, or problems with peripheral devices, that you can solve by replacing the device. The information in this section helps you isolate and resolve some of these straightforward problems and identify failures that require service.

FUJITSU SERVICE ASSISTANT

Your LifeBook notebook includes a sophisticated, full-featured troubleshooting utility that can assist you in solving most problems you might encounter. The Fujitsu Service Assistant is an interactive support tool that provides automated diagnosis and solutions for your hardware and software problems. To use this tool, load the Fujitsu Service Assistant CD that was included with your system's accessories, and follow the instructions after the Fujitsu Service Assistant CD launches.

New support information for the Fujitsu Service Assistant tool may be available after the purchase of your notebook. You should periodically connect to the Internet while using the Fujitsu Service Assistant tool to ensure that you are using the most current version.

IDENTIFYING THE PROBLEM

If you encounter a problem, go through the following procedure before pursuing complex troubleshooting:

1. Turn off your LifeBook notebook.
2. Make sure the AC adapter is plugged into your notebook and to an active AC power source.
3. Make sure that any card installed in the PC Card slot is seated properly. You can also remove the card from the slot, thus eliminating it as a possible cause of failure.
4. Make sure that any devices connected to the external connectors are plugged in properly. You can also disconnect such devices, thus eliminating them as possible causes of failure.
5. Turn on your notebook. Make sure it has been off at least 10 seconds before you turn it back on.
6. Go through the boot sequence.
7. If the problem has not been resolved, refer to the Troubleshooting Table, that follows, for more detailed troubleshooting information.
8. If you are still having problems after referring to the Troubleshooting Table, go to the Fujitsu PC website (www.fujitsupc.com), click on the Support button, and search the list of Frequently Asked Questions (FAQs) contained there.

POINT

If you keep notes about what you have tried, your support representative may be able to help you more quickly by giving additional suggestions over the phone.

9. If you have tried the solutions suggested above without success, contact your support representative:

   Toll free: 1-800-8Fujitsu (1-800-838-5487)
   Fax: 1-901-259-5700
   E-mail: 8fujitsu@fujitsupc.com
   Web site: http://www.fujitsupc.com

Before you place the call, you should have the following information ready so that the customer support representative can provide you with the fastest possible solution:

- Product name
- Product configuration number
- Product serial number
- Purchase date
- Conditions under which the problem occurred
- Any error messages that have occurred
- Hardware configuration
- Type of device connected, if any

See the Configuration Label on the bottom of your notebook for configuration and serial numbers. *(See figure 2-9 on page 10 for location)*

SPECIFIC PROBLEMS

Using the Troubleshooting Table

When you have problems with your LifeBook notebook, try to find the symptoms under the Problem column of the troubleshooting table for the feature giving you difficulty. You will find a description of common causes for that symptom under the column Possible Cause and what, if anything, you can do to correct the condition under Possible Solutions. All possible causes or solutions may not apply to your notebook.

TROUBLESHOOTING TABLE

Problem	Possible Cause	Possible Solutions
Audio Problems		
There is no sound coming from the built-in speakers.	The volume is turned too low.	Adjust the volume control on your notebook.
	The software volume control is set too low.	Adjust the sound volume control settings in your software, operating system and applications.
	Headphones are plugged into your notebook.	Plugging in headphones disables the built-in speakers, remove the headphones.
	BIOS audio settings are incorrect.	Set the BIOS setup utility to the default values within the Multimedia Device Configuration menu. *(See BIOS Setup Utility on page 27 for more information)*
	Software driver is not configured correctly.	Refer to your application and operating system documentation for help.
DVD/CD-RW Drive Problems		
LifeBook notebook fails to recognize DVD/CD-RW drive	Protective sheet is still in the DVD/CD-RW drive tray.	Replace DVD/CD-RW disc in tray.
	DVD/CD-RW disc is not pushed down onto raised center circle of the drive.	Open DVD/CD-RW tray and re-install DVD/CD-RW disc properly.
	DVD/CD-RW drive tray is not latched shut.	Push on the front of the DVD/CD-RW drive tray until it latches.
	Incorrect DVD Player or no DVD Player software is installed.	Install DVD Player software. *(See "DVD/CD-RW Combo Drive Software" on page 36 for more information.)*
	Wrong drive designator was used for DVD/CD-RW drive in the application.	Verify the drive designator used by the application is the same as the one used by the operating system. When the operating system is booted from a DVD/CD, drive designations are automatically adjusted.
	Windows DVD/CD-RW auto insertion function is disabled.	Start the DVD/CD-RW drive from the desktop or application software or re-enable the Windows DVD/CD-RW auto insertion function. *(See Auto Insert Notification Function on page 38 for more information)*
	DVD/CD-RW disc is dirty or defective.	Wipe disc with a non-abrasive CD cleaning cloth and reinsert. It if still will not work try another disc in the drive.

Problem	Possible Cause	Possible Solutions
The DVD/CD-RW Access indicator on the Status Indicator Panel blinks at regular intervals when no DVD/CD-RW disc is in the tray or the drive is not installed.	The Windows DVD/CD-RW auto insertion function is active and is checking to see if a DVD/CD-RW disc is ready to run.	This is normal. However, you may disable this feature. *(See Auto Insert Notification Function on page 38 for more information)*
Floppy Disk Drive Problems		
You cannot access your floppy disk.	You tried to write to a write protected floppy disk.	Eject the floppy disk and set it to write enable. *(See Preparing a Disk for Use on page 44 for more information)*
	Floppy disk is not loaded correctly.	Eject floppy disk, check orientation and re-insert. *(See Ejecting a Disk on page 44 for more information)*
	BIOS setup utility states `Diskette Controller: Disabled.`	Revise the setup utility Main menu settings to enable Diskette Controller. *(See BIOS Setup Utility on page 27 for more information)*
	The floppy disk drive may not be properly installed.	Remove and re-install your floppy disk drive.
	Security is set to protect access to floppy disk data.	Verify your password and security settings.
Hard Drive Problems		
You cannot access your hard drive.	The setup utility is incorrectly set for your internal (Primary Master) or optional second hard drive (Primary Slave).	Revise BIOS settings to set both Primary Master and Primary Slave correctly. *(See BIOS Setup Utility on page 27 for more information)*
	The wrong drive designator was used by an application when a bootable CD-ROM was used to start the notebook.	Verify drive designator used by application is in use by the operating system. When the operating system is booted from a CD, drive designations are automatically adjusted.
	Security is set so your operating system cannot be started without a password.	Verify your password and security settings.
Keyboard or Mouse Problems		
The built-in keyboard does not seem to work.	The notebook has gone into Suspend mode.	Push the **Suspend/Resume/Power On** button.
	Your application has locked out your keyboard.	Try to use your integrated pointing device to restart your system. If this fails, turn your notebook off using the Power Off button located on the back of the system. Wait 10 seconds or more, and then turn the system back on.
You have installed an external keyboard or mouse, and it does not seem to work.	Your external device is not properly installed.	Re-install your device. *(See Device Ports on page 43 for more information)*
	Your operating system software is not setup with the correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.

Problem	Possible Cause	Possible Solutions
You have connected an external keyboard or a mouse and it seems to be locking up the system.	Your operating system software is not setup with the correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.
	Your system has crashed.	Try to restart your notebook. If that fails, turn off the power using the Power Off button located on the back of the system. Wait 10 seconds or more, and then turn the system back on.
When the system is slightly inclined and the Quick-Point device has been worked with slowly for several seconds, the cursor slowly moves across the screen when you are not using it.	This happens due to the design specifications of the Quick Point device.	If this occurs, wait until the cursor stops moving; it should then work properly.
Memory Problems		
Your Power On screen, or Main menu of the BIOS setup utility information, does not show the correct amount of installed memory.	Your memory upgrade module is not properly installed.	Remove and re-install your memory upgrade module. *(See Memory Upgrade Module on page 40 for more information)*
	You have a memory failure.	Check for Power On Self Test (POST) messages. *(See Power On Self Test Messages on page 74 for more information)*
Modem Problems		
Messages about modem operation.	Messages about modem operation are generated by whichever modem application is in use.	See your application software documentation for additional information.
USB Device Problems		
You have installed a USB device but your LifeBook notebook does not recognize the device, or the device does not seem to work properly.	The device is not properly installed.	Remove and re-install the device. *(See Device Ports on page 43 for more information)*
	The device may have been installed while an application was running, so your notebook is not aware of its installation.	Close the application and restart your notebook.
	Your software may not have the correct software driver active.	See your software documentation and activate the correct driver.
	You may have the wrong I/O address selected for your device.	See your device documentation and software documentation to determine the required I/O address. Change the settings in the BIOS setup utility. *(See BIOS Setup Utility on page 27 for more information)*
	Your device and another device are assigned the same I/O address.	Check all I/O addresses located within the BIOS setup utility and any other installed hardware or software to make sure there are no duplications.

Problem	Possible Cause	Possible Solutions
PC Card Problems		
A card inserted in the PC Card slot does not work or is locking up the system.	The card is not properly installed.	Remove and re-install the card. *(See PC Cards on page 39 for more information)*
	The card may have been installed while an application was running, so your notebook is not aware of its installation.	Close the application and restart your notebook.
	Your software may not have the correct software driver active.	See your software documentation and activate the correct driver.
	You may have the wrong I/O address selected for your PC Card device.	See your PC Card documentation to determine the required I/O address. Change the settings in the BIOS. *(See BIOS Setup Utility on page 27 for more information)*
	Your PC Card device and another device are assigned the same I/O address.	Check all I/O addresses located within the BIOS setup utility and any other installed hardware or software to make sure there are no duplications.
Power Failures		
You turn on your LifeBook notebook and nothing seems to happen.	The installed primary battery is completely discharged, there is no optional second battery installed or there is no Power adapter (AC or Auto/Airline) installed.	Check the Status Indicator Panel to determine the presence and condition of the batteries. *(See Status Indicator Panel on page 11 for more information)* Install a charged battery or a Power adapter.
	The primary battery is installed but is faulty.	Use the Status Indicator panel to verify the presence and condition of the batteries. *(See Status Indicator Panel on page 11 for more information)* If a battery is indicating a short, remove that battery and operate from another power source or replace that battery.
	The battery or batteries are low.	Check the Status Indicator Panel to determine the presence and condition of the batteries. *(See Status Indicator Panel on page 11 for more information)* Use a Power adapter to operate until a battery is charged or install a charged battery.
	The power adapter (AC or auto/airline) is not plugged in properly.	Verify that your adapter is connected correctly. *(See Power Sources on page 25 for more information)*
	The Power adapter (AC or auto/airline) has no power from the AC outlet, airplane seat jack, or the car's cigarette lighter.	Move the AC cord to a different outlet, check for a line switch or tripped circuit breaker for the AC outlet. If you are using an auto/airline adapter in a car make sure the ignition switch is in the On or Accessories position.
	The Power adapter (AC or auto/airline) is faulty.	Try a different Power adapter or install a charged optional second battery.

Problem	Possible Cause	Possible Solutions
Your LifeBook notebook turns off all by itself.	The power management parameters are set for auto timeouts which are too short for your operating needs.	Press any button on the keyboard, or move the mouse to restore operation. If that fails, push the Suspend/Resume button. Check your power management settings, or close your applications and go to the Power Savings menu of the setup utility to adjust the timeout values to better suit your operation needs.
	You are operating on battery power only and have ignored a low battery alarm until the batteries are all at the dead battery state and your machine has gone into Dead Battery Suspend mode.	Install a power adapter and then push the Suspend/Resume button. *(See Power Sources on page 25 for more information)*
	You have a battery failure.	Verify the condition of the batteries using the Status Indicator panel, and replace or remove any batteries that are shorted. *(See Status Indicator Panel on page 11 for more information)*
	Your power adapter has failed or lost its power source.	Make sure the adapter is plugged in and the outlet has power.
Your LifeBook notebook will not work on battery alone.	The installed batteries are dead.	Replace the battery with a charged one or install a Power adapter.
	No batteries are installed.	Install a charged battery.
	The batteries are improperly installed.	Verify that the batteries are properly connected by re-installing them.
	Your installed batteries are faulty.	Verify the condition of the batteries using the Status Indicator panel and replace or remove any batteries that are shorted. *(See Status Indicator Panel on page 11 for more information)*
The batteries seem to discharge too quickly.	You are running an application that uses a lot of power due to frequent hard drive or DVD/CD-RW drive access, or use of a modem or LAN PC card.	Use both the primary battery and an optional second battery and/or use a power adapter for this application when at all possible.
	The power savings features may be disabled.	Check the power management and/or setup utility settings in the Power Savings menu and adjust according to your operating needs.
	The brightness is turned all the way up.	Turn down the brightness adjustment. The higher the brightness the more power your display uses.
	The batteries are very old.	Replace the batteries.
	The batteries have been exposed to high temperatures.	Replace the batteries.
	The batteries are too hot or too cold.	Restore the notebook to normal operating temperature. The Charging icon on the Status Indicator panel will flash when the battery is outside its operating range.

Problem	Possible Cause	Possible Solutions
Shutdown and Startup Problems		
The Suspend/Resume/ Power On button does not work.	The Suspend/Resume/Power On button is disabled from the Advanced submenu of the Power menu of the setup utility.	Enable the button from the setup utility.
	You did not hold the button in long enough.	Hold the button longer. This may need to be a few seconds if your application is preventing the CPU from checking for button pushes.
	There may be a conflict with the application software.	Close all applications and try the button again.
The system powers up, and displays power on information, but fails to load the operating system.	The boot sequence settings of the setup utility are not compatible with your configuration.	Set the operating source by pressing the [ESC] key while the Fujitsu logo is on screen or use the [F2] key and enter the setup utility and adjust the source settings from the Boot menu. *(See BIOS Setup Utility on page 27 for more information)*
	You have a secured system requiring a password to load your operating system.	Make sure you have the right password. Enter the setup utility and verify the Security settings and modify them as accordingly. *(See BIOS Setup Utility on page 27 for more information)*
	Internal hard drive was not detected.	Use the BIOS setup utility or Primary Master submenu, located within the Main menu, to try to auto detect the internal hard drive.
An error message is displayed on the screen during the notebook (boot) sequence.	Power On Self Test (POST) has detected a problem.	See the Power On Self Test (POST) messages to determine the meaning and severity of the problem. Not all messages are errors; some are simply status indicators. *(See Power On Self Test Messages on page 74 for more information)*
Your notebook appears to change setup parameters when you start it.	BIOS setup changes were not saved when you made them and exited the BIOS setup utility returning it to previous settings.	Make sure you select **Save Changes And Exit** when exiting the BIOS setup utility.
	The BIOS CMOS hold-up battery has failed.	Contact your support representative for repairs. This is not a user serviceable part but has a normal life of 3 to 5 years.
Video Problems		
The built-in display is blank when you turn on your LifeBook notebook.	Something is pushing on the Closed Cover switch.	Clear the Closed Cover switch. *(See figure 2-5 on page 6 for location)*
	The notebook is set for an external monitor only.	Pressing [F10] while holding down the [Fn] key allows you to change your selection of where to send your display video. Each time you press the combination of keys you will step to the next choice. The choices, in order are: built-in display only, external monitor only, both built-in display and external monitor.

Problem	Possible Cause	Possible Solutions
The built-in display is blank when you turn on your LifeBook notebook. (continued)	The angle of the display and the brightness settings are not adequate for your lighting conditions.	Move the display and the brightness control until you have adequate visibility.
	The power management time-outs may be set for very short intervals and you failed to notice the display come on and go off again.	Press any button the keyboard, or move the mouse to restore operation. If that fails, push the Suspend/Resume button. (The display may be shut off by Standby mode, Auto Suspend or Video Timeout)
	The notebook is set for S-Video display only.	While holding down the [Fn] key, click on the [F11] key to toggle the S-Video display off.
The LifeBook notebook turned on with a series of beeps and your built-in display is blank.	Power On Self Test (POST) has detected a failure which does not allow the display to operate.	Contact your support representative.
The display goes blank by itself after you have been using it.	The notebook has gone into Video timeout, Standby mode, Suspend mode or Hibernation mode because you have not used it for a period of time.	Press any button on the keyboard, or move the mouse to restore operation. If that fails, push the Suspend/Resume button. Check your power management settings, or close your applications and go to the Power Savings menu of the setup utility to adjust the timeout values to better suit your operation needs. *(See BIOS Setup Utility on page 27 for more information)*
	Something is pushing on the Closed Cover switch.	Check the Closed Cover switch. *(See figure 2-5 on page 6 for location)*
	The power management time-outs may be set for very short intervals and you failed to notice the display come on and go off again.	Press any button on the keyboard, or move the mouse to restore operation. If that fails, push the Suspend/Resume button. (The display may be shut off by Standby Mode, Auto Suspend or Video Timeout)
The Built-in Display does not close.	A foreign object, such as a paper clip, is stuck between the display and the keyboard.	Remove all foreign objects from the keyboard.
The Built-in Display has bright or dark spots.	If the spots are very tiny and few in number, this is normal for a large LCD display.	This is normal; do nothing.
	If the spots are numerous or large enough to interfere with your operation needs.	Display is faulty; contact your support representative.
The application display uses only a portion of your screen and is surrounded by a dark frame.	You are running an application that does not support 800 x 600/1024 x 768 pixel resolution display and display compression is enabled.	Display compression gives a clearer but smaller display for applications that do not support 800 x 600/1024 x 768 pixel resolution. You can fill the screen but have less resolution by changing your display compression setting, (See the Video Features submenu, located within the Advanced menu of the BIOS. *(See BIOS Setup Utility on page 27 for more information)*

Problem	Possible Cause	Possible Solutions
The Display is dark when on battery power.	The default is set on low brightness to conserve power.	Press [Fn] + [F7] to increase brightness and adjust Power Control under battery settings.
You have connected an external monitor and it does not display any information.	Your BIOS setup is not set to enable your external monitor.	Toggle the video destination by pressing [Fn] and [F10] together, or check your BIOS setup and enable your external monitor. (See the Video Features submenu, located within the Advanced Menu of the BIOS. *(See BIOS Setup Utility on page 27 for more information)*
	Your external monitor is not properly installed.	Reinstall your device. *(See Mini-VGA Port on page 44 for more information)*
	Your operating system software is not setup with the correct software driver for that device.	Check your device and operating system documentation and activate the proper driver.
You have connected an external monitor and it does not come on.	Your external monitor is not compatible with your LifeBook notebook.	See your monitor documentation and the External Monitor Support portions of the Specifications section. *(See Specifications on page 85 for more information)*
Miscellaneous Problems		
An error message is displayed on the screen during the operation of an application.	Application software often has its own set of error message displays.	See your application manual and help displays screens for more information. Not all messages are errors some may simply be status.

POWER ON SELF TEST MESSAGES

The following is an alphabetic list of error-and-status messages that the Phoenix BIOS and/or your operating system can generate and an explanation of each message. Error messages are marked with an *. If an error message is displayed that is not in this list, write it down and check your operating system documentation both on screen and in the manual. If you can find no reference to the message and its meaning is not clear, contact your support representative for assistance.

nnnn Cache SRAM Passed
Where nnnn is the amount of system cache in kilobytes success-fully tested by the Power On Self Test. (This can only appear if you have an SRAM PC Card installed.)

***Diskette drive A error or Diskette drive B error**
Drive A: or B: is present but fails the BIOS Power On Self Test diskette tests. Check to see that the drive is defined with the proper diskette type in the Setup Utility, *(See BIOS Setup Utility on page 27 for more information)* and that the diskette drive is installed correctly. If the disk drive is properly defined and installed, avoid using it and contact your support representative.

***Extended RAM Failed at offset: nnnn**
Extended memory not working or not configured properly. If you have an installed memory upgrade module, verify that the module is properly installed. If it is properly installed, you may want to check your Windows Setup to be sure it is not using unavailable memory until you can contact your support representative.

nnnn Extended RAM Passed
Where nnnn is the amount of memory in kilobytes successfully tested.

***Failing Bits: nnnn The hex number nnnn**
This is a map of the bits at the memory address (in System, Extended, or Shadow memory) which failed the memory test. Each 1 (one) in the map indicates a failed bit. This is a serious fault that may cause you to lose data if you continue. Contact your support representative.

***Fixed Disk x Failure or Fixed Disk Controller Failure (where x = 1-4)**
The fixed disk is not working or not configured properly. This may mean that the hard drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to check for the hard drive type settings and correct them if necessary. If the settings are OK and the message appears when you restart the system, there may be a serious fault which might cause you to lose data if you continue. Contact your support representative.

***Incorrect Drive A type – run SETUP**
Type of floppy drive A: not correctly identified in Setup. This means that the floppy disk drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to correct the inconsistency.

***Incorrect Drive B type – run SETUP**
Type of floppy drive B: not correctly identified in Setup. This means that the floppy disk drive type identified in your setup utility does not agree with the type detected by the Power On Self Test. Run the setup utility to correct the inconsistency.

***Invalid NVRAM media type**
Problem with NVRAM access. In the unlikely case that you see this message you may have some display problems. You can continue operating but should contact your support representative for more information.

***Keyboard controller error**
The keyboard controller test failed. You may have to replace your keyboard or keyboard controller but may be able to use an external keyboard until then. Contact your support representative.

***Keyboard error**
Keyboard not working. You may have to replace your keyboard or keyboard controller but may be able to use an external keyboard until then. Contact your support representative.

***Keyboard error nn**
BIOS discovered a stuck key and displays the scan code for the stuck key. You may have to replace your keyboard but may be able to use an external keyboard until then. Contact your support representative.

***Monitor type does not match CMOS – Run SETUP**
Monitor type not correctly identified in Setup. This error probably means your BIOS is corrupted, run the setup utility and set all settings to the default conditions. If you still get this error, contact your support representative.

***Operating system not found**
Operating system cannot be located on either drive A: or drive C: Enter the setup utility and see if both the fixed disk, and drive A: are properly identified and that the boot sequence is set correctly. Unless you have changed your installation greatly, the operating system should be on drive C:. If the setup utility is correctly set, your hard drive may be corrupted and your system may have to be re-installed from your back up media.

***Parity Check 1 nnnn**
Parity error found in the system bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????. This is a potentially data destroying failure. Contact your support representative.

***Parity Check 2 nnnn**
Parity error found in the I/O bus. BIOS attempts to locate the address and display it on the screen. If it cannot locate the address, it displays ????. This is a potentially data-destroying failure. Contact your support representative.

***Press <F1> to resume, <F2> to SETUP**
Displayed after any recoverable error message. Press the [F1] key to continue the boot process or the [F2] key to enter Setup and change any settings.

***Previous boot incomplete – Default configuration used**
Previous Power On Self Test did not complete successfully. The Power On Self Test will load default values and offer to run Setup. If the previous failure was caused by incorrect values and they are not corrected, the next boot will likely fail also. If using the default settings does not allow you to complete a successful boot sequence, you should turn off the power with the Power Switch and contact your support representative.

***Real time clock error**
Real-time clock fails BIOS test. May require board repair. Contact your support representative.

***Shadow RAM Failed at offset: nnnn**
Shadow RAM failed at offset nnnn of the 64k block at which the error was detected. You are risking data corruption if you continue. Contact your support representative.

nnnn Shadow RAM Passed
Where nnnn is the amount of shadow RAM in kilobytes successfully tested.

***System battery is dead – Replace and run SETUP**
The BIOS CMOS RAM memory hold up battery is dead. This is part of your BIOS and is a board mounted battery which requires a support representative to change. You can continue operating but you will have to use setup utility default values or reconfigure your setup utility every time you turn off your notebook. This battery has an expected life of 2 to 3 years.

System BIOS shadowed
System BIOS copied to shadow RAM.

***System CMOS checksum bad – run SETUP**
BIOS CMOS RAM has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in BIOS memory. Run Setup and reconfigure the system.

***System RAM Failed at offset: nnnn**
System memory failed at offset nnnn of in the 64k block at which the error was detected. This means that there is a fault in your built-in memory. If you continue to operate, you risk corrupting your data. Contact your support representative for repairs.

nnnn System RAM Passed
Where nnnn is the amount of system memory in kilobytes successfully tested.

***System timer error**
The timer test failed. The main clock that operates the computer is faulty. Requires repair of system board. Contact your support representative for repairs.

UMB upper limit segment address: nnnn
Displays the address of the upper limit of Upper Memory Blocks, indicating released segments of the BIOS memory which may be reclaimed by a virtual memory manager.

Video BIOS shadowed
Video BIOS successfully copied to shadow RAM.

EMERGENCY DVD TRAY RELEASE

If for some reason the eject button fails, you can open the DVD/CD-RW tray with a paper clip or similar tool inserted into the eject hole in the far right side of the front of the tray. Straighten one side of a paper clip and push it gently into the hole. The tray will pop out a short distance.

MODEM RESULT CODES

The operating system and application software that is factory installed detects the modem characteristics and provides the necessary command strings to operate the modem. The internal modem operation is controlled by generic AT commands from the operating system and application software. The standard long form result codes may, in some cases, be displayed on your screen to keep you informed of the actions of your modem. The operating system and application software may suppress display of the result codes.

Examples of result codes are:

- OK
- NO CARRIER
- NO DIALTONE
- CONNECT 53000 (Connection complete at 53,000 bps.)
- ERROR
- FAX
- RING (This means an incoming call.)
- BUSY
- NO ANSWER

When using the internal modem with applications that are not factory installed refer to the application documentation.

Restoring Your Pre-installed Software

Your system has been loaded with a valuable utility that allows you to restore your LifeBook notebook disk drive contents as they were originally shipped from the factory. Most often this is necessary if files or software programs (only those files/programs that came pre-installed) become corrupt or accidentally erased.

DRIVE IMAGE® SPECIAL EDITION (DISE)

PowerQuest® Drive Image Special Edition (DISE) provides a way to restore your computer if you experience a hard disk crash or other system failure. Fujitsu has used DISE to create an image of everything that was installed on the computer at the time you purchased it. The image is saved on a separate partition on the hard disk. You can use DISE to restore the factory image and return your computer to the state in which it shipped from Fujitsu.

Although it is not necessary, you can use DISE to store an *additional* image file that you create. For example, if you install several applications and save data files on your hard disk, you can create a new image file that includes them and then save that image file on the hard disk. Then, in the event of a hard disk failure, you can restore the image that includes the applications and data files you use.

Fujitsu recommends that you create a DISE disk as a backup disk. If your computer fails, you can boot and run DISE from the backup disk.

POINT

Using the DISE feature will reduce the amount of usable disk space on your hard disk drive.

Creating Drive Image SE Diskettes

Note: *You can use a DISE disk to boot your machine and run DISE if your machine is not bootable or if you do not have access to Windows.*

Insert a formatted floppy disk in your machine.

From the Drive Image Special Edition main window, click **Options** > **Create Drive Image SE Diskette.**

Running DISE from Diskettes

1. Insert the Drive Image SE Disk 1 in the floppy drive.
2. Reboot your computer.
3. Insert Disk 2, type DISE, then press <Enter>.

Creating a Backup Image

You can create a backup image of your C:\ drive at any time. The C:\ partition must be a FAT, FAT32, or NTFS partition, and it must be directly before the backup partition on your hard disk.

1. At the Drive Image Special Edition main screen, click **Options**> **Create New Backup.**

   There is also a button on the main DISE screen that performs the same function.

2. You will be prompted to type a password. Type a password (or leave the password fields blank), then click **OK.** DISE displays a warning that it must go to DOS to create the image.
3. Click **Yes.**

   DISE creates an image file in the backup partition. If you created a backup image previously, the new image overwrites the old one.

Enlarging the Backup Partition

If there is not enough unused space in the backup partition on your hard disk, DISE will resize the partition. DISE will display the minimum, maximum, and recommended sizes for the backup partition. You choose the size you want.

DISE takes the space from the FAT, FAT32, or NTFS partition that you are backing up. If there is not enough unused space in that partition to take, you will not be able to resize the backup partition and create an image file. You can delete files from the FAT, FAT32, or NTFS partition to create more unused space on the hard disk.

Restoring a Backup Image

You can restore either a factory image or a backup image you created. Be aware that restoring a backup image will replace the contents of the C:\ partition with the image you restore.

1. Disable virus protection software. If virus protection software is enabled, DISE will hang.
2. From the DISE main window, click **Options** > **Restore Backup** to restore an image you created, or click **Options** > **Restore Factory Backup** to restore the factory image.

   DISE shuts down to DOS and restores the image file.

Drivers and Applications Restore CD

The Drivers and Application CD can be used to selectively re-install drivers and/or applications that may have been un-installed or corrupted. Please refer to installation instructions located in the Drivers and Applications Restore CD.

POINT

Look for and open files with the extensions .DOC .PDF and/or .TXT.

7
Care and Maintenance

Care and Maintenance

If you use your Fujitsu LifeBook notebook carefully, you will increase its life and reliability. This section provides some tips for looking after the notebook and its devices.

CAUTION

Electrical equipment may be hazardous if misused. Operations of this product or similar products, must always be supervised by an adult. Do not allow children access to the interior of any electrical products and do not permit them to handle any cables.

Caring for your LifeBook notebook

- Your LifeBook notebook is a durable but sensitive electronic device. Treat it with respect and care.
- Make a habit of transporting it in a suitable carrying case.
- Do not attempt to service the computer yourself. Always follow installation instructions closely.
- Keep it away from food and beverages.
- If you accidentally spill liquid on your LifeBook notebook:
  1. Turn it off.
  2. Position it so that the liquid can run out.
  3. Let it dry out for 24 hours, or longer if needed.
  4. If your notebook will not boot after it has dried out, call your support representative.
- Do not use your Fujitsu LifeBook notebook in a wet environment (near a bathtub, swimming pool).
- Always use the AC adapter and batteries that are approved for your notebook.
- Avoid exposure to sand, dust and other environmental hazards.
- Do not expose your notebook to direct sunlight for long periods of time as temperatures above 140° F (60° C) may damage your notebook.
- Keep the covers closed on the connectors and slots when they are not in use.
- Do not put heavy or sharp objects on the computer.
- If you are carrying your LifeBook notebook in a briefcase, or any other carrying case, make sure that there are no objects in the case pressing on the lid.
- Never position your notebook such that the DVD/CD-RW drive is supporting the weight of the notebook.
- Do not drop your notebook.
- Do not touch the screen with any sharp objects.

Cleaning your LifeBook notebook

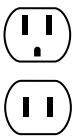
- Always disconnect the power plug. (Pull the plug, not the cord.)
- Clean your LifeBook notebook with a damp, lint-free cloth. Do not use abrasives or solvents.
- Use a soft cloth to remove dust from the screen. Never use glass cleaners.

Storing your LifeBook notebook

- If storing your notebook for a month or longer, turn your LifeBook notebook off, charge the battery, then remove and store all Lithium ion batteries.
- Store your notebook and batteries separately. If you store your LifeBook with a battery installed, the battery will discharge, and battery life will be reduced. In addition, a faulty battery might damage your LifeBook.
- Store your Fujitsu LifeBook in a cool, dry location. Temperatures should remain between 13°F (-25°C) and 140°F (60°C).

Traveling with your LifeBook notebook

- Do not transport your notebook while it is turned on.
- Do not check your notebook as baggage. Carry it with you.
- Always bring your backup disk and Drivers and Applications CD that came with your notebook when you travel. If you experience system software problems while traveling, you may need it to correct any problems.
- Never put your notebook through a metal detector. Have your notebook hand-inspected by security personnel. You can however, put your notebook through a properly tuned X-ray machine. To avoid problems, place your notebook close to the entrance of the machine and remove it as soon as possible or have your notebook hand-inspected by security personnel. Security officials may require you to turn your notebook On. Make sure you have a charged battery on hand.
- When traveling with the hard drive removed, wrap the drive in a non-conducting materials (cloth or paper). If you have the drive checked by hand, be ready to install the drive if needed. Never put your hard drive through a metal detector. Have your hard drive hand-inspected by security personnel. You can however, put your hard drive through a properly tuned X-ray machine.
- Take the necessary plug adapters if you're traveling overseas. Check the following diagram to determine which plug adapter you'll need or ask your travel agent.

Outlet Type	Location
	United States, Canada, parts of Latin America, Mexico, Japan, Korea, the Philippines, Taiwan
	Russia and the Commonwealth of Independent States (CIS), most of Europe, parts of Latin America, the Middle East, parts of Africa, Hong Kong, India, most of South Asia
	United Kingdom, Ireland, Malaysia, Singapore, parts of Africa
	China, Australia, New Zealand

BATTERIES

Caring for your Batteries

- Always handle batteries carefully.
- Do not short-circuit the battery terminals (that is, do not touch both terminals with a metal object). Do not carry lose batteries in a pocket or purse where they may mix with coins, keys, or other metal objects. Doing so may cause an explosion or fire.
- Do not drop, puncture, disassemble, mutilate or incinerate the battery.
- Recharge batteries only as described in this manual and only in ventilated areas.
- Do not leave batteries in hot locations for more than a day or two. Intense heat can shorten battery life.
- Do not leave a battery in storage for longer than 6 months without recharging it.

Increasing Battery Life

- Power your LifeBook notebook through the AC or optional auto/airline adapter whenever possible.
- If your notebook is running on battery power all day, connect it to the AC adapter overnight to recharge the battery.
- Keep brightness to the lowest level comfortable.
- Set the power management for maximum battery life.
- Put your notebook in Suspend mode when it is turned on and you are not actually using it.
- Limit your media drive access.
- Disable the DVD/CD-RW Combo Drive auto insert notification function.
- Always use fully charged batteries.
- Eject PCMCIA™ cards when not in use.

FLOPPY DISKS AND DRIVES

Caring for your Floppy Disks

- Avoid using the floppy disks in damp and dusty locations.
- Never store a floppy disk near a magnet or magnetic field.
- Do not use a pencil or an eraser on a disk or disk label.
- Avoid storing the floppy disks in extremely hot or cold locations, or in locations subject to severe temperature changes. Store at temperatures between 50° F (10°C) and 125°F (52°C).
- Do not touch the exposed part of the disk behind the metal shutter.

Caring for your Floppy Disk Drive

- To clean, wipe the floppy disk drive clean with a dry soft cloth, or with a soft cloth dampened with water or a solution of neutral detergent. Never use benzene, paint thinner or other volatile material.
- Avoid storing the floppy disk drive in extremely hot or cold locations, or in locations subject to severe temperature changes. Store at temperatures between 50° F (10°C) and 125°F (52°C).
- Keep the floppy disk drive out of direct sunlight and away from heating equipment.
- Avoid storing the floppy disk drive in locations subject to shock and vibration.
- Never use the floppy disk drive with any liquid, metal, or other foreign matter inside the floppy disk drive or disk.
- Never disassemble or dismantle your floppy disk drive.

MEDIA CARE

Caring for your Media (DVD/CD-RW/CD-ROM)

Media discs are precision devices and will function reliably if given reasonable care.

- Always store your media disc in its case when it is not in use.
- Always handle discs by the edges and avoid touching the surface.
- Avoid storing any media discs in extreme temperatures.
- Do not bend media discs or set heavy objects on them.
- Do not spill liquids on media discs.
- Do not scratch media discs.
- Do not get dust on media discs.
- Never write on the label surface with a ballpoint pen or pencil. Always use a felt pen.
- If a media disc is subjected to a sudden change in temperature, cold to warm condensation may form on the surface. Wipe the moisture off with a clean, soft, lint free cloth and let it dry at room temperature. DO NOT use a hair dryer or heater to dry media discs.
- If a disc is dirty, use only a DVD/CD cleaner or wipe it with a clean, soft, lint free cloth starting from the inner edge and wiping to the outer edge.

Caring for your DVD/CD-RW Drive

Your DVD/CD-RW drive is durable but you must treat it with care. Please pay attention to the following points:

- The drive rotates the compact disc at a very high speed. Do not carry it around or subject it to shock or vibration with the power on.
- Avoid using or storing the drive where it will be exposed to extreme temperatures.
- Avoid using or storing the drive where it is damp or dusty.
- Avoid using or storing the drive near magnets or devices that generate strong magnetic fields.
- Avoid using or storing the drive where it will be subjected to shock or vibration.
- Do not disassemble or dismantle the DVD/CD-RW drive.
- Occasional use of a commercially available lens cleaner kit is recommended to maintain your drive.

PC CARDS

Caring for your PC Cards

PC Cards are durable, but you must treat them with care. The documentation supplied with your PC Card will provide specific information, but you should pay attention to the following points:

- To keep out dust and dirt, store PC Cards in their protective sleeves when they are not installed in your LifeBook notebook.
- Avoid prolonged exposure to direct sunlight or excessive heat.
- Keep the cards dry.
- Do not flex or bend the cards, and do not place heavy objects on top of them.
- Do not force cards into the slot.
- Avoid dropping cards, or subjecting them to excessive vibration.

8 Specifications

Specifications

This section provides the hardware and environmental specifications for your Fujitsu LifeBook notebook. Specifications of particular configurations will vary.

CONFIGURATION LABEL

There is a configuration label located on the bottom of your LifeBook notebook. *(See figure 2-9 on page 10 for location)* This label contains specific information regarding the options you've chosen for your notebook. Following is an example label and information on how to read your own configuration label.

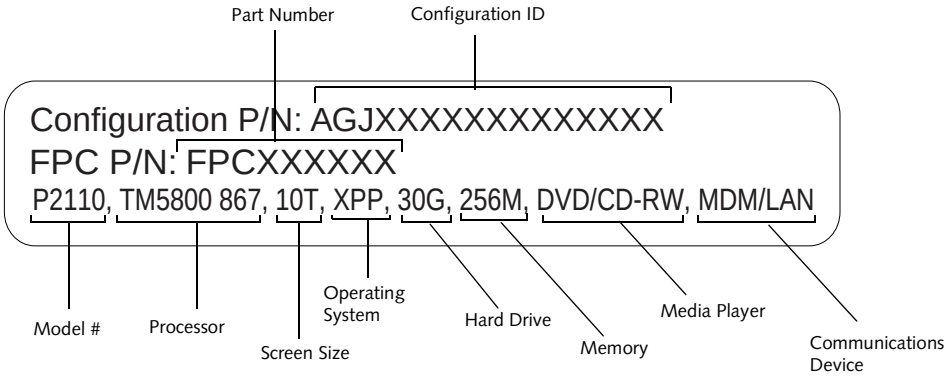


Figure 8-1 Configuration Label

MICROPROCESSOR

- 867MHz Crusoe™ TM5800 processor with LongRun™ Power Management
- 133MHz bus speed
- 512K on-die L2 cache memory

MEMORY

System Memory*
256MB, expandable to 384MB SDRAM
(256MB on-board, one slot)

* Transmeta CPU uses 16MB of RAM for Code Morphing Software (CMS). For more information on CMS, refer to the Transmeta web site at: www.transmeta.com.

VIDEO

Built-in color flat-panel TFT active matrix LCD display with simultaneous display capability

Video Color and Resolution
10.6" TFT wide-SXGA

- Internal: 1280 x 768 pixel resolution, 16M colors
- External: 1280 x 1024 pixel resolution, 16M colors
  Simultaneous Video = Yes (1024 x 768, 16M colors)
  XGA, SVGA and VGA compatible

Video RAM
ATI Rage Mobility-M1 with 8MB embedded Video RAM

AUDIO

- SigmaTel STAC9757T codec with 18-bit stereo audio
- SigmaTel Surround Stereo Enhancement
- Stereo headphone jack, 200 mVrms (@32 ohms), 1 Vrms (@10Kohms)
- Stereo line out jack (SPDIF), 1 Vrms (@10 Kohms)
- Mono microphone jack, 100 mVrms max.
- Dolby Headphone signal processing utility (in the InterVideo DVD software)
- Two built-in stereo speakers, 20 mm diameter (Stereo)

MASS STORAGE DEVICE OPTIONS

Single Flexible Bay devices:

External USB Floppy Disk Drive
External 3.5" Floppy Disk Drive, which accommodates 1.44MB or 720KB floppy disks

Hard Drive
30GB or 20GB fixed hard drive

DVD/CD-RW Combo Drive
8x DVD / 10x CD-RW / 16x CD-R / 24x CD-ROM

FEATURES

Integrated Pointing Device
Quick Point pointing device with scroll button

Communications
Modem: Internal V.90 standard 56K fax/modem (ITU V.90, 56K data, 14.4K fax)

LAN: 10/100 Base-TX Ethernet

IEEE 1394 and S-Video Out

LifeBook Application Panel
The Application Launcher buttons on your LifeBook notebook default to the following applications:

Table 8-1 Application Launcher Defaults

Button Label	Button Function
A	Launch Notepad
B	Launch Fujitsu Service Assistant
	Launch Netscape Messenger

Theft Prevention Lock Slot
Lock slot for use with physical restraining security systems.

DEVICE PORTS

- PC Card slot for one Type II card: PCMCIA Standard 2.1 with CardBus support
- One 16-pin mini-VGA connector for external monitor (see Display specifications)
- Two USB (Universal Serial Bus) connectors for input/output devices
- One S-Video Out jack
- One modular modem (RJ-11) connector
- One LAN (RJ-45) connector
- One IEEE 1394 connector
- One Line-Out/Optical Digital (SPDIF) jack
- One stereo headphone jack. (See Audio specifications)
- One mono microphone jack. (See Audio specifications)

KEYBOARD

Built-in keyboard with all functions of 101 key keyboards.

- Total number of keys: 83
- Function keys: [F1] through [F12]
- Feature extension key: [Fn]
- Two Windows keys: one Start keys and one application key
- Key pitch: 17 mm
- Key stroke: 2 mm
- Built-in Quick Point pointing device with left and right buttons and scroll button.
- Built-in Palm Rest

External Keyboard Support
USB-compatible

External Numeric Keypad Support
USB-compatible

External Mouse Support
USB-compatible

POWER

Batteries
One main Lithium ion battery, rechargeable, 10.8V, 1900 mAh

Optional high-capacity Lithium ion battery, rechargeable, 10.8V, 3800 mAh

Optional Flexible Bay battery: Lithium ion battery, rechargeable, 10.8V, 3400 mAh

AC Adapter
Autosensing 100-240V AC, 40W, supplying 16V DC, 2.5A, to the LifeBook notebook, Fujitsu Model FPCAC28AP, which includes an AC cable.

Power Management
Conforms to ACPI (Advanced Configuration and Power Interface).

DIMENSIONS AND WEIGHT

Overall Dimensions
Approximately 10.6"(w) x 7"(d) x 1.59"(h) (270mm x 178mm x 40.4mm)

Weights
Approximately 3.3 lbs (1.5 kg) with standard main battery and DVD/CD-RW combo drive

Approximately 2.8 lbs. (1.29 kg) with standard main battery and weight saver

ENVIRONMENTAL REQUIREMENTS

Temperature
Operating: 41° to 95° F (5° to 35° C)
Non-operating: 5° to 140° F (–15° to 60° C)

Humidity
Operating: 20% to 85%, relative, non-condensing
Non-operating; 8% to 85%, relative, non-condensing

Altitude
Operating: 10,000 feet (3,048 m) maximum

POPULAR ACCESSORIES

For ordering or additional information on Fujitsu accessories please visit our Web site at: www.fujitsupc.com or call 1-800-733-0884.

Memory Upgrade

- 128MB SDRAM

Expansions

- External USB floppy drive

Power

- Main Lithium ion battery
- High-capacity main Lithium ion battery
- Auto/Airline Adapter
- AC Adapter
- 2-Bay Battery Charger

Flexible Bay Devices

- Additional DVD/CD-RW combo drive
- Modular 2nd Lithium ion Battery

Additional Accessories

- Mini-VGA Cable
- USB Hub
- USB Camera
- TeleAdapt 16' TeleCord
- Notebook Guardian Lock
- IBM Modem Saver

Carrying Cases

- Diplomat
- Dual Carrying Case
- Slipcase

PRE-INSTALLED SOFTWARE

Depending on your pre-installed operating system, your Fujitsu LifeBook notebook comes with pre-installed software for playing audio and video files of various formats. In addition there is file transfer software, virus protection software and Power Management software.

LEARNING ABOUT YOUR APPLICATION SOFTWARE

Tutorials

All operating systems and most application software have tutorials built into them upon installation. We highly recommend that you step through the tutorial before you use an application.

Manuals

Included with your notebook you will find manuals for your installed operating system and other pre-installed software. Any manuals that are not included, are available online through the help system of the software. We recommend that you review these manuals for general information on the use of these applications.

Drive Image Special Edition (DISE) by PowerQuest

DISE is used to restore the factory image and restore the system to its original state. For future backup, a section of your hard drive contains an image of the original installed software and utilities. If necessary, you can restore your system to the state in which it was shipped from Fujitsu. *(See Drive Image® Special Edition (DISE) on page 76 for more information)*

Adobe Acrobat Reader

The Adobe Acrobat Reader, located in the Service and Support Software folder, allows you to view, navigate, and print PDF files from across all of the major computing platforms.

LifeBook Application Panel Software

Your LifeBook notebook is pre-installed with software utilities that let you operate and configure your LifeBook Application Panel.

Your notebook is pre-installed with software utilities that let you operate and configure your LifeBook Application Panel. These utilities are found under the Start menu, under Programs, then LifeBook Application Panel. They include a Media Player, Application Panel Setup. Application Panel Guide, Activate Panel and Deactivate Panel.

POINT

As your notebook does not support the CPU Clock control, the option is not active within the Power Control menu of BatteryAid.

Netscape 6

Browser suite, including integrated E-mail accounts, instant messaging, address book, search, and other tools and plug-ins.

Fujitsu Service Assistant

The LifeBook notebook includes a sophisticated, full-featured troubleshooting utility that can assist you in solving most problems you might encounter. The Fujitsu Service Assistant is an interactive support tool that provides automated diagnosis and solutions for your hardware and software problems.

McAfee.com Scan for Virus

Scan for Virus, by McAfee.com, is an antivirus program designed to protect your LifeBook notebook from computer viruses. It assists in the protection of the data currently residing on your hard disk from destruction or contamination. *(See your online help or manual for more information on how and when to run this program)* Scan for Virus allows free updates for 30 days from the time you register the software with McAfee.com.

WINDOWS XP SOFTWARE ONLY

Fujitsu HotKey Utility
Utility for adjusting the brightness level on your LifeBook.

Earthlink 5.0
Software suite that allows you to connect with the Internet.

Quicken New User Edition (Windows XP Home only)
Quicken New User Edition by Intuit is a personal money management program. It has features such as portfolio management, account registries, on-line banking and bill paying features. This application is for new users who are using Quicken software for the first time. Full version upgrade information is available on line.

MS Works (Windows XP Home only)
Microsoft Works is a suite of software containing the basic tools to write letters and reports, track family and friends with address books, manage home finances, and create a home inventory.

WINDOWS 2000 SOFTWARE ONLY

Fujitsu BatteryAid
BatteryAid allows you to control the display brightness of your notebook in order to maximize battery life. *(See your BatteryAid online help for more information on the correct way to use this program)*
New support information for the Fujitsu Service Assistant tool may be available after the purchase of your notebook. You should periodically connect to the Internet while using the Fujitsu Service Assistant tool to ensure that you are using the most current version.

Regulatory Information

CAUTION

Changes or modifications not expressly approved by Fujitsu could void this user's authority to operate the equipment

FCC NOTICES

Notice to Users of Radios and Television

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet that is on a different circuit than the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device.

Notice to Users of the US Telephone Network

Your LifeBook notebook may be supplied with an internal modem which complies with Part 68 of the FCC rules. On this LifeBook notebook is a label that contains the FCC Registration Number and the Ringer Equivalence Number (REN) for this equipment among other information. If requested, the user must provide their telephone company with the following information:

1. The telephone number to which the LifeBook notebook is connected.
2. The Ringer Equivalence Number (REN) for this equipment.
3. The equipment requires a standard modular jack type USOC RJ-11C which is FCC Part 68 compliant.
4. The FCC Registration Number.

This equipment is designed to be connected to the telephone network or premises wiring using a standard modular jack type USOC RJ-11C which is FCC Part 68 compliant and a line cord between the modem and the telephone network with a minimum of 26AWG.

The REN is used to determine the number of devices that you may connect to your telephone line and still have all of those devices ring when your number is called. Too many devices on one line may result in failure to ring in response to an incoming call. In most, but not all, areas the sum of the RENs of all of the devices should not exceed five (5). To be certain of the number of devices you may connect to your line, as determined by the RENs, contact your local telephone company.

If this equipment causes harm to the telephone network, your telephone company may discontinue your service temporarily. If possible, they will notify you in advance. If advance notice is not practical they will notify you as soon as possible. You will also be advised of your right to file a complaint with the FCC.

This fax modem also complies with fax branding requirements per FCC Part 68.

Your telephone company will probably ask you to disconnect this equipment from the telephone network until the problem is corrected and you are sure that the equipment is not malfunctioning. This equipment may not be used on coin-operated telephones provided by your telephone company. Connection to party lines is subject to state tariffs. Contact your state's public utility commission, public service commission or corporation commission for more information.

This equipment includes automatic dialing capability. When programming and/or making test calls to emergency numbers:

- Remain on the line and briefly explain to the dispatcher the reason for the call.
- Perform such activities in off-peak hours, such as early morning or late evening.

FCC rules prohibit the use of non-hearing aid compatible telephones in the following locations or applications:

- All public or semi-public coin-operated or credit card telephones.
- Elevators, highways, tunnels (automobile, subway, railroad or pedestrian) where a person with impaired hearing might be isolated in an emergency.
- Places where telephones are specifically installed to alert emergency authorities such as fire, police or medical assistance personnel.
- Hospital rooms, residential health care facilities, convalescent homes and prisons.
- Workstations for the hearing impaired.
- Hotel, motel or apartment lobbies.
- Stores where telephones are used by patrons to order merchandise.
- Public transportation terminals where telephones are used to call taxis or to reserve lodging or rental cars.
- In hotel and motel rooms as at least ten percent of the rooms must contain hearing aid-compatible tele-

phones or jacks for plug-in hearing aid compatible telephones which will be provided to hearing impaired customers on request.

DOC (INDUSTRY CANADA) NOTICES

Notice to Users of Radios and Television

This Class B digital apparatus meets all requirements of Canadian Interference-Causing Equipment Regulations.

CET appareil numérique de la class B respecte toutes les exigence du Réglement sur le matérial brouilleur du Canada.

Notice to Users of the Canadian Telephone Network

NOTICE: This equipment meets the applicable Industry Canada Terminal Equipment Technical Specifications. This is confirmed by the registration number. The abbreviation, IC, before the registration number signifies that registration was performed based on a Declaration of Conformity indicating that Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment.

Before connecting this equipment to a telephone line the user should ensure that it is permissible to connect this equipment to the local telecommunication facilities. The user should be aware that compliance with the certification standards does not prevent service degradation in some situations.

Repairs to telecommunication equipment should be made by a Canadian authorized maintenance facility. Any repairs or alterations not expressly approved by Fujitsu or any equipment failures may give the telecommunication company cause to request the user to disconnect the equipment from the telephone line.

NOTICE: The Ringer Equivalence Number (REN) for this terminal equipment is 0.0. The REN assigned to each terminal equipment provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

CAUTION

For safety, users should ensure that the electrical ground of the power utility, the telephone lines and the metallic water pipes are connected together. Users should NOT attempt to make such connections themselves but should contact the appropriate electric inspection authority or electrician. This may be particularly important in rural areas.

Avis Aux Utilisateurs Du Réseau Téléphonique Canadien

AVIS: Le présent matériel est conforme aux spécifications techniques d'Industrie Canada applicables au matériel terminal. Cette conformité est confirmée par le numéro d'enregistrement. Le sigle IC, placé devant le numéro d'enregistrement, signifie que l'enregistrement s'est effectué conformément à une déclaration de conformité et indique que les spécifications techniques d'Industrie Canada ont été respectées. Il n'implique pas qu'Industrie Canada a approuvé le matériel.

Avant de connecter cet équipement à une ligne téléphonique, l'utilisateur doit vérifier s'il est permis de connecter cet équipement aux installations de télécommunications locales. L'utilisateur est averti que même la conformité aux normes de certification ne peut dans certains cas empêcher la dégradation du service.

Les réparations de l'équipement de télécommunications doivent être eVectuées par un service de maintenance agréé au Canada. Toute réparation ou modification, qui n'est pas expressément approuvée par Fujitsu, ou toute défaillance de l'équipement peut entraîner la compagnie de télécommunications à exiger que l'utilisateur déconnecte l'équipement de la ligne téléphonique.

AVIS: L'indice d'équivalence de la sonnerie (IES) du présent matériel est de 0.0. L'IES assigné à chaque dispositif terminal indique le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas 5.

AVERTISSEMENT

Pour assurer la sécurité, les utilisateurs doivent vérifier que la prise de terre du service d'électricité, les lignes télphoniques et les conduites d'eau métalliques sont connectées ensemble. Les utilisateurs NE doivent PAS tenter d'établir ces connexions eux-mêmes, mais doivent contacter les services d'inspection d'installations électriques appropriés ou un électricien. Ceci peut être particulièrement important en régions rurales.

UL Notice

This unit requires an AC adapter to operate. Use only UL Listed Class 2 Adapters with an output rating of 16 VDC, with a current of 2.5 A.

AC Adapter output polarity:

CAUTION

The modem-to-telephone network connection must be a line cord using a minimum #26 AWG wire.

For Authorized Repair Technicians Only

WARNINGS

- For continued protection against risk of fire, replace only with the same type and rating fuse.
- Danger of explosion if Lithium (clock) battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instruction.

9 Glossary

Glossary

AC Adapter
A device which converts the AC voltage from a wall outlet to the DC voltage needed to power your LifeBook notebook.

ACPI
Advanced Configuration and Power Interface. An industry specification for the efficient handling of power consumption in mobile computers. ACPI determines how a computer's BIOS, operating system, and peripherals communicate with each other about power management.

Active-Matrix Display
A type of technology for making flat-panel displays which has a transistor or similar device for every pixel on the screen.

ADSL
Asymmetric Digital Subscriber Line. Technology for transporting high bit-rate services over ordinary phone lines.

APM
Advanced Power Management.

Auto/Airline Adapter
A device which converts the DC voltage from an automobile cigarette lighter or aircraft DC power outlet to the DC voltage needed to power your LifeBook notebook.

BIOS
Basic Input-Output System. A program and set of default parameters stored in ROM which tests and operates your LifeBook notebook when you turn it on until it loads your installed operating system from disk. Information from the BIOS is transferred to the installed operating system to provide it with information on the configuration and status of the hardware.

Bit
An abbreviation for binary digit. A single piece of information which is either a one (1) or a zero (0).

bps
An abbreviation for bits per second. Used to describe data transfer rates.

Boot
To start-up a computer and load its operating system from disk, ROM or other storage media into RAM.

Bus
An electrical circuit which passes data between the CPU and the sub-assemblies inside your LifeBook notebook.

Byte
8 bits of parallel binary information.

Cache Memory
A block of memory built into the micro-processor which is much faster to access than your system RAM and used in specially structured ways to make your overall data handling time faster.

CardBus
A faster, 32-bit version of the PC Card interface which offers performance similar to the 32-bit PCI architecture.

CD-ROM
Compact disc read only memory. This is a form of digital data storage which is read optically with a laser rather than a magnetic head. A typical CD-ROM can contain about 600MB of data and is not subject to heads crashing into the surface and destroying the data when there is a failure nor to wear from reading.

CMS
Code Morphing Software. Crusoe processor software architecture that results in longer battery life. For more information on CMS, click on the Technology link on the refer to the Transmeta web site at: www.transmeta.com.

Command
An instruction which you give your operating system. Example: run a particular application or format a floppy disk.

Configuration
The combination of hardware and software that makes up your system and how it is allocated for use.

Data
The information a system stores and processes.

DC
Direct current. A voltage or current that does not fluctuate periodically with time.

Default Value
A pre programmed value to be used if you fail to set your own.

DIMM
Dual-in-line memory module.

Disk
A spinning platter of magnetic data storage media. If the platter is very stiff it is a hard drive, if it is highly flexible it is a floppy disk, if it is a floppy disk in a hard housing with a shutter it is commonly called a diskette.

Disk Drive
The hardware which spins the disk and has the heads and control circuitry for reading and writing the data on the disk.

Diskette
A floppy disk in a hard housing with a shutter.

DMA
Direct Memory Access. Special circuitry for memory to memory transfers of data which do not require CPU action.

DMI
Desktop Management Interface. A standard that provides PC management applications with a common method of locally or remotely querying and configuring PC computer systems, hardware and software components, and peripherals.

DOS
Disk Operating System (MS-DOS is a Microsoft Disk Operating System).

Driver
A computer program which converts application and operating system commands to external devices into the exact form required by a specific brand and model of device in order to produce the desired results from that particular equipment.

ESD
Electro-Static Discharge. The sudden discharge of electricity from a static charge which has built-up slowly. Example: the shock you get from a doorknob on a dry day or the sparks you get from brushing hair on a dry day.

Extended Memory
All memory more than the 640KB recognized by MS-DOS as system memory.

FCC
Federal Communication Commission.

Floppy Disk
A spinning platter of magnetic data storage media which is highly flexible.

GB
Gigabyte.

Hard drive
A spinning platter of magnetic data storage media where the platter is very stiff.

Hexadecimal
A decimal notation for the value of a 4 bit binary number. (0-9, A, B, C, D, E, F) Example: 2F in hexadecimal = 00101111 in binary = 47 in decimal.

I/O
Input/Output. Data entering and leaving your LifeBook notebook in electronic form.

I/O Port
The connector and associated control circuits for data entering and leaving your LifeBook notebook in electronic form.

IDE
Intelligent Drive Electronics. A type of control interface for a hard drive which is inside the hard drive unit.

IEEE 1394
A type of data transfer protocol that allows for fast transfer of digital files and data with devices such as digital cameras.

IRQ
Interrupt Request. An acronym for the hardware signal to the CPU that an external event has occurred which needs to be processed.

KB
Kilobyte.

LAN
Local Area Network. An interconnection of computers and peripherals within a single limited geographic location which can pass programs and data amongst themselves.

LCD
Liquid Crystal Display. A type of display which makes images by controlling the orientation of crystals in a crystalline liquid.

Lithium ion Battery
A type of rechargeable battery which has a high power-time life for its size and is not subject to the memory effect as Nickel Cadmium batteries.

MB
Megabyte.

Megahertz
1,000,000 cycles per second.

Memory
A repository for data and applications which is readily accessible to your LifeBook notebook CPU.

MHz
Megahertz.

Modem
A contraction for **MOdulator-DEModulator**. The equipment which connects a computer or other data terminal to a communication line.

Monaural
A system using one channel to process sound from all sources.

NTSC
National TV Standards Commission. The standard for TV broadcast and reception for the USA.

Operating System
A group of control programs that convert application commands, including driver programs, into the exact form required by a specific brand and model of microprocessor in order to produce the desired results from that particular equipment.

Partition
A block of space on a hard drive which is set aside and made to appear to the operating system as if it were a separate disk, and addressed by the operating system accordingly.

PCMCIA
PCMCIA is a trademark of the Personal Computer Memory Card International Association. The Personal Computer Memory Card International Association is an organization that sets standards for add-in cards for personal computers.

Peripheral Device
A piece of equipment which performs a specific function associated with but not integral to a computer. Examples: a printer, a modem, a CD-ROM.

Pitch (keyboard)
The distance between the centers of the letter keys of a keyboard.

Pixel
The smallest element of a display, a dot of color on your display screen. The more pixels per area the clearer your image will appear.

POP3
Post Office Protocol. Protocol that is used to retrieve email from a mail server.

POST
Power On Self Test. A program which is part of the BIOS which checks the configuration and operating condition of your hardware whenever power is applied to your LifeBook notebook. Status and error messages may be displayed before the operating system is loaded. If the self test detects failures that are so serious that operation can not continue, the operating system will not be loaded.

PPPoE
Point to Point Protocol over Ethernet. A protocol for Ethernet, using a Point-to-Point Protocol (PPP), which is used for connection on the phone line.

Program
An integrated set of coded commands to your computers telling your hardware what to do and how and when to do it.

PS/2
An IBM series of personal computers which established a number of standards for connecting external devices such as keyboards and monitors.

RAM
Random Access Memory. A hardware component of your LifeBook notebook that holds binary information (both program and data) as long as it has the proper power applied to it.

RAM Module
A printed circuit card with memory and associated circuitry which allows the user to add additional memory to the computer without special tools.

Reset
The act of reloading the operating system. A reset erases all information stored in RAM.

Restart
See Reset.

Resume
To proceed after interruption. In your LifeBook notebook, this refers to returning to active operation after having been in one of the suspension states.

ROM
Read Only Memory. A form of memory in which information is stored by physically altering the material. Data stored in this way can not be changed by your LifeBook notebook and does not require power to maintain it.

SDRAM
Synchronous Dynamic Random Access Memory.

Shadow RAM
A technique of copying data or applications stored in ROM (Read Only Memory) into RAM (Random Access Memory) for access during actual operation. RAM is much faster to access than ROM, however ROM contents are not lost when power is removed. Shadowing allows permanently stored information to be rapidly accessed.

SPDIF
Sony Philips Digital Interface. Technology that allows you to download digital audio data onto a MiniDisc recorder.

SSID
Service Set Identifier. Specifies which network you are joining. Some systems allow you to specify any SSID as an option so you can join any network.

Status Indicator
A display which reports the condition of some portion of your hardware. On your LifeBook notebook this is an LCD screen just above the keyboard.

Stereo (audio)
A system using two channels to process sound from two different sources.

Stroke (keyboard)
The amount of travel of a key when it is pressed from resting to fully depressed.

Suspend
To make inoperative for a period of time. Your LifeBook notebook uses various suspension states to reduce power consumption and prolong the charge of your battery.

SVGA
Super VGA. Standard that provides 800x600 pixel resolution and a palette of 16M colors.

S-Video
Super Video. A component video system for driving a TV or computer monitor.

System Clock
An oscillator of fixed precise frequency which synchronizes the operation of the system and is counted to provide time of day and date.

TFT
Thin Film Transistor. A technology for flat display panels which uses a thin film matrix of transistors to control each pixel of the display screen individually.

UL
Underwriters Laboratories – An independent organization that tests and certifies the electrical safety of devices.

USB
Universal Serial Bus. An external bus standard that allows for fast data transfer. A single USB port can be used to connect up to 127 peripheral devices, such as mice, modems, and scanners.

VGA
Video Graphics Array. A video display standard originally introduced by IBM with the PS/2 series of personal computers. Provides resolutions of 720 x 400.

VRAM
Video Random Access Memory. A memory dedicated to video display data and control.

WEP
Wired Equivalent Privacy. WEP is a protocol for increasing privacy over wireless LANs. The protocol works by encrypting data while being transmitted over radio waves.

WFM
Wired for Management is Intel's broad-based initiative to reduce the total cost of ownership (TCO) of business computing without sacrificing power and flexibility.

Wi-Fi Compatible

Wi-Fi (**Wireless Fidelity**) identifies that the product has passed the interoperability test, supplied by the WECA (Wireless Ethernet Compatibility Alliance), which guarantees the interoperability of wireless IEEE 802.11 LAN products. For more information on the Wi-Fi standard, go to the WECA website at: www.wirelessethernet.com.

Write Protect
Prevent alteration of the binary state of all bits in a storage media. Example: all information on a device such as a floppy diskette; a block of space in a storage media such as a partition of a hard drive; a file or directory of floppy diskette or hard drive.

XGA
Extended graphics array. Standard that provides resolutions of 640x480 or 1024x764, supporting 64k colors.

Index

A

B

C

D

E

F

G

H

I

K

L

M

N

O

P

Q

R

S

T

U

V

W