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B5FH-6571-01EN-00

FC

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: Model Configuration:
LifeBook B2620

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 B Series Notebook
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Preface

Preface

ABOUT THIS GUIDE

The LifeBook® B Series notebook from Fujitsu PC Corporation is a powerful mini-notebook computer. It is powered by an Intel® Pentium™ III microprocessor, has a built-in color touch screen display, and brings the computing power 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 LifeBook notebook is compatible with the IBM® PC AT.

It comes with Windows® 98 Second Edition, Windows® 2000 Professional, Windows XP Home, or Windows XP Professional pre-installed.

Your 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 notebook.

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

🖎 P O I N T

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

🔥 C A U T I O N

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.

⚠ W A R N I N G

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

FPC CONTACT INFORMATION

Service and Support

You can contact FPC Service and Support 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 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.

🖎 P O I N T

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

WARRANTY

Your LifeBook notebook is backed by a three year International Limited Warranty and includes toll-free technical support. Check the service kit that came with your notebook for warranty terms and conditions.

2

Getting to Know Your LifeBook
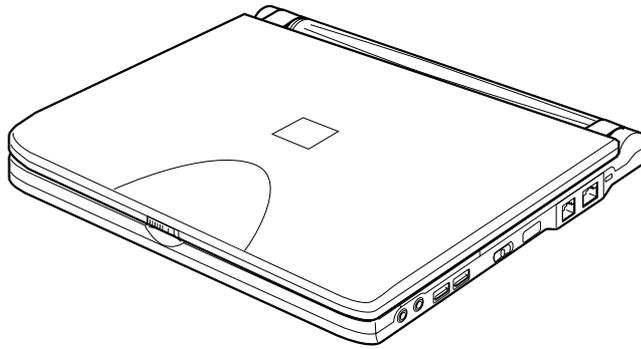
Figure 2-1 Fujitsu LifeBook B Series notebook (LAN model shown)

Overview

This section describes the components of your Fujitsu LifeBook B Series notebook. We strongly recommend that you read it before using your LifeBook 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.

For a pre-configured model you should have:

- LifeBook B Series notebook *(Figure 2-1)*
- AC adapter with AC power cord *(Figure 2-2)*
- Phone/Modem (RJ-11) telephone cable
- Stylus (located in stylus holder)
- Two additional pointer caps
- Driver and Application Restore CD
- Getting Started Guide
- User's Guide (this document)
- International Limited Warranty Brochure
- Microsoft Windows Manual and Certificate of Authenticity
- Premium Care Registration card and envelope

Depending upon the configuration of your notebook, you will have one of the following battery configurations:

- One main Lithium ion battery pre-installed, or,
- One main high-capacity Lithium ion battery (pre-installed), or,
- One main Lithium ion battery pre-installed and one spare main high-capacity Lithium ion battery

You may also have one or more of the following devices in the box:

- External USB Floppy Disk Drive *(Figure 2-4)*, and/or,
- Port Replicator *(Figure 2-3)*
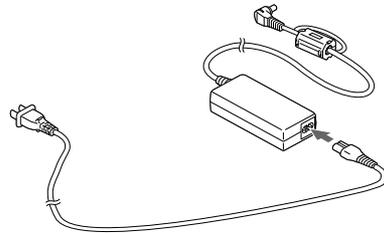
Figure 2-2 AC Adapter
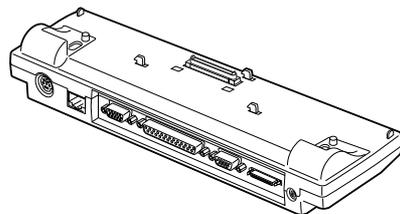
Figure 2-3 Optional Port Replicator (LAN model shown)
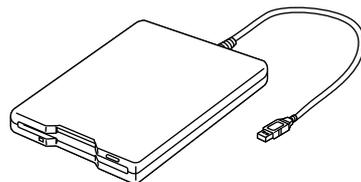
Figure 2-4 External USB Floppy Disk Drive

Touch Screen Stylus

Suspend/Resume Button

Status Indicator Panel

Closed Cover Switch

Cursor Control

Built-in
Microphone

Display Panel Latch

Display Panel

LifeBook Security/
Application Panel

Keyboard

Quick Point
Pointing Device
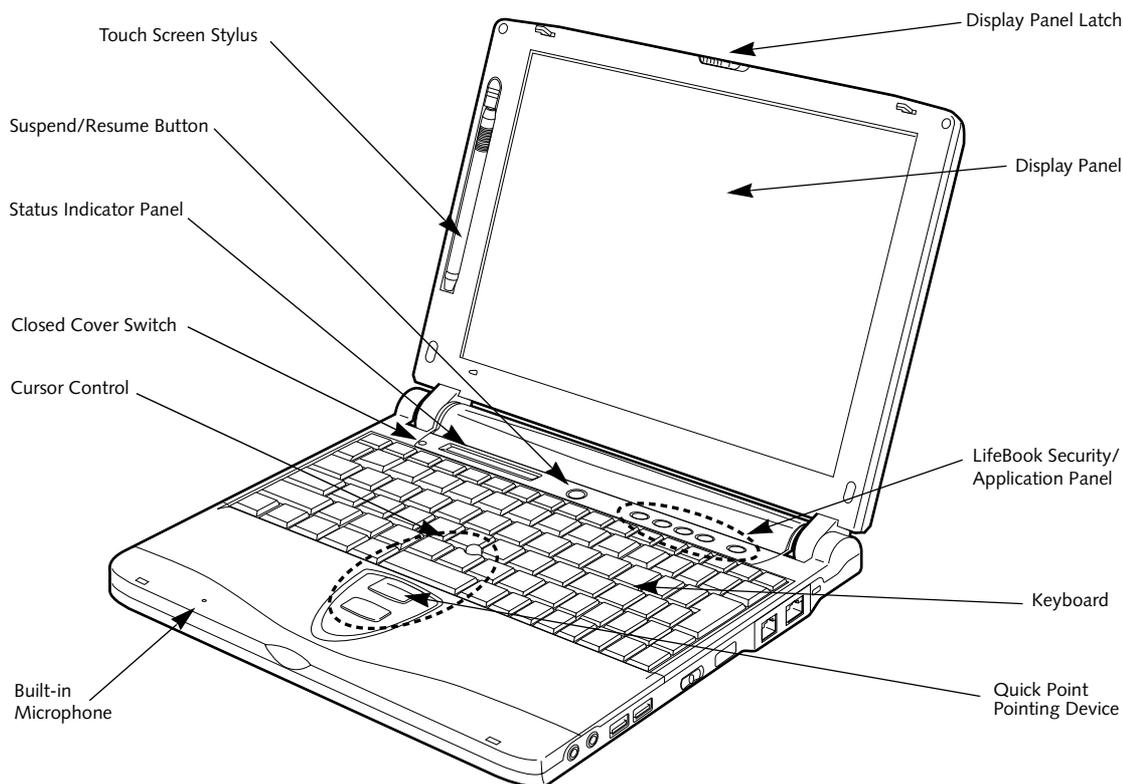
Figure 2-5 LifeBook notebook with display open

Locating the Controls and Connectors

TOP AND FRONT COMPONENTS
The following is a brief description of your LifeBook notebook's top and front components. *(Figure 2-5)*

Touch Screen Stylus
The stylus is used as the pointing device for the touch screen.

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

Suspend/Resume Button
The Suspend/Resume button allows you to suspend notebook activity without powering off, resume your notebook from standby mode, and power on your notebook when it has been shut down from the Windows operating system. See "Suspend/Resume Button" on page 32.

Display Panel Latch
The display panel latch locks and releases the display panel.

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 12.

LifeBook Security/Application Panel
The LifeBook Security/Application Panel provides hardware security and one-touch application launch capability. See "LifeBook Security/ Application Panel" on page 20.

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 16.

Keyboard
A full-function keyboard with dedicated Windows keys. See "Keyboard" on page 14.

Built-in Microphone
The built-in microphone allows mono audio input.

Display Panel
The display panel is a color LCD panel with back lighting for the display of text and graphics and Touch Screen functionality.

DC Power Jack

Air Vents

PC Card Slots

External Monitor Port
(behind cover)

PC Card Eject/Lock Button
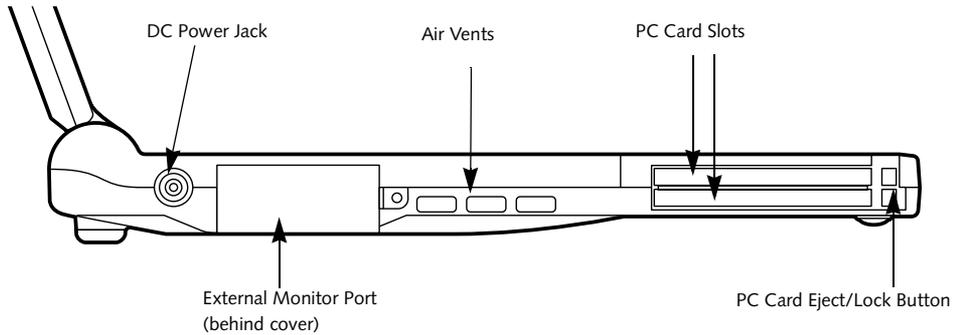
Figure 2-6 LifeBook notebook left-side panel

LEFT-SIDE PANEL COMPONENTS

Following is a brief description of your LifeBook note-
book's left-side components.

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 2-6)

External Monitor Port

The external monitor port allows you to connect an
external VGA or SVGA CRT monitor. Note that when
the optional Port Replicator is attached to the system,
you must use the external monitor port on the Port
Replicator rather than the port on the system. *(Figure 2-
6)* See "External Monitor Port" on page 48.

PC Card Slots

The PC Card Slots allow you to install two Type II or
one Type III PC Card. *(Figure 2-6)* See "PC Cards" on
page 41.
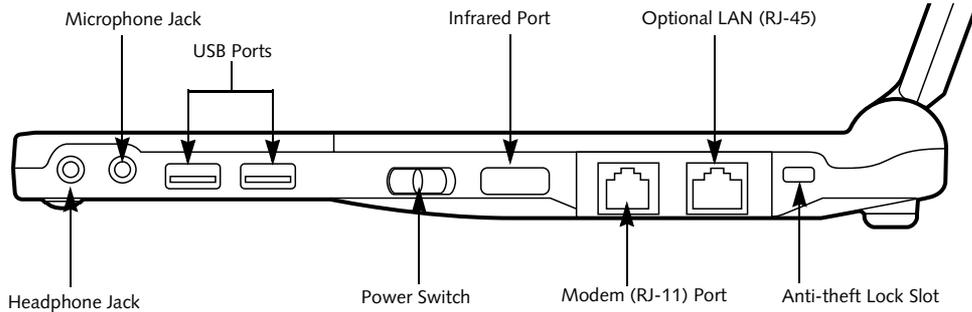
Figure 2-7 LifeBook notebook right-side panel

RIGHT-SIDE PANEL COMPONENTS

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. *(Figure 2-7)* See "Headphone Jack" on page 47.

Microphone Jack

The microphone jack allows you to connect an external mono microphone. *(Figure 2-7)* See "Microphone Jack" on page 47.

Power Switch

This switch is the main power switch for your notebook. *(Figure 2-7)*

USB Ports

The two USB ports allow you to connect Universal Serial Bus devices. *(Figure 2-7)* See "Universal Serial Bus Ports" on page 47.

Infrared Port

The fast IrDA compatible port allows you to communicate with another IrDA compatible infrared device without a cable. *(Figure 2-7)*

Modem (RJ-11) Telephone Port

The Modem (RJ-11) telephone port is for attaching a telephone line to the internal multinational 56K modem. *(Figure 2-7)*

⚠ WARNING

The internal multinational 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.

📝 POINT

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.

LAN (RJ-45) Jack

The optional internal LAN (RJ-45) port is used for an internal Fast Ethernet (10/100 Base-T/Tx) connection. *(Figure 2-7)* See "Internal LAN (RJ-45) jack (LAN model only)" on page 46.

Anti-theft Lock Slot

The anti-theft lock slot allows you to attach a optional physical lock down device. *(Figure 2-7)*

Battery Pack Lock   Battery Pack Latch

Lithium ion
Battery Bay

Docking Port
Connector

Main Unit and
Configuration
Label (approximate
location)

Memory Upgrade
Compartment

Speaker   Speaker
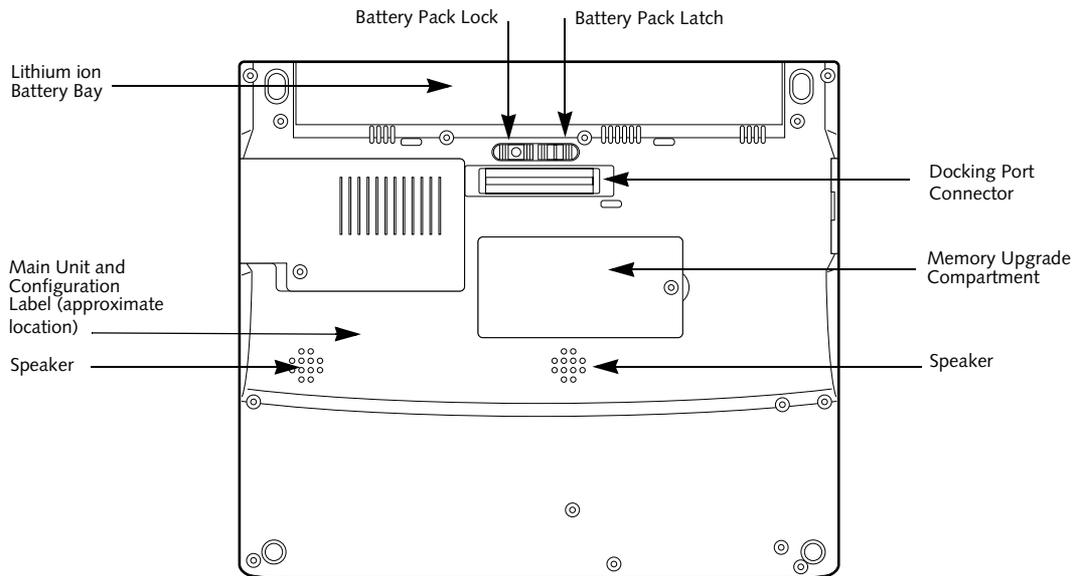
Figure 2-8 LifeBook notebook bottom panel

BOTTOM COMPONENTS
Following is a brief description of your LifeBook note-
book's bottom panel components.

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.
(Figure 2-8) See "Lithium ion Battery" on page 37.

Stereo Speakers
The built-in dual speakers allow for stereo sound.
(Figure 2-8)

Docking Port Connector
This connector allows you to connect the optional Port
Replicator. *(Figure 2-8)*

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 identi-
fies the exact version of various components of your
notebook. *(Figure 2-8)*

Memory Upgrade Compartment
Your LifeBook notebook comes with high speed
Synchronous Dynamic RAM (SDRAM). The memory
upgrade compartment allows you to expand the system
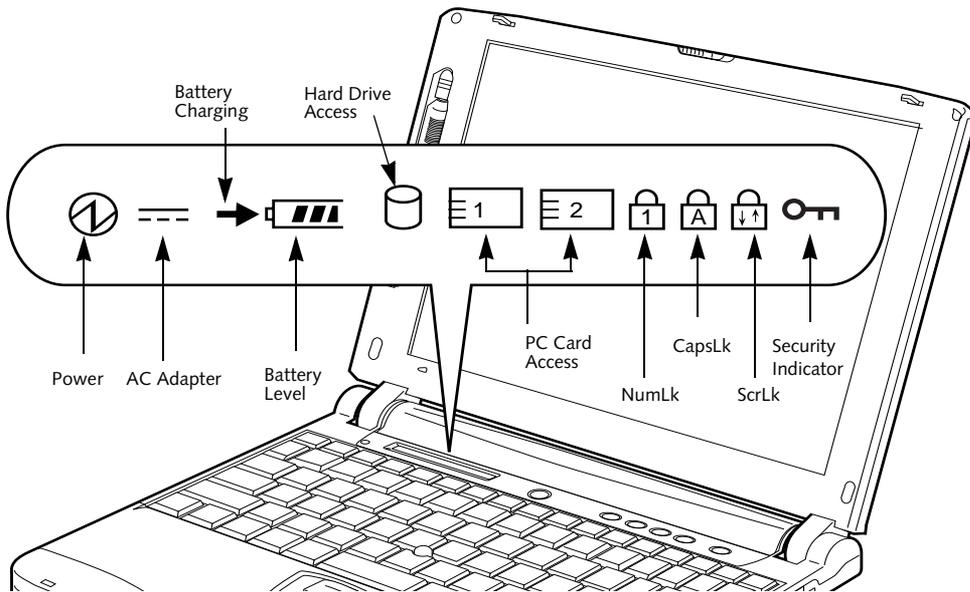
Figure 2-9 Status Indicator Panel

Status Indicator Panel

The Status Indicator displays symbols that correspond with a specific component of your LifeBook notebook. These symbols tell you how each of those components are operating. *(Figure 2-9)*

⊘ 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 notebook and that it is ready for use.
- Flashing: This means that your notebook is in Standby mode.
- Steady Off: This means that your system is either in Hibernate mode, or that your 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 LifeBook 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 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 is installed. In addition, this symbol states how much charge is available within the installed battery. The symbol will only be displayed for a battery that is currently installed in your notebook. *(Figure 2-10)*

	76%–100% Charging
	76%–100%
	51%–75%
	26%–50%
	11%–25%
	Low Warning <11%
	Critical Low or Dead Battery
	Shorted Battery
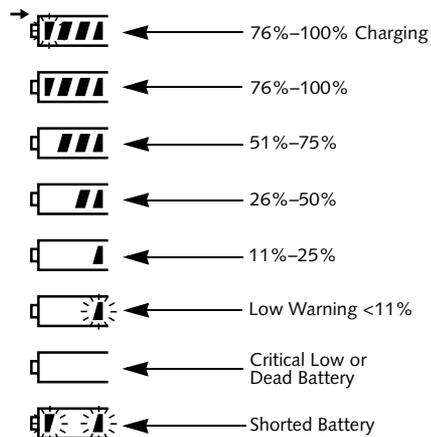
Figure 2-10 Battery Level Indicator

BATTERY CHARGING INDICATORS

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.

HARD DRIVE OR REMOVABLE MEDIA DRIVE ACCESS INDICATOR

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

PC CARD ACCESS INDICATORS

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 41.*

NUMLK INDICATOR

The NumLk indicator states that the integral keyboard is set in ten-key numeric keypad mode.

CAPSLOCK INDICATOR

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

SCRLK INDICATOR

The ScrLk indicator states that your scroll lock is active.

SECURITY INDICATOR

The Security Indicator flashes (if a password was set) when the system resumes from Off or Standby modes. You must enter the password that was set in the Security Panel before your system will resume operation.

Function Keys

Fn Key   Start Key   Numeric Keypad   Start Key   Cursor Keys

Application Key
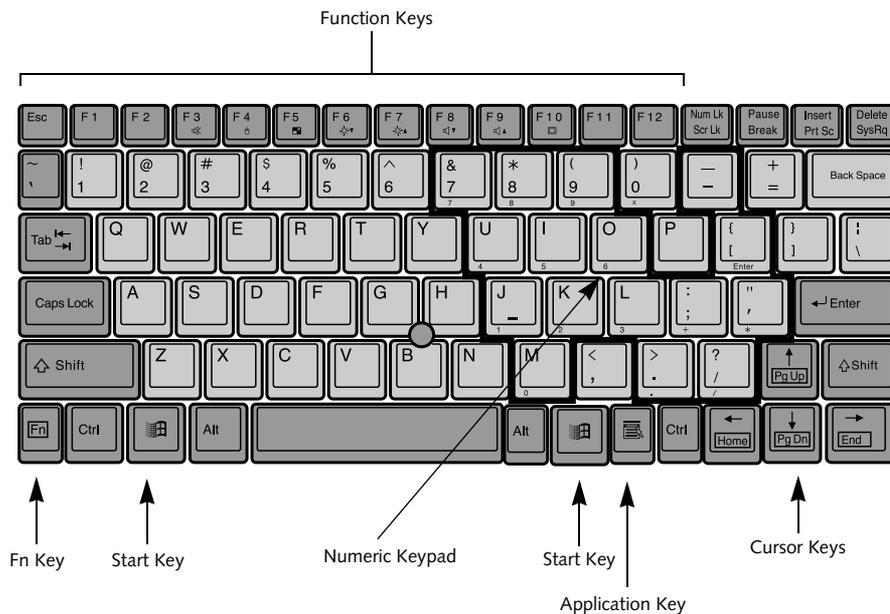
Figure 2-11 Keyboard

Keyboard

USING THE KEYBOARD

Your 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 2-11)*

■ 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 2-11)*

🖉 POINT

If you are using the optional external numerical keypad, pressing the [NumLk] key will activate the external keypad. The indicator will come on, however it will not change any of the functionality of your keyboard keys.

WINDOWS KEYS

Your LifeBook notebook has three Windows keys: two Start keys and an Application key. The two Start keys display 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 2-11)*

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 2-11)*

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 2-11)*

[Fn] Key

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 29)

- [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.

Left Button

Right Button
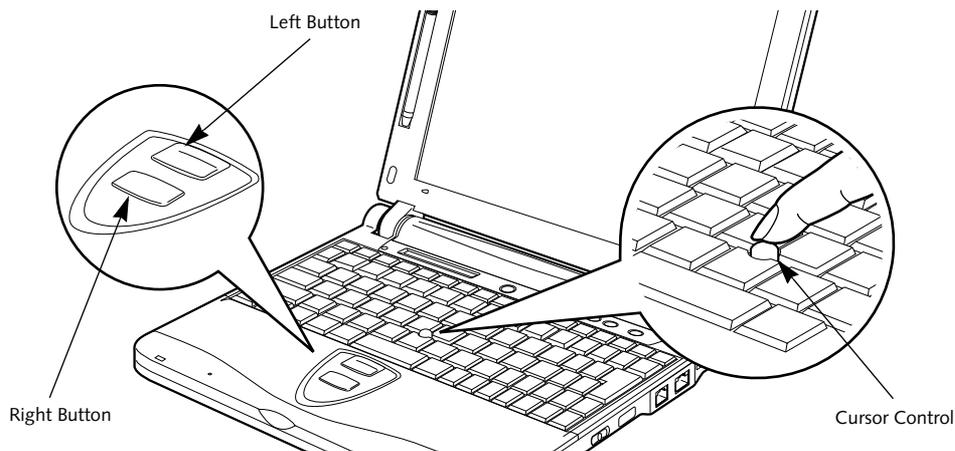
Cursor Control

Figure 2-12 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 two 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 upper button functions the same as a left mouse button while the lower button has the same function as a right mouse button. The actual functionality of the buttons may vary depending on the application that is being used. *(Figure 2-12)*

◤ P O I N T

You have the option of using any two of the following pointing devices at any given time; Quick Point, touch screen or external PS/2 mouse. *See "BIOS Setup Utility" on page 29.*

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 2-13)*

Figure 2-13 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 2-14)*

Figure 2-14 Double-clicking

◤ P O I N T

■ 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 2-15)*
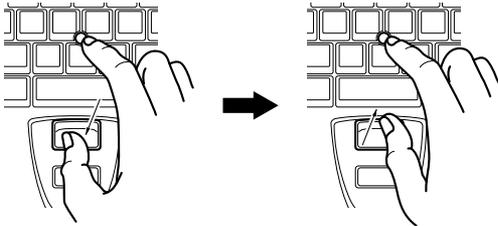
Figure 2-15 Dragging

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.

TOUCH SCREEN

The integrated Touch Screen allows you to use either the included stylus, or your fingertip, as a pointing device. You can use the stylus to click, double-click, drag items and icons, or to draw like a pen or pencil in applications that support this behavior, such as drawing or painting programs. See the documentation that came with your application for details. *(Figure 2-16)*
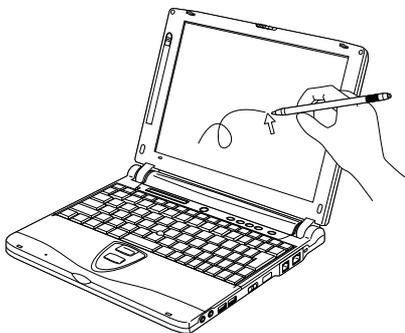
Figure 2-16 Using the Stylus with the Touch Screen

🔥 C A U T I O N

To avoid potential scratching and damage, never use anything but the included stylus or your finger with the Touch Screen.

✏ P O I N T

To purchase additional or replacement styluses, visit Fujitsu's accessories web site at: http://www.fujitsupc.com.

Clicking

To left-click, touch the object you wish to select and then lift the stylus tip immediately. You also have the option to perform the left-click operation by tapping lightly with your finger on the Touch Screen once. *(Figure 2-17)*

To right-click, go to Start --> Programs --> Fujitsu Touch Panel. From that window, you can specify a right button tool by using the Touch Panel Configuration Control button prior to the desired right mouse click. It can be used two ways: by holding down the key or by pressing the key once.
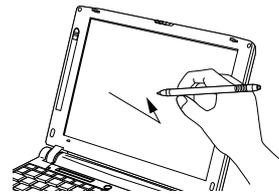
Figure 2-17 Clicking the Touch Screen

Double-Clicking

To double-click, touch the item twice, and then immediately remove the stylus tip. You also have the option to perform the double-click operation by tapping lightly with your finger on the Touch Screen twice. *(Figure 2-18)*
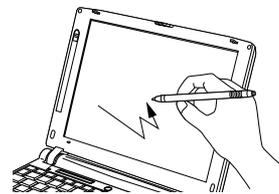
Figure 2-18 Double-clicking the Touch Screen

✏ P O I N T

If the interval between taps is too long, the double-click will not be executed.

P O I N T

Parameters for the Touch Screen can be adjusted from the Mouse Properties dialog box located in the Windows Control Panel.

Dragging

Dragging means touching the screen with the stylus, moving and then lifting the stylus. To drag, tap the Touch Screen twice with your stylus over the item you wish to move, making sure to leave your finger on the screen after the final tap. Next, move the item to its new location by moving the stylus across the screen, and then lifting the stylus to release it. Dragging can also be done using your fingertip. *(Figure 2-19)*
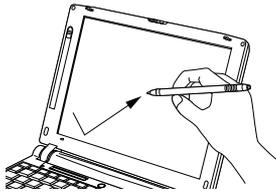
Figure 2-19 Dragging on the Touch Screen

Right-clicking

It is possible for you to perform right-click functions with the stylus.

1. Click Start -> Programs -> Fujitsu Touch Panel
   -> Touch Panel Configuration.

2. When the Right Button Tool screen appears, select either "Hold [Ctl] key down and touch the screen" or "Press [Ctl] key and touch the screen".

   When you select "Hold [Ctl]...", the stylus will act as a right mouse button when you hold down the control key while touching the screen.

   When you select "Press [Ctl]...", pressing the control key before touching the screen will cause the stylus to act as a right mouse button.

3. Click [Apply] to complete your selection.

Calibrating the Touch Screen

In order to ensure accurate tracking between the stylus and cursor, you must run the Touch Screen Calibration Utility before you use the Touch Screen for the first time, or after you change the display resolution.

To run the calibration utility:

1. On the **Start** menu, point to **Programs**. Point to **Fujitsu Touch Panel/CTouch Screen Calibration Utility**. This will open the Calibration Utility.

2. Adjust the display of your notebook to a comfortable angle and find the red (+) symbol in the upper-left corner of the display.

3. Using the stylus, firmly touch the screen directly on the (+) symbol, then pause for a moment. When you lift the stylus tip, the (+) symbol will move to the next location.

4. Repeat step 3 until you have selected a total of twelve symbols. This is the minimum number of points necessary to calibrate your touch screen.

5. Once you have selected the twelve symbols, press [ENTER], then press [ENTER] again.

P O I N T

 If you receive an error message at this point, you selected fewer than twelve symbols. Click **[OK]** and begin again at Step 2.

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.

(1) Application A Button
(2) Application B Button
(3) Internet Button
(4) E-Mail Button
Enter Button
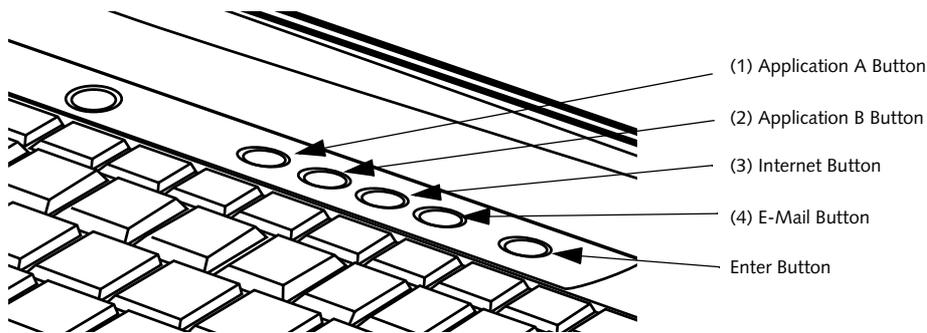
Figure 2-20 LifeBook Security/Application Panel

LifeBook Security/ Application Panel

A unique feature of your LifeBook notebook is the Security/Application Panel that allows you to secure your notebook from unauthorized use. The Security/Application Panel also allows you to launch applications with the touch of a button when your system is on.

If the security system is activated, upon starting your notebook or resuming from Standby mode the security system requires you to enter a password code using the buttons on the Security/Application Panel. After entering a correct password, your notebook resumes system operation. *(Figure 2-20)*

SETTING UP YOUR LIFEBOOK SECURITY PANEL

When you receive your LifeBook notebook, the security panel application is pre-installed without any passwords. The following sections provide detailed information on your security panel, how to set, change or remove passwords.

Numbered Buttons

Use these buttons to enter your password.*(Figure 2-20)*

Enter Button

After entering the button strokes, push this button to enter the password into the LifeBook notebook. *(Figure 2-20)*

PASSWORDS

The user and supervisor password may be set on this notebook. A supervisor password is typically the same for all LifeBook notebooks in a working group, office, or company to allow for system management. Individual LifeBook notebooks in a group environment should not use a common password. A password consists of one to five button strokes plus the enter button. A valid stroke

consists of pushing one or up to four buttons simultaneously. The following are valid button strokes:

- Pushing [4] by itself
- Pushing [2] and [3] at the same time
- Pushing [1], [2], and [4] at the same time
- Pushing [1], [2], [3], and [4] at the same time

The following are valid passwords. The numbers within braces ({ }) are button strokes using more than one button.

- {[2]+[3]}, [1], [enter]
- [4], [enter]
- {[1]+[3]}, {[2]+[3]+[4]}, [1], [4], [2], [enter]

Setting Passwords

When shipped from the factory, no passwords are set. You have a choice of having no password or setting a supervisor and user password. You must set the supervisor password before the user password.

P O I N T

- The purpose of supervisor password is to be able to bypass the user password in case the user password is forgotten. The supervisor password alone will not lock the system.
- You have to set both the supervisor and user passwords for the security panel to work.

Setting Supervisor Password

You must have set a supervisor password before setting any user passwords. The supervisor password can bypass the user password.

1. Go to the **Start** menu.
2. Click on **Run**.
3. Type in:
   C:\Program Files\Fujitsu\
   Security Panel Application\
   Supervisor\FJSECS.EXE,
   then press [Enter]

4. Follow the on-screen instructions to set the Supervisor password.

Setting User Password

1. Go to the **Start** menu.
2. Click on **Programs**.
3. Click on **Security Panel Application** and **Set User Password**.
4. Follow the on-screen instructions to set the user password.

POINT

You may change or remove the supervisor or user password by repeating the steps defined above.

OPERATING YOUR LIFEBOOK SECURITY/ APPLICATION PANEL

The security lock feature is in effect both when the system resumes from Off or Standby state. You always need to push the Suspend /Resume button to input the user password. Your system will not begin the boot sequence without entering your supervisor/user password.

From Off State

1. Turn on your system.
2. When the Security Indicator flashes, enter the password and press Enter button.

   For example, if the password is 22222,
   Press Button Number 2 five times and press Enter button.

   The LifeBook notebook will boot to normal operation.

From Standby State

1. Press your Suspend/Resume button.
2. When the Security Indicator flashes, enter the password and press Enter button.

   The notebook should resume normal operation.

Incorrect Password Entry

If an invalid supervisor or user password is entered three times in succession, the system will "beep" for about one minute. If a valid password is entered within a minute (while system beeps), the beeping will stop and the notebook will resume normal operation. If no or an invalid password is entered while the system beeps, the system will return to its previous locked state (standby or off) and the Security Indicator will go off. To reactivate the notebook after a password failure, you must press the Suspend/Resume button, then enter a correct password.

POINT

Remember the user password you specified on the Security Panel Application. If you forget the password you will not be able to use your computer. The supervisor password can override the user password.

PRECAUTIONS

Opening and Closing the Cover

Closing the cover automatically places the notebook into Standby mode. Opening the cover does not automatically place the notebook into normal operation. Instead, you must enter the proper security password after pushing the Suspend/Resume button.

Low Battery Operations

If your LifeBook notebook has low battery, pushing the suspend/resume button only turns on the Security Indicator. Your notebook does not unlock, the Security Indicator turns off after one minute. To resume normal operation, first attach a power supply to the notebook. Then you may unlock the notebook.

UNINSTALLING THE SECURITY PANEL APPLICATION

You have two options when uninstalling the security panel application:

■ Uninstall the security panel application software. This will disable all security feature.
■ Uninstall the security panel application with password still active. This will not allow any changes to the password.

Uninstalling the Security Panel Application Software

Remove passwords when User wants no password protection whatsoever and doesn't want to give anybody the utility to set a password on their computer. In this case, if passwords (supervisor, user, or both) are set, the passwords must first be cleared BEFORE removing the application. To clear passwords, follow same procedure in SETTING PASSWORD CODES except this time, select REMOVE, enter current password then click **Next**. When asked to confirm select **Yes**.

Removing Security Panel Application with Passwords Still Active

Using this feature will not allow any changes to the password.

P O I N T

Removing the applications does not remove the password. It simply removes the utility to change/add/ remove passwords. To change your password you must reinstall the application.

User:
1. Go to **Start** Menu, Click on **Control Panel**.
2. Open **Add/Remove Programs Properties** in the Control Panel.
3. Select the **Security Panel Application** in the list, and click **Add/Remove**.
4. When the Confirm File Deletion box appears, click **Yes**.

Supervisor:
1. Go to **Start** Menu, Click on **Control Panel**.
2. Open **Add/Remove Programs Properties** in the Control Panel.
3. Select the **Security Panel Application for Supervisor** in the list, and click **Add/Remove**.
4. When the Confirm File Deletion box appears, click **Yes**.

Reinstalling the Security/Application Panel
To reinstall supervisor or user security application, you will need your Drivers and Applications CD. The **Utilities\Security Application Panel** folder contains two separate folders: **Supervisor** and **User**. The setup files for supervisor and user security applications are contained in those folders.

1. Go to the **Utilities\Security Application Panel\Supervisor** folder on the CD and double-click the **setups.exe** file. The Installing Security Panel Application window will appear. Follow the instructions on the screen.
2. Go to the **Utilities\Security Application Panel\User** folder on the CD and double-click the **setup.exe** file. The Installing Security Panel Application window will appear. Follow the instructions on the screen.

Supervisor and user passwords can be set via Windows software using the FJSECS.exe and FJSECU.exe files, respectively. FJSECU.exe for the user password cannot run without first setting a supervisor password. You need to run FJSECS.exe first to set the supervisor password. Follow instructions under Setting Passwords on page 20.

If you forget both passwords, please contact Fujitsu PC Corporation Service and Support at 1-800-8FUJITSU (1-800-838-5487). Fujitsu PC Corporation charges a service fee for unlocking a password restricted LifeBook notebook. When calling please have a valid credit card

and provide proof of ownership. You will then be given instructions on where to ship your notebook.

LAUNCHING APPLICATIONS WITH THE SECURITY/APPLICATION PANEL

The security panel also enables you to launch applications with the touch of a button when your system is on. Pressing any of the buttons will launch a user-defined application. Your notebook is pre-installed with software utilities that let you operate and configure your LifeBook Security /Application Panel. These utilities are found under the Start menu, under Programs, then under Life-Book Application Panel. They include Application Panel Setup, Application Panel Guide, Activate Panel and Deactivate Panel.

Configuring your LifeBook Application Panel
When you start Windows, the LifeBook Application Panel is automatically activated. An icon resembling a finger pressing a button will appear on the system tray (the indented portion of the status bar where the clock is displayed). When you see this icon you will know that LifeBook Application Panel is active.

As an application launcher, the LifeBook Application Panel is very flexible, giving you a variety of options. To set up the Panel to best suit your needs, we have provided the Application Panel Setup utility that quickly and easily helps you make the most of this valuable feature.

To configure your LifeBook Application Panel with Application Panel Setup:
1. Click on **Start**.
2. Click on **Programs**.
3. Click on **LifeBook Application Panel**.
4. Click on **Application Panel Setup**.

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 programs, as referenced in Chapter 7 of this document.

P O I N T

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

To change an application associated with the Application buttons, click on the tab for the button you would like to reconfigure – for example, Application A. Click on Browse from 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.

The Internet tab is different. It comes set to launch your Windows default Internet browser (Internet Explorer), unless you have changed this in Windows. In order to reconfigure it to launch another program follow these easy steps:

1. Click on **Other** from the Internet browser box.
2. Click on **Browse** from Start Menu.
3. Scroll down the list of applications, and then click on the application you wish to launch with this button.
4. Click **OK**.

The button will now launch the new application. If you want to return to launching your Windows default Internet browser with this button, you need only click on "Default Internet Browser" from the Internet browser box. Be aware that you will erase the settings for the "other application". If you wish to go back to launching the "other application" from this button, you will need to reconfigure it as described above.

✎ P O I N T

If your system has dedicated one of the application launcher buttons to be an Internet launcher, the button can still be configured to launch any application you wish, not just an Internet browser.

When you have finished with Application Panel Setup click OK, and the new settings will take effect. You can reconfigure your LifeBook Application Panel as often as you like.

Deactivating and Activating the LifeBook Application Panel

To deactivate the LifeBook Application Panel, follow these easy steps:

1. Click on **Start**.
2. Click on **Programs**.
3. Click on **LifeBook Application Panel**.
4. Click on **Deactivate Panel**.

To reactivate, follow the same procedure, except for step 4. Click on **Activate Panel** instead.

✎ P O I N T

Every time you start Windows the LifeBook Application Panel is activated, even if you deactivated it before you shut down.

3
Getting Started

DC Power Jack

DC Output Cable

AC Adapter

AC Cable
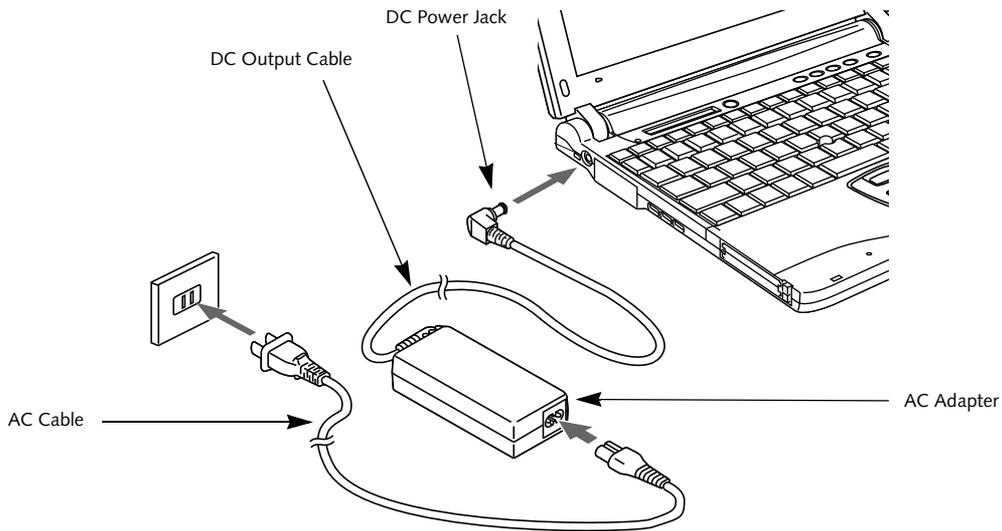
Figure 3-1 Connecting the AC Adapter

Power Sources

Your LifeBook notebook has three possible power
sources: a primary 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 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.

✎ **P O I N T**

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.

Display Panel Latch
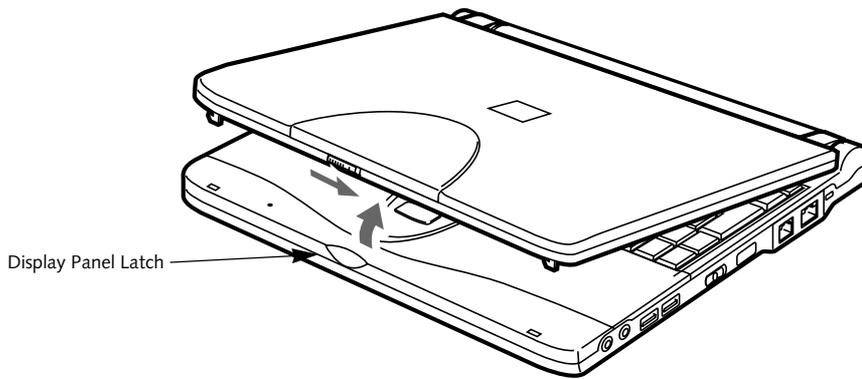
Figure 3-2 Opening the Display Panel

Display Panel

Your 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. 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 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, keyboard and power management utility.

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.

POINT

If using AC power your brightness setting is set to its highest level by default. If using battery power your brightness settings is set to approximately mid-level by default.

Power Management Utility
(Windows 98 and WIndows 2000 models only)

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

1. Double-click the BatteryAid icon in the lower right corner of your display. This will open the BatteryAid Properties dialog box.

2. Select the Fujitsu BatteryAid (2/2) 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 LifeBook 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 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
Power Switch
The power switch 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 2-7 on page 10 for location)*

▶ POINT
When you turn on your 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.

Facing the right-side panel of your notebook, move the power switch to the right, this is the On position. The power switch moved to the left is the Off position. When you are done working you can either leave your notebook in Standby mode, See "Standby Mode" on page 32., or you can turn it off. *See "Power Off" on page 34.*

⚠ CAUTION
Do not carry your 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 notebook will emit an audio warning and/or an error message will be displayed. See "Power On Self Test Messages" on page 60. 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 notebook on the next time. *See "Power On Self Test Messages" on page 60.*

BOOT SEQUENCE
The procedure for starting-up your notebook is termed the Bootup sequence and involves your LifeBook notebook's BIOS. When your 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 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 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 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 seelct 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.

POINT

If your data security settings require it, you may be asked for a password before the BIOS main menu will appear.

BOOTING THE SYSTEM

We strongly recommend that you not attach any external devices 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.

- 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 "FPC Contact Information" on page 3.* 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.

Registration

If your connection is successful, you will go to the Registration Confirmation page. On this page simply enter the requested information, and 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.

POINT

If you do not register at this time you can do it later simply by double-clicking on the **LifeBook Registration** icon on your desktop and following the instructions.

You will then go through the Fujitsu registration process. Follow the instructions on the screens, and enter all of the necessary information. Be as specific as possible so that if you need help the service and support team will be able to serve you better.

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.

POINT

- 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.

ACTIVATING ADDITIONAL UTILITIES

The first time you boot up a WIndows 98 or Windows 2000 system, you will see an icon on the desktop called Click Me! In Windows XP systems, the Click Me! icon is in the Start menu.

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.

Although the icon remains on the screen, you need invoke it only once.

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?
With Windows, just follow the on-screen instructions during the Welcome process. If you do not register during the Welcome process you can double-click on the LifeBook Registration icon on your desktop at any time and follow the instructions.

✎ POINT
Make sure you have connected a phone line to your modem before you use E-Registration.

You may also complete the pre-printed registration form and either:

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

You may also register on our Web site:

- www.fujitsupc.com/support

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

Power Management

Your 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 notebook battery from running down as quickly. For example, you can create an appropriate power saving profile, put your notebook into Standby 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.

Power Mode	System Activity	Events causing system to enter mode state
Fully On Mode	System is running. CPU, system bus, and all other interfaces operate at full speed.	▪ From Standby mode: System operation resumed (Suspend/Resume button pressed, resume on modem ring, resume on time). ▪ From Hibernation mode: Suspend/Resume button pressed. ▪ From Off mode: Suspend/Resume button pressed.
Standby Mode (Suspend-to-RAM)	Resume system logic remains powered and RAM remains powered to maintain active data. All other devices are turned off.	▪ Standby timeout occurs. ▪ Suspend request issued by software or by pressing the Suspend/Resume button. ▪ Low battery.
Hibernation Mode (Suspend-to-Disk)	Windows saves desktop state (including open files and documents) to hard disk. CPU stops. All other devices are turned off.	▪ Suspend timeout occurs. ▪ Clicking Start -> Shut Down -> Hibernate (It may be necessary to Enable Hibernate Support from Windows Power Options.) ▪ Low battery condition
Power Off	System is fully powered off except for logic components required for Suspend/Resume button and real-time clock operation.	▪ System shutdown. ▪ Low battery condition

Table 1. System Power States

SUSPEND/RESUME BUTTON

When your LifeBook notebook is active, the Suspend/Resume button can be used to manually put your LifeBook into Standby 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 Standby mode. *(See figure 2-5 on page 8 for location).*

If your 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 Standby mode by looking at the Power indicator. *See "Power Indicator" on page 12.* 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 Standby mode. If the indicator is not visible at all, the power is off or your notebook is in Hibernate mode *(See Hibernate Mode)*

STANDBY MODE

Standby mode in Windows saves the contents of your 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 Standby 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 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 Standby mode, your notebook will return to the point where it left off. To resume operation, 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.

CAUTION

If you are running your LifeBook notebook on battery power, be aware that the battery continues to discharge while your notebook is in Standby mode, though not as fast as when fully operational.

HIBERNATE MODE

The Hibernate mode saves the contents of your notebook's system memory to the hard drive as a part of the Suspend/Resume mode. Your notebook is pre-configured to perform this function. The Hibernate mode can also be configured through the system BIOS to run in other ways depending on what you need to accomplish. *See "BIOS Setup Utility" on page 29.*

Using Hibernate Mode with Windows 98 Systems
The default method for using Hibernate Mode in Windows 98 follows:

1. Press the [Fn] button together with the Suspend/ Resume button. This will open a Hibernate dialog box and begin the process.

**Customer-configured BIOS Methods
for using Hibernate Mode:**

1. Enable Hibernate in the BIOS setup utility. (See "Entering the BIOS Setup Utility" on page 29). Click on [**Start**], click **Shut Down** and then **Standby**. OR

2. Enable **Hibernate** mode from within the Power Management Properties window. Go to Start -> Settings -> Control Panel, and double-click on the Power Management icon. In the Power Management Properties window, click on the Hibernate tab, and ensure that the "Enable hibernate support" box is checked, then click [OK].

POINT

The Standby or Hibernate modes should not be used with certain PC Cards. Check your PC Card documentation for more information.

POINT

- Disabling the Suspend/Resume button prevents it from being used to put your notebook in Standby or Hibernate mode. The resume function of the button cannot be disabled.

- If your notebook is actively accessing information when you enter the Standby or Hibernate mode, changes to open files are not lost. The files are left open and memory is kept active during Standby mode or the memory is transferred to the internal hard drive during Hibernate mode.

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

- The main advantage of using the Hibernate function is that power is not required to maintain your data. This is particularly important if you will be leaving your notebook in a suspended state for a prolonged period of time. The drawback of using Hibernate mode is that it lengthens the power down and power up sequences and resets peripheral devices.

- Hibernate mode requires allocating a significant amount of hard drive capacity for saving all system memory, which reduces your usable disk space. When you purchase your notebook it will have space allocated for the memory installed. If you upgrade the original system by adding a memory upgrade module without changing the size of your Hibernate allocation you will get an error message when you try to activate Hibernate mode and it will not work. Use the PHDISK Utility to increase the size of the Hibernate file, SAVE2DSK.BIN. You can download the Hibernate File Allocation information from our Web site at www.fujitsupc.com. If you need help, contact your support representative for recommendations.

Using Hibernate Mode with Windows 2000 and Windows XP Systems
The Hibernate default setting is enabled for Windows XP and disabled for Windows 2000.

To **enable or disable the Hibernation feature** follow these easy steps:

1. From the **Start** menu, select **Settings**, and then select **Control Panel --> Power Management**.

2. Select **Hibernation,** and then select the box to enable or disable this feature.

To **use Hibernate mode** with Windows 2000 and Windows XP systems:

1. Click on the **Start** button, click **Shut Down**.

2. Select **Hibernate** option from the "What do you want the computer to do" list.

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 Power Management and BIOS setup utility (APM only). *See "BIOS Setup Utility" on page 29.*

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 (APM only). *See "BIOS Setup Utility" on page 29.*

WINDOWS 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 (APM only). *See "BIOS Setup Utility" on page 29.*

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**. 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 by choosing Shut Down from the Windows Start menu, check that the Hard Drive, CD-ROM, PC Card and the Floppy Disk Drive Access indicators are all Off. *(See Figure 2-5 on page 8)* If you turn off the power while accessing a disk or PC Card

there is a risk of data loss. To assure 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**.
4. Move the power switch to the off position.

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

4

User-Installable Features

Lithium ion Battery

Your 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 40°F (5°C) or a high of 95°F (35°C). 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 Indicators" on page 13.*
- When using a high current device such as a modem, CD-ROM drive, or the hard drive, using the AC adapter will conserve your battery life.

☢ CAUTION

- Do not leave a faulty battery in your 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.

- 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.

✎ POINT

Actual battery life will vary based on screen brightness, applications, features, power management settings, battery condition and other customer preferences. CD-ROM drive 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.

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 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 Standby mode, or turn it off while the adapter is charging the battery. *See "Power Management" on page 32.*

✎ POINT

Using heavy current devices such as Modem or frequent CD-ROM and PCMCIA powered external devices accesses may prevent charging completely.

Low Battery State
When the battery is running low, your LifeBook notebook will beep every 15 seconds and the Battery Level indicator will flash. If you do not respond to the low battery alarm, the batteries will continue to discharge until they are too low to operate. When this happens there will be a multiple beep alarm and the Battery Level indicator will show a dead battery. Your LifeBook will then go into Standby mode to try and protect your data for as long as possible. There is no guarantee that your data will not be lost once the notebook reaches this point.

☢ CAUTION

- You may not be able to hear the audio alarm if the volume control is set too low or is turned off by either the hardware or software. However, you will still be able to see the Battery Level indicator flash. Once the low battery alarm occurs you must save all your active data and put your notebook into Standby mode until you can provide a new power source. You should provide a charged battery, an AC power adapter, or Auto/Airline as soon as possible.

- When you are in Standby mode there must always be at least one power source active. If you remove all power sources while your notebook is in Standby 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 Standby 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 2-10 on page 12)* 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 notebook.

REPLACING THE BATTERY

Your LifeBook B Series notebook comes with two battery packs: one installed and one spare. By keeping the spare battery fully charged, you can immediately swap with one that is not charged. There are two ways to swap batteries: cold-swapping and warm-swapping. Cold swapping means swapping batteries when the system has been powered down; warm swapping is performed when the system is in Standby mode.

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.
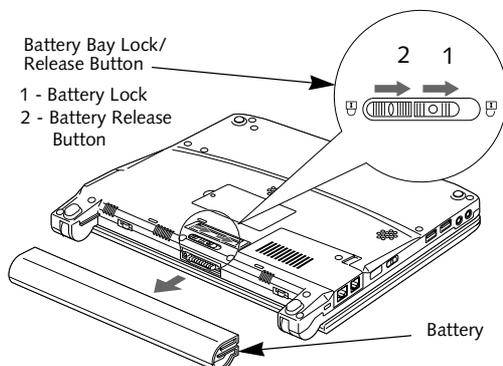
Figure 4-1 Removing the Battery

3. Slide the Battery Bay Lock to the right, then slide the battery release button in the same direction.

4. Slide the battery away from the battery bay and remove it from the bay.

5. Position the new battery on the tray slides and carefully slide it fully into the tray. *(Figure 4-2)*

6. Slide the Battery Bay Lock to the left to lock the pack into position.

7. Turn the power on.

Figure 4-2 Installing the Battery

Warm-swapping Batteries

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

> **POINT**
> You have only a few minutes to perform a warm-swapping before the internal bridge battery runs out of power. Have the charged battery nearby when performing a warm battery swap.

1. Close any open files and put your notebook into Standby mode.

3. Slide the Battery Bay Lock to the right, then slide the Battery Release Button in the same direction.

4. Slide the battery away from the battery bay and remove it from the bay.

5. Position the new battery on the tray slides and carefully slide it fully into the tray. *(Figure 4-2)*

6. Slide the Battery Bay Lock to the left to lock the pack into position.

7. 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.

Eject Button
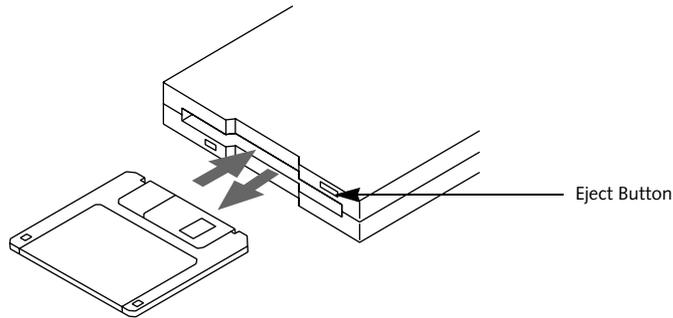
Figure 4-3 Loading/Ejecting a 3.5" Floppy Disk

External Floppy Disk Drive

CONNECTING AN EXTERNAL FLOPPY DISK DRIVE

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

Your USB floppy disk drive can be installed while your system is in a suspended state ("warm" connection), while the system is running ("hot" connection), or when the system is off ("cold" connection).
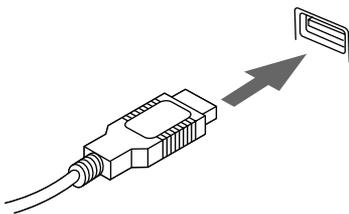
Figure 4-4 USB floppy disk drive cable and computer connection

Attach the external USB floppy disk drive by inserting the end of the cable connector into the USB port. See the figure above.

See your computer's User's Guide to determine the location of the USB floppy disk drive port.

Your computer will automatically detect the floppy disk drive and activate it within your system. The drive letters associated with the floppy disk drive will be created and listed under My Computer and Windows Explorer.

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 4-3)*

2. Push the disk into the drive until the Eject button pops out and you hear a click.
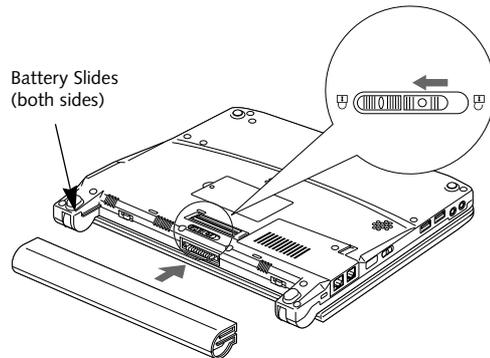
POINT
When there is no disk in the drive, the Eject button is flush with your LifeBook notebook.

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 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 4-5)*

Write Enabled
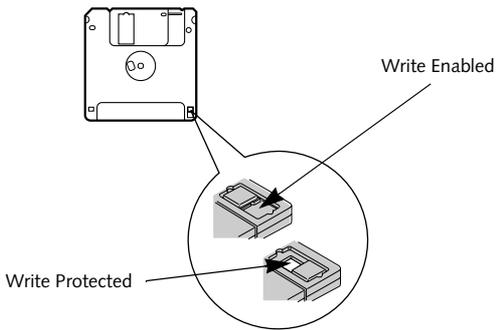
Write Protected

Figure 4-5 Floppy Disk Write Protect

⚠ **CAUTION**

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

PC Card Slot

PC Card

Eject Button
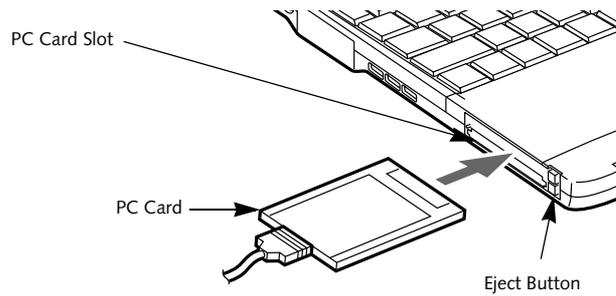
Figure 4-5 Installing/Removing PC Cards

PC Cards

Your LifeBook notebook supports Type I, II, and Type III 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.
- Other PC Cards that conform to PCMCIA 2.1 or CardBus standards.
- Optional SmartCard adapter

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 4-5)*

> **⚠ WARNING**
>
> - Installing or removing a PC Card during your note-book'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 perma-nently damage the card, your 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.

> **🔥 CAUTION**
>
> Windows has a shutdown procedure for PC Cards that must be followed before removing a card. (Review your operating system manual for the correct procedure)

REMOVING PC CARDS

To remove a PC Card, follow these easy steps:

1. See your PC Card manual for specific instructions on removing your card. Some PC Cards may require your notebook to be in Standby 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 LifeBook. Once your LifeBook has been shut down, you must turn Off the power using the power switch.

2. Push the Eject button until it pops out, and then push it in to eject the card. This will allow 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.

SMART CARD READER

An embedded Smart Card Reader is provided on your LifeBook notebook. Smart Cards are the same size and shape as credit cards, but they contain an integrated microprocessor chip. The chip can hold a variety of information, and provides the user with many possible options, such as allowing them to make secure purchases, pay for phone calls, store security informa-tion, and provide identification and information.

In order to use the embedded Smart Card Reader, you must purchase an optional Smart Card holder for instal-lation into an available Type II PC Card slot.

Memory Upgrade Module

Your LifeBook notebook has been configured with 128MB or 256MB of high speed Synchronous Dynamic RAM (SDRAM) factory installed. If your system is configured with 128MB of SDRAM, you canTo increase your notebook's memory capacity, you must replace the original memory module with a higher capacity module. The memory upgrade must be a dual-in-line (DIMM) 100 MHz SDRAM module.

☙ CAUTION

Do not remove any screws from the memory upgrade module compartment except those specifically shown in the directions for installing and removing the memory upgrade module.

INSTALLING A MEMORY UPGRADE MODULE

1. Turn off power to your notebook using the power switch, and remove any attached power adapter (AC or auto/airline).
2. Make sure that all connector covers are closed.
3. Turn the notebook bottom side up, with the front panel toward you.
4. Remove the screws of the memory upgrade module compartment. *(Figure 4-6)*
5. Remove the cover.
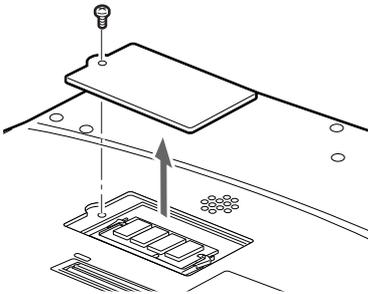
Figure 4-6 Opening the Memory Upgrade Compartment

⚠ WARNING

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

6. Remove the memory upgrade module from the static guarded sleeve.

7. Align the memory upgrade module with the part side up. Align the connector edge of the memory upgrade module with the connector slot in the compartment. The connector will be pointing toward the rear of the notebook.
8. Insert the memory upgrade module at a 45° angle. Press the connector edge of the module firmly down and into the connector until it lodges under the retaining clip. You will hear a click when it is properly in place. *(Figure 4-7)*
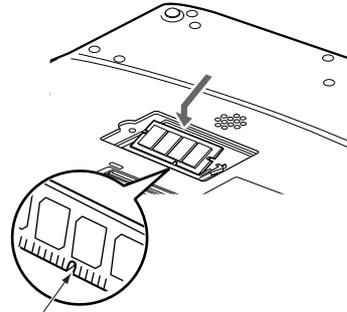
Figure 4-7 Installing a Memory Upgrade Module

9. Replace the cover.
10. Replace the screws.

✐ POINT

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

REMOVING A MEMORY UPGRADE MODULE

1. Perform steps 1 through 5 of Installing a Memory Upgrade Module.
2. Pull the clips sideways away from each side of the memory upgrade module at the same time.
3. While holding the clips out, remove the module from the slot by lifting it up and pulling towards the rear of your notebook. *(Figure 4-8)*
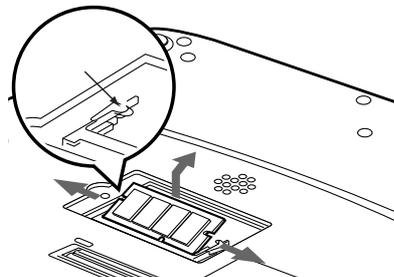
Figure 4-8 Removing a Memory Upgrade Module

4. Store the memory upgrade module in a static guarded sleeve.

5. Replace the cover by following steps 9 and 10 of Installing a Memory Upgrade Module.

> **✎ POINT**
>
> After installing your new memory module, you must complete the Resetting the Hibernate Parameters procedure in order for the Hibernate mode to operate properly on your notebook. *See "Hibernate Mode" on page 33.*

CHECKING THE COMPUTER RECOGNITION OF NEW MEMORY CAPACITY

Once you have changed the system memory capacity, be sure to check that your 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 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 29.*

The System Memory and the Extended Memory capacity, as detected by your notebook during the Power On Self Test (POST), are displayed at the bottom of 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 "Troubleshooting" on page 51.
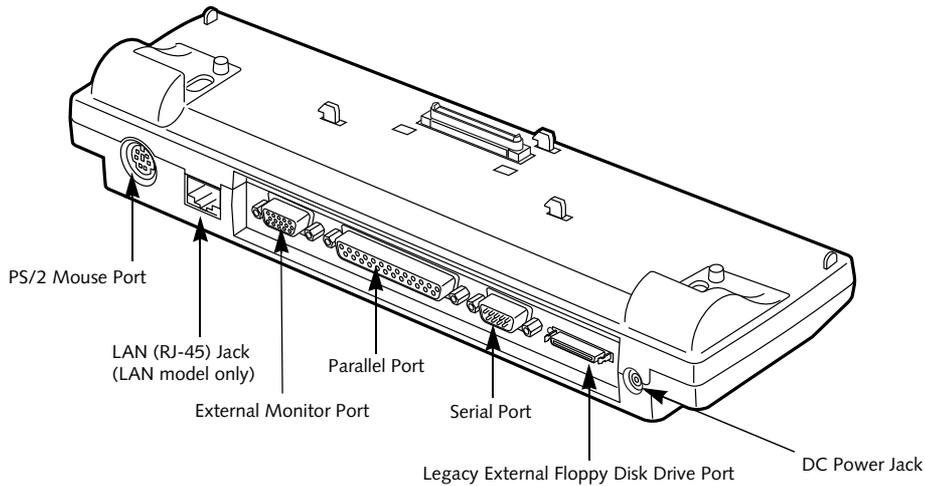
Figure 4-9 Port Replicator rear panel (LAN model shown)

Port Replicator

An optional Port Replicator is available from Fujitsu to support your LifeBook notebook. The Port Replicator extends the functionality of your notebook by providing ports to connect PS/2 devices, a parallel device, a serial device, and an external floppy disk drive. The Port Replicator connects to the bottom of your notebook. *See "Device Ports" on page 46.*

✎ P O I N T

There are two optional Port Replicators available for this LifeBook series. The correct model is determined by the configuration of your system:

- Systems with Modem LAN option: Port Replicator FPCPR22

- Systems with Modem/Wireless LAN option: Port Replicator FPCPR23.

REAR PANEL COMPONENTS

Following is a brief description of the optional Port Replicator's rear panel components.

PS/2 Mouse Port

The PS/2 mouse port allows you to connect an external PS/2 Mouse. *(Figure 4-9)*

Serial Port

The serial port allows you to connect serial (RS-232C) devices. (This is also sometimes referred to as a COM port.) *(Figure 4-9)*

Parallel Port

The parallel port allows you to connect parallel devices. (This is also sometimes referred to as an LPT port.) *(Figure 4-9)*

External Monitor Port

The external monitor port allows you to connect an external VGA or SVGA monitor. Note that if a Port Replicator is attached, you must use the external monitor port on the Port Replicator. *(Figure 4-9)*

External Floppy Disk Drive Port

The external floppy disk drive port allows you to attach an optional external legacy floppy disk drive. Note that if you are connecting the standard USB floppy disk drive, you must use the USB port on the system. *(Figure 4-9)*

LAN (RJ-45) Jack (LAN model only)

The LAN jack allows you to connect a LAN to the Port Replicator. Note that when the system is attached to the Port Replicator, the LAN Jack on the Port Replicator should be used, not the one on the system.

DC Power Jack

The DC power jack allows you to plug in the AC adapter to power your notebook and charge the internal Lithium ion battery.
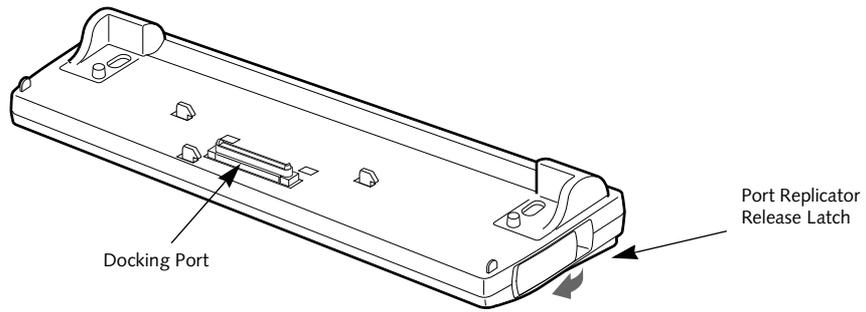
Figure 4-10 Port Replicator front panel (LAN model shown)

FRONT PANEL COMPONENTS
Following is a brief description of the optional Port Replicator's front panel components

Docking Port
The docking port connects the Port Replicator to your LifeBook notebook. *(Figure 4-10)*

Port Replicator Release Latch
Pull the Port Replicator Release latch away from the Port Replicator to remove the Port Replicator from your notebook. *(Figure 4-10)*

ATTACHING THE PORT REPLICATOR
To attach the Port Replicator follow these easy steps:

1. Power off your notebook.
2. Align the Port Replicator connector on the bottom of your notebook with the connector on the Port Replicator and push together at the two corners. *(Figure 4-11)*
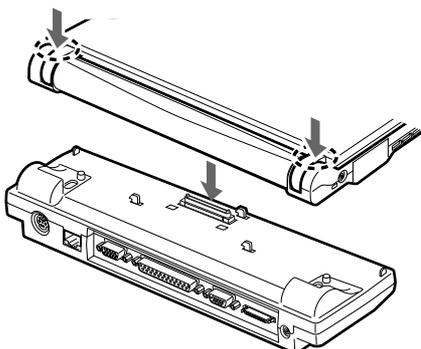
Figure 4-11 Attaching the Port Replicator
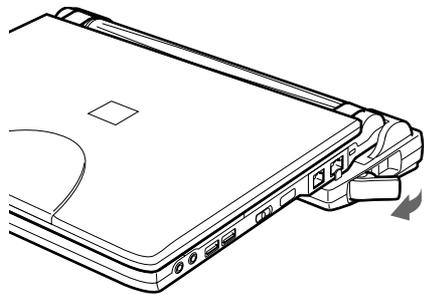
Figure 4-12 Unlatching the Port Replicator

DETACHING THE PORT REPLICATOR
To detach the Port Replicator follow these easy steps:

1. Power off your notebook.
2. Pull the Port Replicator's release latch away from the Port Replicator to release it from your notebook. *(Figure 4-12)*
3. Pull away the Port Replicator to detach it from your notebook. *(Figure 4-13)*
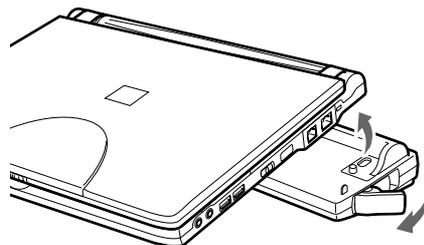
Figure 4-13 Removing the Port Replicator

Device Ports

Your LifeBook notebook and the optional Port Replicator come equipped with multiple ports to which you can connect an external device including: disk drives, keyboards, modems, printers, etc.

MODEM (RJ-11) JACK
The modem (RJ-11) jack is used for an internal modem. To connect the telephone cable follow these easy steps: *(See figure 2-7 on page 10 for location)*

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

> ⚠ **W A R N I N G**
>
> 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.

> 📝 **P O I N T**
>
> ▪ The internal modem is designed to the ITU 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 LifeBook notebooks from Fujitsu PC Corporation are certified for use in the United States and Canada.
> ▪ Depending upon the configuration of your system, your LifeBook notebook may have either a LAN jack or an IEEE 1394 jack.

INTERNAL LAN (RJ-45) JACK
(LAN MODEL ONLY)
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 2-7 on page 10 for location)*

> 📝 **P O I N T**
>
> Note that the optional Port Replicator is designed to cover the LAN jack located on the system. This design ensures that the LAN jack on the Port Replicator is the only one used when the Port Replicator is installed.

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

PARALLEL PORT
The parallel port, or LPT port, located on the optional Port Replicator allows you to connect parallel devices, such as a printer to your notebook. In order to connect a parallel interface device follow these easy steps: *(See figure 4-9 on page 44 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Tighten the two hold-down screws, located on each end of the connector.

SERIAL PORT
The serial port, or COM port, located on the optional Port Replicator allows you to connect serial devices, such as printers or scanners. In order to connect a serial interface device follow these easy steps: *(See figure 4-9 on page 44 for location)*

1. Align the connector with the port opening.
2. Push the connector into the port until it is seated.
3. Tighten the two hold-down screws, located on each end of the connector.

PS/2 PORT

The PS/2 port located on the optional Port Replicator allows you to connect an external keyboard, and/or numeric keypad and mouse. In order to connect a PS/2 interface device follow these easy steps: *(See figure 4-9 on page 44 for location)*

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

🖊 P O I N T

- A mouse, keyboard, or keypad may be installed and automatically recognized by your notebook without restarting or changing setups.
- The use of two PS/2 devices simultaneously from the port requires a PS/2 splitter.

DOCKING PORT

The docking port is used for the connection of your LifeBook notebook to an optional port replicator. In order to connect your notebook to one of these devices follow the instructions that came with your docking port. *(See figure 2-8 on page 11 for location)*

EXTERNAL FLOPPY DISK DRIVE PORT

The external floppy disk drive port is used for attaching an optional external legacy floppy disk drive. In order to connect an external floppy disk drive to your notebook follow the instructions that came with the drive. If you are using the standard external USB drive, connect it to a USB port. *(See figure 4-9 on page 44 for location)*

🖊 P O I N T

Although there is a USB port on the system that will accommodate a floppy disk drive, and a standard floppy disk drive connector on the optional Port Replicator, only one drive should be connected at any time.

UNIVERSAL SERIAL BUS PORTS

The Universal Serial Bus ports (USB) allow you to connect USB devices such as external floppy disk drives, game pads, pointing devices, keyboards and/or speakers. In order to connect a USB device follow these easy steps: *(See figure 2-7 on page 10 for location)*

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

INFRARED PORT

The Infrared IrDA 1.1 (4Mbps) port allows for wireless data transfer between your LifeBook notebook and other IrDA-compatible devices, such as another computer or a printer, without the use of a cable. *(See figure 2-7 on page 10 for location)*

It is important to keep in mind that while carrying out this form of communication, both devices must be placed so their infrared ports are directly facing each other without obstruction. The devices must also be separated by at least 6" but no more than 36" for maximum performance.

The following conditions may interfere with infrared communications:

- A television, radio remote control unit, or a wireless headphone is being used nearby.
- Direct sunlight, fluorescent light, or incandescent light shines directly on the port.

🔥 C A U T I O N

- Do not move either device while communication is active as it may interrupt data transmission.
- Be careful not to scratch the infrared port lens. Scratches, dirt, or other surface marks can degrade operation.

🖊 P O I N T

With Windows 98 Second Edition, you can use the Infrared Recipient application for infrared file transfers.

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 2-7 on page 10 for 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 head-phones or speakers follow these easy steps: *(See figure 2-7 on page 10 for location)*

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

🖊 P O I N T

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

EXTERNAL MONITOR PORT

The external monitor port allows you to connect an external monitor. In order to connect an external monitor follow these easy steps: *(See figure 2-6 on page 9 for location)*

1. Remove the cover from the port opening, if present.
2. Align the connector with the port opening.
3. Push the connector into the port until it is seated.
4. Tighten the two hold-down screws, located on each end of the connector.

POINT

When a Port Replicator is attached and an external monitor is plugged in, 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.
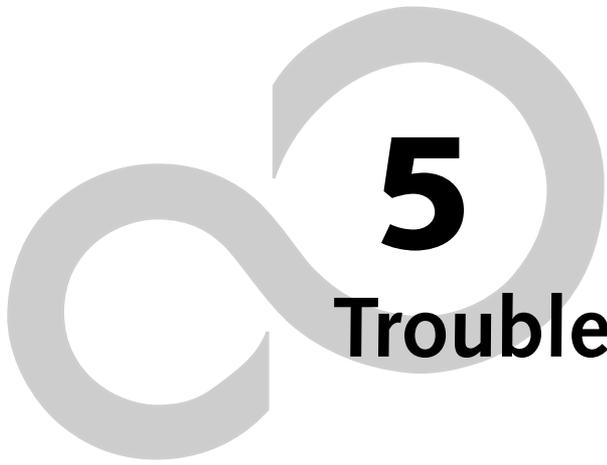
5
Troubleshooting

Troubleshooting

Your 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.

IDENTIFYING THE PROBLEM

If you encounter a problem that you are having difficulty in solving, go through the following procedure before pursuing further 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 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.

🖊 **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.

- Do not return a failed LifeBook notebook to your supplier until you have talked to a support representative.

8. If you have tried the solutions suggested in the Troubleshooting Table without success, contact your support representative:

Toll free: 1-800-8Fujitsu
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 LifeBook notebook for configuration and serial numbers. *(See figure 2-8 on page 11 for location)*

SPECIFIC PROBLEMS

Using the Troubleshooting Table

When you have problems with your 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 29.*
	Software driver is not configured correctly.	Refer to your application and operating system documentation for help.
	Sound could have been muted with function keys.	Press [F3] while holding the [Fn] key to toggle the sound on and off.
Port Replicator Problems		
LifeBook notebook does not turn on when installed in optional Port Replicator	Port Replicator AC adapter is not plugged in.	Provide power to the Port Replicator.
	Notebook is not properly seated in the Port Replicator.	Remove and re-dock your notebook.
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 39.*
	Floppy disk is not loaded correctly.	Eject floppy disk, check orientation and re-insert. *See "Ejecting a Disk" on page 39.*
	BIOS setup utility states Diskette Controller: Disabled.	Revise the setup utility Main menu settings to enable Diskette Controller. *See "BIOS Setup Utility" on page 29.*
	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.
	The USB floppy disk drive is not selected in the BIOS.	Verify that the USB Support is enabled in the BIOS Advanced menu. *See "BIOS Setup Utility" on page 29.*

Problem	Possible Cause	Possible Solutions
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 29.*
	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 Standby mode.	Push the **Suspend/Resume** 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 switch, wait 10 seconds or more, and then turn it 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 46.*
	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 mouse or keyboard is connected to the wrong PS/2 port on the LAN dock.	Plug the mouse into the PS/2 Mouse port and the external keyboard or numeric key pad into the PS/2 Keyboard port. *See "PS/2 Port" on page 47.*
	The external mouse is disabled in the BIOS.	Revise the setup utility Advanced menu settings to disable the Internal Pointing Device, thus enabling the external pointing device. *See "BIOS Setup Utility" on page 29.*
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 switch, wait at least 10 seconds, and then power on.

Problem	Possible Cause	Possible Solutions
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.	Turn off your notebook. Remove and re-install your memory upgrade module. *See "Memory Upgrade Module" on page 42.*
	You have a memory failure.	Check for Power On Self Test (POST) messages. *See "Power On Self Test Messages" on page 60.*
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.
Parallel, Serial, and USB Device Problems		
You have installed a parallel port device, a serial port device or a USB device. 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 46.*
	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 29.*
	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.
	Parallel port is set to output only.	Check parallel port setting in the BIOS and set to bi-directional or ECP.
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 41.*
	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 29.*

Problem	Possible Cause	Possible Solutions
A card inserted in the PC Card slot does not work or is locking up the system. (continued)	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 battery. See "Status Indicator Panel" on page 12. 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 battery. See "Status Indicator Panel" on page 12. If a battery is indicating a short, remove that battery and operate from another power source or replace that battery.
	The battery is low.	Check the Status Indicator Panel to determine the presence and condition of the battery. See "Status Indicator Panel" on page 12. Use a Power adapter to operate until a battery is charged or install a charged battery.
	The AC or auto/airline adapter is not plugged in properly.	Verify that your adapter is connected correctly. *See "Power Sources" on page 27.*
	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.
	Power switch is not in the On position.	Slide the power switch firmly to the Off position, pause 10 seconds or more and then firmly to the On position.
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 battery is 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 27.*

Problem	Possible Cause	Possible Solutions
Your LifeBook notebook turns off all by itself. (continued)	You have a battery failure.	Verify the condition of the battery using the Status Indicator panel, and replace or remove any battery that is shorted. *See "Status Indicator Panel" on page 12.*
	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 battery is dead.	Replace the battery with a charged one or install a Power adapter.
	No battery is installed.	Install a charged battery.
	The battery is improperly installed.	Verify that the battery is properly connected by re-installing them.
	Your installed battery is faulty.	Verify the condition of the battery using the Status Indicator panel and replace or remove any battery that is shorted. *See "Status Indicator Panel" on page 12.*
The battery seems to discharge too quickly.	You are running an application that uses a great deal of power due to frequent hard drive access or CD-ROM access, use of a modem card or a 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 battery is very old.	Replace the battery.
	The battery has been exposed to high temperatures.	Replace the battery.
	The battery is 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.
Shutdown and Startup Problems		
The Suspend/Resume button does not work.	The Suspend/Resume 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.

Problem	Possible Cause	Possible Solutions
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 29.*
	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 29.*
An error message is displayed on the screen during the LifeBook 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 60.*
Your system display won't turn on when the system is turned on or when the system has resumed.	The system may be password-protected.	Check the status indicator panel to verify that the Security icon is blinking. If it is blinking, enter your password.
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 back-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 notebook.	Something is pushing on the Closed Cover switch.	Clear the Closed Cover switch. *(See figure 2-5 on page 8 for location)*
	The optional Port Replicator is attached, an external monitor is plugged in, and 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.
	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 timeouts 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 Standy mode, Auto Suspend or Video Timeout)

Problem	Possible Cause	Possible Solutions
The 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.
Your system display won't turn on when the system is turned on or when the system has resumed.	The system may be password-protected.	Check the status indicator panel to verify that the Security icon is blinking. If it is blinking, enter your password.
The display goes blank by itself after you have been using it.	The notebook has gone into Video Timeout, Standby Mode, or Hibernate 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 29.*
	Something is pushing on the Closed Cover switch.	Check the Closed Cover switch. *(See figure 2-5 on page 8 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 29.*
The Display is dark when on battery power.	The BatteryAid default is set on low brightness to conserve power.	Press [Fn] + [F7] to increase brightness or double-click on BatteryAid battery gauge and adjust Power Control under battery settings.

Problem	Possible Cause	Possible Solutions
You have connected an external monitor and it does not display any information.	Your BIOS setup is not set to enable your external monitor.	Try toggling 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 29.*
	Your external monitor is not properly installed.	Reinstall your device. *See "External Monitor Port" on page 48.*
	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 notebook.	See your monitor documentation and the External Monitor Support portions of the Specifications section. See "Specifications" on page 73.
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 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 successfully 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 29. 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.

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's 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 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.

NOTE: Systems with the Windows 98 operating system installed have the DISE directory structure in place, but without the disk image or the DISE software installed. *(See Installing and Using DISE With Windows 98 Systems on page 63 for more information)*

Although it is not necessary, you can use DISE to store additional image files 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 Drive Image SE floppy boot diskette as a "rescue disk." If your computer fails, you can boot and run DISE from the rescue disk.

🔖 POINT

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

USING DISE WITH WINDOWS 2000/XP

Creating a Drive Image SE Diskette

You can use a DISE disk to boot your machine and run DISE if your machine is unbootable 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 Factory Backup** to restore the factory image.

   DISE exits 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.

INSTALLING AND USING DISE WITH WINDOWS 98 SYSTEMS

Systems with Windows 98 installed have the DISE directory structure in place, but without the disk image or the DISE software installed.

When DISE is completely installed, the DISE backup partition requires approximately 1.8GB of hard disk space in Windows 98 systems. This number reflects the size of the original Fujitsu Factory Image; if additional applications are added by the reseller, the amount of space required will be proportionately greater.

Factory Backup Image: This is the image that is originally delivered from the factory or the reseller.

User Backup Image: This is the modified Factory Image containing any applications or changes that have been added by the user.

This document outlines the procedure for creating the Factory Backup Image on the hard drive using the DISE utility. (The User Backup Image is designed for the end-user, and can be invoked from the desktop using the DISE icon.)

Creating the Backup Partition and Installing DISE on Windows 98

In order to provide a dedicated area on the hard disk to store the image, you must first partition the disk.

1. Go to the C:\FPC\INSTALL\POWERQUEST directory and double-click on SETUP.EXE. The Welcome screen appears.
2. Click Next.
3. Depending upon whether you are creating a Factory Backup Image, a User Backup Image, or both, check the applicable box(es). Be aware that the numbers displayed represent Megabytes of disk space that will be reserved to store the image. The following list indicates the approximate size of the partition required for Windows 98 systems:
   One image - 1024MB
   Two images - 1.8GB

4. Click [Next]. If the information displayed is correct, click Finish to create the partition. The system will automatically reboot and complete the operation.
5. When the message "The operation completed successfully" appears, click [OK]. The system will reboot.

Creating a Factory Backup Image

To create a Factory Backup Image, first partition the disk, as outlined above. After the disk is partitioned, proceed with the following steps.

1. Boot the system up into DOS.
2. From the DISE directory, type and enter the following command (Note the spaces after "DISE", ".TXT", and ".PQI"):

```
DISE /CMD=CREATE.TXT /IMG=FACTORY.PQI /SEC
```

3. After the Factory Backup Image is created, an "Operation completed successfully" message appears. Click [OK]. The system will reboot automatically.

Creating Drive Image SE Diskettes

It is recommended that you create DISE diskettes for the system. You can use a DISE disk to boot the machine and run DISE in the event the machine is unbootable or if you do not have access to Windows.

1. Insert a formatted floppy disk in the drive.
2. From the Drive Image Special Edition main window, click **Options** > **Create Drive Image SE Diskette**. Follow the instructions displayed.
3. After diskettes have been created, label them Disk 1 and Disk 2.

Running Drive Image SE from Diskettes

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

Additional information about DISE is contained in the following location on the hard drive: C:\DISE\dise_end.pdf. There is also a shortcut icon on the desktop to access the DISE readme file.

6

Care and Maintenance

Care and Maintenance

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

> ⚠ **WARNING**
>
> 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.

LIFEBOOK NOTEBOOK
Caring for your LifeBook notebook
- Your LifeBook notebook is a durable but sensitive electronic device. Treat it with 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 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 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 notebook in a briefcase, or any other carrying case, make sure that there are no objects in the case pressing on the lid.
- 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 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 the notebook off, fully charge the battery, then remove and store all Lithium ion batteries.
- Store your notebook and batteries separately. If you store your notebook with a battery installed, the battery will discharge, and battery life will be reduced. In addition, a faulty battery might damage the notebook.
- Store your notebook in a cool, dry location. Temperatures should remain between -25ºC (13ºF) and 60ºC (140ºF).

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.
- 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 adapter you'll need or ask your travel agent.

Outlet Type	Location
	United States, Canada, Mexico, parts of Latin America, 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

KEYBOARD
Caring for your Keyboard
The keyboard of your computer is a very sensitive instrument. It is made up of many switches that are activated when you press on the keys. The keyboard is a major component of the heat dissipation system in a notebook. Due to heat and size considerations the keyboard is not sealed. Because the keys are so close

together, it is not easy for the user to see when liquids have fallen onto the circuitry below the keys.

Attempting to clean the keyboard with a spray on cleaner or rag soaked with cleaner the liquid can drip onto the circuitry sight unseen. Once the liquid seeps between the layers of circuitry, it can cause corrosion or other damage to the circuits. This can result in keys which no longer operate, or which, when pressed, record the wrong characters and other similar failures.

There is no repair for this problem other than replacement. The solution is to become aware of the issue and take appropriate steps to protect your keyboard.

Cleaning should be done with a rag dampened (but not soaking) with cleaning solution. Use extreme care to prevent liquid from dripping between the keys. Spraying directly on the keys should be avoided. The spray should be applied first to the cloth, and then the cloth wiped over the keys.

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
- Keep brightness to the lowest level comfortable.
- Set the power management for maximum battery life.
- Put your notebook in Standby mode when it is turned on and you are not actually using it.
- Limit your CD-ROM access.
- Disable the Windows CD auto insert 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 50º F (10ºC) and 125ºF (52ºC).

- 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 50º F (10ºC) and 125ºF (52ºC).

- 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.

CDs
Caring for your CDs
CDs are precision devices and will function reliably if given reasonable care.

- Always store your CDs in its case when it is not in use.

- Always handle CDs by the edges and avoid touching the surface.

- Avoid storing any CDs in extreme temperatures.

- Do not bend CDs or set heavy objects on them.

- Do not spill liquids on CDs.

- Do not scratch CDs.

- Do not put a label on CDs.

- Do not get dust on CDs.

- Never write on the label surface with a ballpoint pen or pencil. Always use a felt pen.

- If a CD 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 CDs.

▪ If a CD is dirty, use only a 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 CD-ROM Drive

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

▪ The drive rotates the compact disk 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.
▪ Use of a commercially-available lens cleaner kit is recommended to maintain the drive lens.
▪ 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 CD-ROM drive.

PC CARDS

Caring for your PC Card Slots

PC Cards are durable, but you must treat them with care. The documentation supplied with your PC Cards provides specific information for caring for the cards.

When you don't have a PC Card installed in your system, you should be sure to install the PC Card slot inserts that came with your system. These will help to keep dust and dirt out of your system.

7
Specifications

Specifications

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

CONFIGURATION LABEL

Your LifeBook notebook contains a configuration label located on the bottom. *(See figure 2-8 on page 11 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.
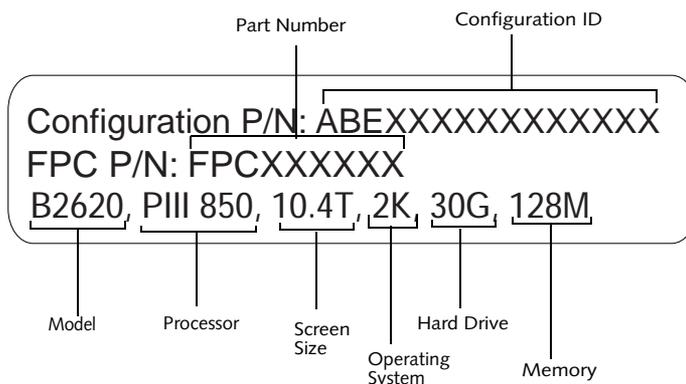
Part Number   Configuration ID

Configuration P/N: ABEXXXXXXXXXXXX
FPC P/N: FPCXXXXXX
B2620, PIII 850, 10.4T, 2K, 30G, 128M,

Model   Processor   Screen   Hard Drive
               Size
              Operating   Memory
              System

Figure 7-1 Configuration Label

MICROPROCESSOR

850MHz ultra-low-voltage Pentium III processor featuring Intel SpeedStep technology

MEMORY

System Memory
128MB or 256MB SDRAM (one slot)

Cache Memory
512K On-die L2

BIOS Memory
512KB Flash ROM
256 Bytes CMOS RAM with back-up battery

VIDEO

Built-in color flat-panel TFT active matrix LCD display with touch screen capability.

Graphics Card
ATI® Rage® Mobility-M1

Video Color and Resolution
10.4" XGA TFT
- Internal: 1024 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
8MB Embedded VRAM.

AUDIO

- SigmaTel STAC9723 codec

- Stereo headphone jack, 1 V_{rms}, or less, minimum impedance 32 Ohms.
- Mono microphone jack, 125 mV_{p-p} or less, minimum impedance 10K Ohms.
- Two built-in speakers, 28 mm diameter (Stereo).
- One built-in monaural microphone.

MASS STORAGE DEVICE OPTIONS

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

Optional legacy Floppy Disk Drive, which accommodates 1.44MB or 720KB floppy disks.

Hard Disk Drive

30G or 40G fixed hard drive, Ultra DMA 33 type.

INTEGRATED POINTING DEVICE
Quick Point pointing device.

LIFEBOOK SECURITY/APPLICATION PANEL
Application Launcher buttons default to the following:

Label	Button Function	Default Application
1	Application A	Notepad
2	Application B	Calculator
3	Internet	Internet Explorer
4	E-Mail	Netscape Messenger

THEFT PREVENTION LOCK SLOT

Lock slot for use with physical restraining security systems. The locking system by Kensington is recommended.

COMMUNICATIONS

Modem: Internal Multinational V.90 standard 56K fax/modem (ITU V.90, 56K data, 14.4K fax.), and
LAN: 10/100 base-Tx Ethernet or IEEE 1394, depending upon the configuration of your system.

* Actual data transfer rate over U.S. telephone lines varies and is less than 56Kbps due to the current FCC regulations and line conditions.

DEVICE PORTS

On the LifeBook notebook:

- PC Card slot for two Type II or one Type III cards: PCMCIA Standard 2.1 with CardBus support
- One 15-pin D-SUB connector for VGA external monitor (see Video specifications)
- Two USB (Universal Serial Bus) connectors for input/output devices.
- One modem (RJ-11) connector.
- One LAN (RJ-45) jack (option with LAN models only)
- One stereo headphone jack. (See Audio specifications)
- One mono microphone jack.
  (See Audio specifications)
- One IrDA port for infrared devices.
- One 100-pin connector for docking devices.
- One embedded SmartCard Reader (requires an optional SmartCard holder and a third-party application)

On the Optional Port Replicator:

- One 6-pin mini DIN PS/2 compatible connector for external keyboard, external mouse, or external numeric keypad.
- One 15-pin D-SUB connector for VGA external monitor (see Video specifications).
- One 25-pin D-SUB connector for parallel input/output devices; Bi-directional, output only or ECP.
- One 9-pin D-SUB connector for RS-232C serial input/output devices.
- One 25-pin special connector for legacy external floppy disk drive connection.
- One RJ-45 port for LAN connectivity (LAN model only).

KEYBOARD

Built-in keyboard with all functions of 101 key PS/2 compatible keyboards.

- Total number of keys: 83.
- Function keys: F1 through F12.
- Feature extension key: Fn.
- Two Windows keys: one Start key and one application key

- Key pitch: 17 mm.
- Key stroke: 2 mm.
- Built-in Quick Point pointing device with left and right buttons.
- Built-in Palm Rest.

External Keyboard Support
PS/2-compatible.

External Numeric Keypad Support
PS/2-compatible.

External Mouse Support
PS/2-compatible.

POWER

Batteries
One 6-cell Lithium ion battery, rechargeable, 10.8V, 3600mAh. An optional 3-cell, 10.8V, 1800mAh battery is also available.

Bridge Battery
Your LifeBook notebook comes equipped with a bridge battery. A bridge battery allows a charged Lithium ion battery to be replaced **while the system is in Standby mode** ("warm-swapping"). The bridge battery capacity is not large and can vary with the condition of your notebook, so you will have three minutes at the most to make the change.

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) standards.

DIMENSIONS AND WEIGHT

Overall Dimensions
Approximately 9.92"(w) x 8.5"(d) x 1.24"(h).

Weights
Approximately 2.96 lbs with 3-cell battery.
Optional Port Replicator approximately 0.6 lbs.

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 Upgrades
▪ 256MB SDRAM

Docking/Expansions
▪ Port Replicator

Power
▪ 6-cell Lithium ion battery pack
▪ Battery Charger
▪ Auto/Airline Adapter
▪ AC Adapter

Storage
▪ External CD-ROM drive

PC Cards
▪ SmartCard holder

Additional Accessories
▪ Wireless Keyboard and Mouse
▪ Numeric Keypad
▪ Presentation Audio system
▪ TeleAdapt 16' TeleCord
▪ IBM Modem Saver
▪ Notebook Guardian Lock
▪ Stylus Five Pack

Carrying Cases
▪ Duo Carrying Case
▪ Diplomat Carrying Case

PRE-INSTALLED SOFTWARE

Your LifeBook notebook comes with pre-installed software for playing audio and video files of various formats. The software configuration installed is dependent upon the operating system that is pre-installed on your system. 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 LifeBook notebook you will find manuals for your operating system and other pre-installed software. 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.

Microsoft Windows
Depending upon the configuration of your notebook, Microsoft Windows 98 Second Edition, Microsoft Windows 2000 Professional, Microsoft Windows XP Home, or Microsoft Windows XP Professional is installed as your operating system.

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

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.

McAfee.com, Inc. VirusScan
VirusScan, by McAfee.com, is an antivirus program that can be run after loading data or programs onto your notebook. It assists in protecting the data currently residing on your hard disk from contamination and destruction. *(See your VirusScan online help or manual for more information on how and when to run this program)*

Drive Image Special Edition (DISE) by PowerQuest
DISE by PowerQuest provides a way to restore your computer if you experience a hard disk crash or other system failure. DISE is used to restore the factory image and restore the system to its original state. Note that on systems with Windows 98 installed, the DISE directory structure is in place, but the drive image and DISE software have not yet been installed. See "Drive Image Special Edition (DISE)" on page 62.

BatteryAid by Fujitsu Limited (Microsoft Windows 98 SE and Windows 2000 Professional only)
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)*

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

Fujitsu HotKey Utility (Microsoft Windows XP only)
Utility for displaying the brightness and volume levels on your LifeBook screen.

Microsoft Internet Explorer
Internet Explorer is installed as your default internet browser.

Netscape
Netscape is installed as an alternative browser.

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 Security/Application Panel Software
Your LifeBook 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 under LifeBook Application panel. They include a CD Player, Application Panel Setup, Application Panel Guide, Activate Panel and Deactivate Panel.

Intel SpeedStep
(Windows 98 and 2000 models only)
Intel SpeedStep allows your Lifebook notebook to operate in dual mode by default. When connected to AC source, the system operates in Maximum Performance mode. When powered by battery, the system switches to Battery Optimized mode to conserve battery life. SpeedStep software is automatically loaded when you start your system and appears on the system tray as one of the two flags. A checker flag indicates that the system is set for Maximum Performance mode. A blue flag with a green center square indicates that the system is set for Battery Optimized mode. You can change the setting or disable the software by double-clicking the flag icon and changing the settings in the Intel SpeedStep Technology window.

8
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

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.

AdHoc
A name of a wireless LAN configuration.

It is a type of communication using wireless cards only.

Another type of communication is called Infrastructure (using a wireless card and an access point).

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

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 disk 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.

Channel
A radio frequency band used for communication between wireless cards and access points.

CMOS RAM
Complementary metal oxide semiconductor random access memory. This is a technology for manufacturing random access memory which requires very low levels of power to operate.

COM Port
Abbreviation for communication port. This is your serial interface connection.

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.

CRT
Cathode Ray Tube. A display device which uses a beam of electronic particles striking a luminescent screen. It produces a visual image by varying the position and intensity of the beam.

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.

DHCP

Dynamic Host Configuration Protocol

A protocol used to automatically acquire parameters required for the communication, such as IP address.

The sender of IP address is called a DHCP server, and the receiver is called a DHCP client.

DIMM

Dual-in-line memory module.

DISE

Drive Image Special Edition.
A utility that allows you to restore the original factory image on your hard drive in the event of corruption or accidental erasure of files or applications.

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.

DNS

Domain Name System

A function to control the association between the IP address and the name assigned to the computer.

If you do not know the IP address but if you know the computer name, you can still communicate to that computer.

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.

ECP

Extended Capability Port. A set of standards for high speed data communication and interconnection between electronic devices.

Encryption Key (Network Key)

Key information used to encode data for data transfer.

This device uses the same encryption key to encode and decode the data, and the identical encryption key is required between the sender and receiver.

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.

I/O

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

I/O Port

The connector and associated control circuits for data entering and leaving your 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
Industry standard that allows you to connect between your notebook and a peripheral device such as a digital camera. Also known as "Firewire" or "iLINK".

Infrared
Light just beyond the red portion of the visible light spectrum which is invisible to humans.

Infrastructure
A name of a wireless LAN configuration. This type of communication uses an access point.

Another type of communication is called AdHoc.

IP Address
An address used for computers to communicate in the TCP/IP environment.

Current IPv4 (version 4) uses four values in the range between 1 and 255. (Example: 192.168.100.123).

There are two types of IP address: global address and private address.

The global address is an only address in the world. It is controlled by JPNIC (Japan Network Information Center). A private address is an only address in the closed network.

IR
An abbreviation for infrared.

IrDA
Infrared Data Association. An organization which produces standards for communication using infrared as the carrier.

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.

LPT Port
Line Printer Port. A way of referring to parallel interface ports because historically line printers were the first and latter the most common device connected to parallel ports.

MAC Address
Media Access Control Address

A unique physical address of a network card. For Ethernet, the first three bytes are used as the vendor code, controlled and assigned by IEEE. The remaining three bytes are controlled by each vendor (preventing overlap), therefore, every Ethernet card is given a unique physical address in the world, being assigned with a different address from other cards. For Ethernet, frames are sent and received based on this address.

MB
Megabyte.

Megahertz
1,000,000 cycles per second.

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

MHz
Megahertz.

MIDI
Musical Instrument Digital Interface. A standard communication protocol for exchange of information between computers and sound producers such as synthesizers.

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.

MPU-401
A standard for MIDI interfaces and connectors.

MTU
Maximum Transmission Unit

The maximum data size that can be transferred at a time through the Internet or other networks. You can set a smaller MTU size to obtain successful communication,

if you have difficulty transferring data due to the fact that the maximum size is too large.

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 micro-processor 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.

PCI
Peripheral Component Interconnect

Self-configuring PC local bus. Designed by Intel, PCI has gained wide acceptance as a standard bus design.

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.

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 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.

Protocol
Procedures and rules use to send and receive data between computers.

- Method of sending and receiving data

- Process used to handle communication errors

Conditions required for communication are organized in procedures for correct transfer of information.

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 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 infor-mation is stored by physically altering the material. Data stored in this way can not be changed by your notebook and does not require power to maintain it.

SDRAM
Synchronous Dynamic Random Access Memory.

Serial Port
A connection to another device through which data is transferred one bit at a time on a single wire with any other wires only for control of the device not for transfer of data.

SMART

Self-Monitoring, Analysis and Reporting Technology (SMART) is an emerging technology that provides near-term failure predictions for hard drives. When SMART is enabled the hard drive monitors pre-determined drive attributes that are susceptible to degradation over time. If a failure is likely to occur, SMART makes a status report available so that the LifeBook notebook can prompt the user to back up the data on the drive. Naturally not all failures are predictable. SMART predictability is limited to those attributes which the drive can self-monitor. In those cases where SMART can give advance warning, a considerable amount of precious data can be saved.

SRAM

Static random access memory. A specific technology of making RAM which does not require periodic data refreshing.

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.

Standby

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.

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.

SVGA

Super VGA.

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.

TCP/IP

Transmission Control Protocol/Internet Protocol. A standard Internet protocol that is most widely used.

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.
Standard that allows you to simultaneously connect up to 127 USB devices such as game pads, pointing devices, printers, and keyboards to your computer.

VGA

Video Graphics Array. A video display standard originally introduced by IBM with the PS/2 series of personal computers.

VRAM

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

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.

WLAN

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

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 VGA.

Zip Drive

A 100MB or 250MB read/write removable media disk drive.

Regulatory Information

♨ **C A U T I O N**

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

This equipment complies with Part 68 of the FCC rules. On the bottom of this equipment is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN) for this equipment. If requested, this information must be provided to the telephone company.

This equipment is designed to be connected to the telephone network or premises wiring using a standard jack type USOC RJ11C. A plug and jack used to connect this equipment to the premises wiring and telephone network must comply with the applicable FCC Part 68 rules and requirements adopted by the ACTA. A compliant telephone cord and modular plug is provided with this product. It is designed to be connected to a compatible modular jack that is also compliant.

The ringer equivalent number (REN) of this equipment is 0.0B as shown on the label. The REN is used to determine the number of devices that may be connected to a telephone line. Excessive RENs on a telephone may result in the devices not ringing in response to an

incoming call. In most but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations or procedures that could effect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

If trouble is experienced with this equipment, for repair or warranty information, please refer to the manual or contact Fujitsu PC Corporation, Customer Service. If the equipment is causing harm to the telephone network, the telephone company may request that you disconnect the equipment until the problem is resolved.

The equipment cannot be used on public coin service provided by the telephone company. Connection to party line service is subject to state tariffs. (Contact the state public utility commission, public service commission or corporation commission for information).

If your home has specially wired alarm equipment connected to the telephone line, ensure the installation of this computer does not disable your alarm equipment. If you have any questions about what will disable alarm equipment, consult your telephone company or a qualified installer.

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device to send any message via a telephone fax machine unless such message clearly contains in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date an time it is sent and an identification of the business or other entity, or other individual sending the message and the telephone number of the sending machine or such business, other entity, or individual.

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 matériel 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.

☣ C A U T I O N

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.

☣ A V E R T I S S E M E N T

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

⚠ WARNING

▫ 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.

Appendix

Integrated Wireless LAN* User's Guide

*Optional Device

FC FCC REGULATORY INFORMATION

Please note the following regulatory information related to the optional 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

The Integrated Wireless LAN is an optional device available for the LifeBook laptops. 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 98/2000 SYSTEMS

This chapter describes how to set the wireless LAN connection for computers running Windows 98 or Windows 2000.

POINT

If you purchased a LifeBook with the optional wireless LAN, 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 8. 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

Item	Description
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 8: Profile Parameters

5. Click the [Encryption] tab.
6. Set the encryption items in accordance with Table 9.
   - 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 9: 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 98 and 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 98

The section describes how to set the network connection if your computer running Windows 98.

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] icon. [Network] appears.

3. Perform the following steps.
   ▪ Click [TCP/IP].
   ▪ Click [Properties].

POINT

If you have more than one [TCP/IP...] entry, select [TCP/IP -> Intersil PRISM Wireless LAN PCI Card]. [TCP/IP Properties] appears.

4. Set an IP address. (When you are done, ask your network administrator to check the setting).

- AdHoc Network: Select [IP address], and enter a value for [IP address] and [Subnet Mask]. Refer to "About IP Addresses" on page 27 to set an IP address and subnet mask.
- Infrastructure Network: Select [Obtain an IP address automatically].

5. Click [OK]. [Network] appears again.

In the next step, you will check the computer name and workgroup.

Checking the Computer Name and Workgroup

1. Click the [Identification] tab on the [Network] window.

> ### ◤ POINT
>
> If this tab is not found on the [Network] window, click [Start] -> [Settings] -> [Control Panel], and double-click the [Network] icon.

2. Check the entry for [Computer name] and [Work-group]. Ask your network administrator and check the setting, if you have a network administrator.

Item	Description
Computer Name	A name to identify the computer on the network. You can specify any name for any computer. Use up to 15 single-byte characters. For easiest identification, use the model name or user name.
Workgroup	The 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 a workgroup name to connect to.
Computer Description	Additional description for the computer. This is not necessary.

Table 10: Computer Name and Workgroup

> ### ◤ POINT
>
> Including a period or other special characters may prevent you from connecting to the network.

3. 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 Networks

1. Click [Start] -> [Settings] -> [Control Panel].
2. Double-click the [Network] icon. The [Network] window appears.
3. Click [File and Print Sharing...]. [File and Print Sharing] appears.
4. Click and check one or both of the options.
5. Click [OK]. [File and Printer Sharing for Microsoft Networks] is added under [The following network components are installed] on [Configuration] tab.
6. Click [OK]. [Network Properties] closes. Follow the instructions on the screen.
7. When a message appears prompting you to restart the computer, click [Yes].

Sharing Files

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

1. Double-click [My Computer] -> [C: drive] on the desktop.
2. Right-click the "Work" folder, then click [Sharing] from the menu that appears. The [Work Properties] window appears.
3. Click [Sharing], and select items, as specified below.

Item	Description
Share Name	Specify a share name for the drive or folder that you want to share.
Access Type	Limits the read/write permission for the drive to be shared. ■ Read-Only Password: Specifies read-only for the drive to be shared. ■ Full Access Password: Allows read and write for the drive to be shared. ■ Depends On Password: Identifies either Read-Only or Full, depending upon the password.
Passwords	A password used for [Access Type]. ■ Read-Only Password: Specify a password to allow read. ■ Full Access Password: Specify a password to allow read and write.

Table 11: Password Setup

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

Printer Sharing

1. Click [Start] -> [Settings] -> [Printers]. [Printers] appears, showing the printers that are connected.
2. Right click the printer that you want to share, and 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 for the printer to be shared.
Comment	Enter a description of the printer to be shared.
Passwords	Specify passwords. If you specify a password, you need to enter it when using the printer.

Table 12: Printer Sharing

4. Click [OK]. The printer is set for sharing, and the printer 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 [Network Neighborhood] on the desktop. The computers that are connected to the network are displayed.
2. Double-click the computer that you want to access. The drive that you set with "Sharing" is displayed. The drive is not displayed unless it is set for sharing, even if it exists.
3. Double-click the drive that you want to access. The drive is displayed showing its contents and made available to you.

If you have a question or problem, refer to "Trouble-shooting" on page 19.

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 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 network.
Rescan	Click 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 [Excellent], [Good], [Fair], [Poor], or [Not Connected], depending on the link quality. This is not shown for the AdHoc connection.
Signal Strength	Shows [Excellent], [Good], [Fair], [Poor], or [Not Connected], depending on the signal strength. This is not shown for the AdHoc connection.

Table 13: Connectivity Condition

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 14. 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 109 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 14: 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 15: 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 16: 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 17: 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 103.

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 18: 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

If you purchased a LifeBook with the optional wireless LAN, 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 19: 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 109 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 20: 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 21: 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 103.

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 22: 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.	You did not enter the password when Windows 98 started. You clicked [Cancel] or [ESC] when User Name/Password window was shown.	Make sure that you enter user name and password and click [OK] when starting Windows 98. If you forget your password, enter another user name. A new user name and password is registered in the computer.
	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.

Problem	Possible Cause	Possible Solution
Other computers are not displayed when the [Network Computer] icon is double-clicked.	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 98: Click [Start] -> [Programs] -> [MS-DOS Prompt]. 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 98: Click [Start] -> [Programs] -> [MS-DOS Prompt]. 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 find 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 98)
		Windows 98:
		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 [Device Manager] tab.
		3. Click [+] beside [Network adapters].
		4. Perform the following steps.
		   ▪ Click [Intersil PRISM Wireless LAN PCI Card].
		   ▪ Click [Remove]. [Confirm Device Removal] appears.
		5. Click [OK]. The device is removed, and [System Settings Change] appears.
		6. Click [No].
		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] -> [Settings] -> [Control Panel]. [Control Panel] appears.
		10. Double-click [Add/Remove Programs]. [Add/Remove Programs Properties] appears.
		11. Double-click [PRISM 11Mbps Wireless LAN for Windows]. 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 Properties] and [Control Panel].
		15. Shut down Windows, and turn off the computer.

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]. 8. Make sure that the icon has disappeared from the task tray in the lower right corner of the screen. 9. Click [Start] -> [Settings] -> [Control Panel]. 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.

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.

IF A SECOND LAN DEVICE IS INSTALLED

Instructions for disabling another LAN device

If you have another LAN card on your computer running Windows 98, perform the following steps to disable that LAN card before installing the driver.

For Windows 98

1. Click [Start] -> [Settings] -> [Control Panel].
2. Double-click [System]. [System Properties] appears.
3. Click [+] beside [Network adapters], and double-click the standard built-in LAN device.

The following devices appear depending on your computer model.

- [Intel(R) 82559 Fast Ethernet LOM with Alert on LAN 2*]
- [Intel(R) 8255x-based PCI Ethernet Adapter(10/100)]
- [Realtek RTL8139(A/B/C/8130)PCI Fast Ethernet NIC]
- or others.

The LAN Card Properties window appears.

4. Check [Set disable with this hardware profile], and click [OK]. An [x] mark is added to the LAN card icon.
5. Click [OK].
6. Restart the system.

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 98: [Obtain an IP address automatically]

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 the Optional 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 98, Windows 2000, Windows XP
Power Current	Max: 350mA
Maximum number of units recommended for wireless LAN (AdHoc network)	10 or less

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