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## DECLARATION OF CONFORMITY according to FCC Part 15

Responsible Party Name: Fujitsu PC Corporation

Address: 598 Gibraltar Drive  
Milpitas, CA 95035

Telephone: (408) 935-8800

Declares that product: Model: LifeBook 690Tx.

Complies with Part 15  
of the FCC Rules.

This device complies with Part 15 of the FCC rules. Operations is 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.

David Woo  
FULL NAME

Fujitsu  
COMPANY

4/17/98  
DATE



## CAUTION

Changes or modification not expressly approved by Fujitsu PC Corporation 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  
The LifeBook™ 600 Series notebook computers are supplied with an internal modem which complies with Part 68 of the FCC rules. On this notebook is a label that contains the FCC Registration Number and the Ringer Equivalence Number (REN) for this equipment among other information. If requested, the user must provide their telephone company with the following information:

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

This equipment is designed to be connected to the telephone network or premises wiring using a standard modular jack type USOC RJ-11C which is FCC Part 68

compliant and a line cord between the modem and the telephone network with a minimum of 26AWG.

The REN is used to determine the number of devices that you may connect to your telephone line and still have all of those devices ring when your number is called. Too many devices on one line may result in failure to ring in response to an incoming call. In most, but not all, areas the sum of the RENs of all of the devices should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the RENs, contact your local telephone company.

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

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

Your telephone company will probably ask you to disconnect this equipment from the telephone network until the problem is corrected and you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service telephones provided by your telephone company. Connection to party lines is subject to state tariffs. Contact your state's public utility commission, public service commission or corporation commission for more information.

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

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

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

- All public or semipublic coin-operated or credit card telephones.
- Elevators, highways, tunnels (automobile, subway, railroad or pedestrian) where a person with impaired hearing might be isolated in an emergency.
- Places where telephones are specifically installed to alert emergency authorities such as fire, police or medical assistance personnel.
- Hospital rooms, residential health care facilities, convalescent homes and prisons.

- Workstations for the hearing impaired.
- Hotel, motel or apartment lobbies.
- Stores where telephones are used by patrons to order merchandise.
- Public transportation terminals where telephones are used to call taxis or to reserve lodging or rental cars.
- In hotel and motel rooms as at least ten percent of the rooms must contain hearing aid compatible telephones or jacks for plug in hearing aid compatible telephones which will be provided to hearing impaired customers on request.

#### DOC (INDUSTRY CANADA) NOTICES

Notice to Users of Radios and Television  
This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

CET appareil numérique de la class B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Notice to Users of the  
Canadian Telephone Network  
The Canadian Industry Canada label identifies certified equipment. This certification means that the equipment

meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

The LifeBook 600 Series notebook computers are supplied with an internal modem which complies with the Industry Canada certification standards for telecommunication network protection and safety requirements. 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 PC Corporation or any equipment failures may give the telecommunication company cause to request the user to disconnect the equipment from the telephone line.

The connecting arrangement code for this equipment is CA11A.

The Load Number is 3.

The Load Number assigned to each telephone terminal device denotes the percentage of the total load to be connected to a telephone loop or circuit which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices such that the total of the load numbers of all devices does not exceed 100.



#### **CAUTION**

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

#### **Avis Aux Utilisateurs Du Réseau Téléphonique Canadien**

L'étiquette canadienne Industrie Canada identifie l'équipement certifié. Cette certification signifie que l'équipement satisfait certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le département ne garantit pas le fonctionnement de l'équipement à la satisfaction de l'utilisateur.

La série LifeBook™ 600 possèdent un modem interne conforme aux normes de certification d'Industrie Canada pour protéger les réseaux de télécommunications et satisfaire aux normes de sécurité. 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 effectuées par un service de maintenance agréé au Canada. Toute réparation ou modification, qui n'est pas expressément approuvée par Fujitsu PC Corp., ou toute défaillance de l'équipement peut entraîner la compagnie de télécommunications à exiger que

l'utilisateur déconnecte l'équipement de la ligne téléphonique.

Le code d'arrangement de connexion de cet équipement est CA11A.

Le numéro de charge est 3.

Le numéro de charge assigné à chaque terminal téléphonique indique le pourcentage de la charge totale pouvant être connecté à une boucle ou à un circuit téléphonique, utilisé par ce périphérique afin de prévenir toute surcharge. La terminaison d'une boucle peut être constituée de n'importe quelle combinaison de périphériques de sorte que le total de numéros de charge de tous les périphériques n'exède pas 100.



## **AVERTISSEMENT**

Pour assurer la sécurité, les utilisateurs doivent vérifier que la prise de terre du service d'électricité, les lignes téléphoniques 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 (FOR AUTHORIZED REPAIR TECHNICIANS ONLY)**

**CAUTION:** For continued protection against risk of fire, replace only with the same type and rating fuse.

**CAUTION:** Danger of explosion if CMOS 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.

**WARNING:** CMOS and NICAD batteries may explode if mistreated. Do not recharge, disassemble or dispose of in fire.

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## PREFACE

The LifeBook 600 Series from Fujitsu PC Corporation is a powerful ultra flexible thin and light notebook computer. It is powered by an Intel Pentium microprocessor with MMX technology, has a built-in color display, an internal modem and comes with a LAN Enhancement Unit with built-in floppy disk drive, CD-ROM drive, and network adapter bringing the computing power of desktop personal computers (PCs) to a portable environment.

This manual explains how to operate your LifeBook 600 Series' hardware and built-in system software. The LifeBook 600 Series is compatible with the IBM PC AT. It comes with Windows 95 pre-installed.

A LifeBook 600 Series 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. (Figure P-1.)

### CONVENTIONS USED IN THE GUIDE

Screen examples in this manual are intended as examples only, and screen and file names may differ in actual use.

Messages displayed on screen by the LifeBook 600 Series, and commands that you enter into the computer using the keyboard, appear in Courier type.

**Example:** Shutdown the computer?

**Keyboard keys are shown in boldface Helvetica type.**

**Example:** Fn, F1, Esc, and Ctrl.

Pages with additional information about a specific topic are cross-referenced within the text.

**Example:** (See page xx.)



### POINT

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



### CAUTION

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

**LifeBook 600 Series from Fujitsu**

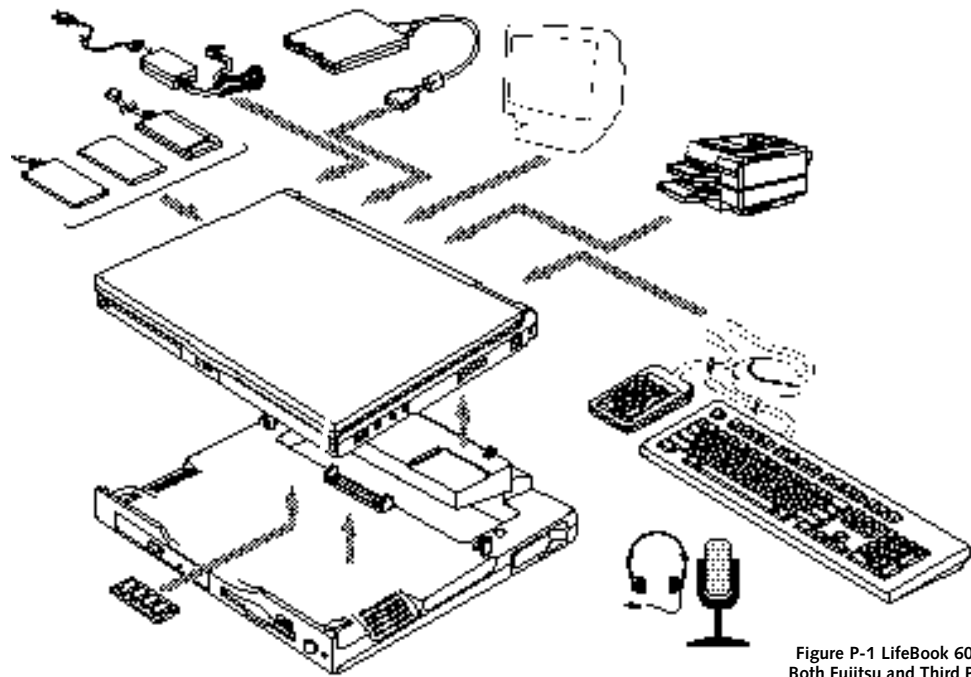


Figure P-1 LifeBook 600 Series with Both Fujitsu and Third Party Options

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## SECTION ONE

### SETTING UP YOUR LIFEBOOK 600 SERIES FROM FUJITSU

This section describes how to set up your LifeBook 600 Series from Fujitsu. We strongly recommend that you read it before using your notebook – even if you are already familiar with notebook computers.

### UNPACKING YOUR NOTEBOOK

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

For a standard configuration you should have:

- LifeBook 600 Series from Fujitsu. (Figure 1-1.)
- AC adapter with AC power cord (located in the accessories box). (Figure 1-2.)
- External Smart Lithium ion battery (located in the accessories box). (Figure 1-3.)
- LAN Enhancement Unit (located in the accessories box). (Figure 1-4.)

- RJ-11 cable (located in the accessories box).
- Getting Started Guide.
- User's Guide.
- Microsoft Windows 95 Manual.
- Registration card and customer information pack.
- LANdesk Client Manager 3.2 CD-ROM (located in the accessories box).
- Recovery CD-ROM (located in the accessories box).

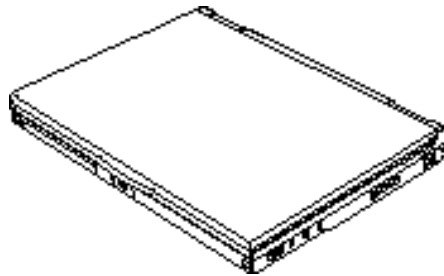


Figure 1-1 LifeBook 600 Series Notebook

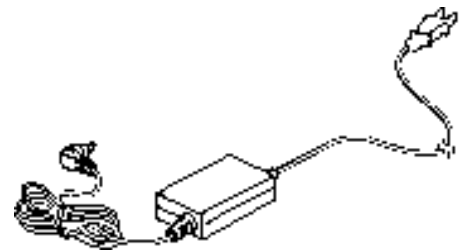


Figure 1-2 AC Adapter Unit

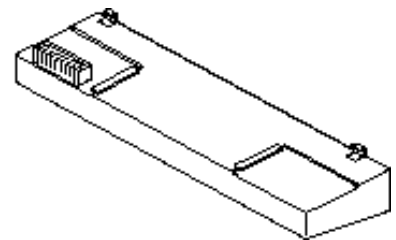


Figure 1-3 External Smart Lithium ion Battery

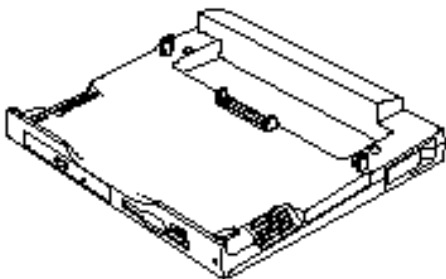


Figure 1-4 LAN Enhancement Unit

Once you have checked and confirmed that your notebook system is complete, connect the AC adapter and follow the instructions starting on page 17 to accept the conditions for using the LifeBook 600 Series. When you have completed the setup process please register your notebook. (See page 19.)

#### OVERVIEW OF LIFEBOOK 600 SERIES FEATURES

The LifeBook 600 Series is a compact, yet powerful notebook computer available with standard features including: (See Appendix A, pages 152-156, for detailed information.)

- 266 MHz Intel Pentium processor with MMX technology.
- 32MB SDRAM standard, expandable to 96MB.
- 12.1" active-matrix (TFT) color display with 1024 x 768 resolution (XGA).
- 2MB video RAM.
- Built-in 4GB hard drive.
- Internal Lithium ion Smart battery.
- External Lithium ion Smart battery.
- Hot swap PS/2 connection for an external keyboard or an external mouse.
- Internal 56K fax/data/voice modem with built-in telephony and DSVD support.
- DMI 2.0 compliant.



#### CAUTION

Your internal modem is designed to allow faster downloads from K56flex compliant digital sources. Maximum achievable download transmission rates may not reach 56 Kbps and will vary with line conditions.

- Integrated touchpad pointing device for easy cursor control.
- Hot Docking connection for an Enhancement Unit.
- LAN Enhancement Unit with:
  - Fixed 3.5" floppy disk drive.
  - Fixed 20-speed maximum CD-ROM drive.
  - Built-in stereo speakers.
  - Fast Ethernet port.
  - Dual USB port.
  - Stereo Line Out port.
  - Composite Video jack.
  - MIDI/joystick port.

- Hot swap PS/2 connection for an external keyboard and an external mouse.
- Serial port.
- Parallel port.
- External Monitor port.
- DC Power jack.
- Full audio and video features:
  - 16-bit SoundBlaster-compatible sound chip.
  - 3D-Stereo for multiple speaker effects.
  - 3D-Graphics for fast graphic rendering.
  - Zoomed Video support for full motion video acceleration.
  - Built-in mono speaker.
  - Built-in mono microphone.
  - Stereo Line In jack.
  - Stereo Headphone jack.
  - Microphone jack.
- Two Type II/one Type III PC Card slots.
- Fast IrDA (4Mbps) compatible infrared port for wireless data transfer.
- External monitor support with simultaneous display capabilities.
- “No re-learning”, full-size keyboard with three dedicated Windows 95 keys.
- Dual USB device support.
- Standard pre-installed software:
  - Microsoft Windows 95 operating system with Internet Explorer 4.01.
  - LapLink from Traveling Software for file transfers via modem, cable or infrared port.
  - PC-Doctor for system diagnostics.
  - SoftPEG from CompCore for MPEG-1 video playing.
  - McAfee VirusScan for virus protection.
  - ESS AudioRack for 3D-Stereo, audio CD, and other audio controls.
  - MegaPhone by AVEO for telephone applications including fax, dialing, and speakerphone.
  - PowerPanel by Phoenix Technologies for power conservation management.
- Standard user-install software.
  - Netscape Communicator 4.0.
  - America Online 3.0 Free Trial.
  - JFAX Telecom Software.
  - AT&T Worldnet Service.

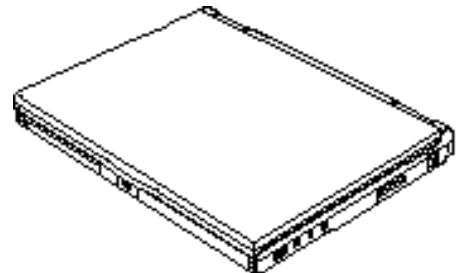


Figure 1-5 Top and Front Panel

## Setting Up Your LifeBook 600 Series

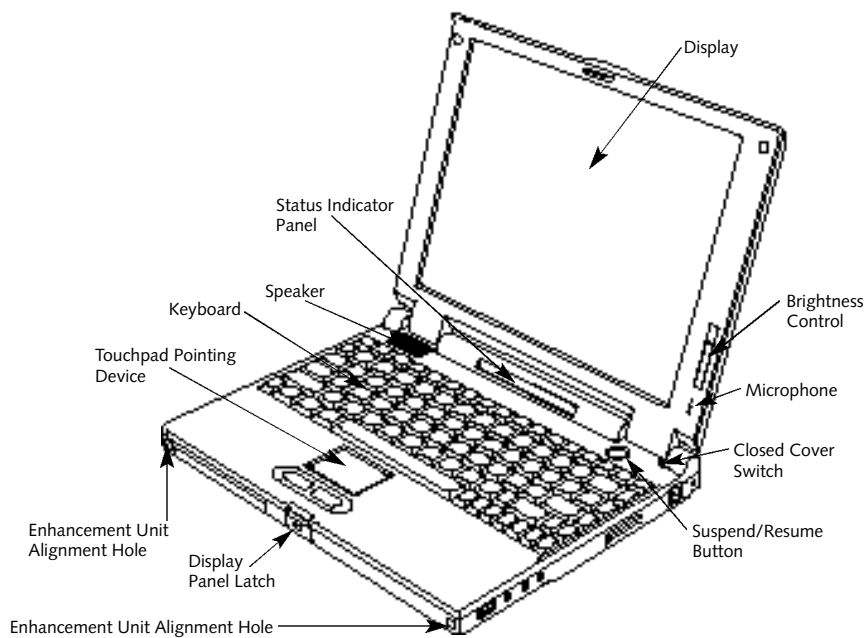


Figure 1-6 LifeBook 600 Series with Display Open

### COMPONENT IDENTIFICATION

For detailed specifications refer to *Appendix A* on pages 152-156.

#### TOP AND FRONT COMPONENTS

##### Display Panel

This is a color LCD panel with back lighting for the display of text and graphics. (Figure 1-6.)

##### Brightness Control

The brightness control adjusts the overall intensity of the display panel back lighting. (Figure 1-6.)

##### Built-in Microphone

The built-in microphone allows mono audio input to your notebook. (Figure 1-6.)

##### Status Indicator Panel

LCD display of the status of the power state and source, Suspend mode, AC connected/disconnected, battery charge for both batteries, floppy disk drive activity, hard drive activity, CD-ROM drive activity, PC Card activity, CapsLock, NumLk and Scr Lk. (Figure 1-6.)

#### Suspend/Resume Button

The Suspend/Resume button allows you to suspend notebook activity without turning off the notebook power, and to return it to an active state. This feature saves power, and is particularly useful when the notebook is running only on battery power. (See pages 42-43 and 88-89 for more information.)



#### CAUTION

Be sure you know what settings are active for your Suspend/Resume button before you use it as misuse can result in data loss. (See the Power Savings Menu of the BIOS setup utility, pages 88-89, for more information.)

#### Speaker

The built-in speaker outputs sound from the notebook. (Figure 1-6.)

#### Closed Cover Switch

The closed cover switch turns off the LCD back lighting when the display panel is closed, thus saving power. It can also be set as a Suspend/Resume switch in the BIOS Setup utility. (see pages 98-105.) (Figure 1-6.)

#### Keyboard

A full-size keyboard with dedicated Windows 95 keys for input into the notebook. (Figure 1-6.)

#### Touchpad Pointing Device

The touchpad pointing device is a finger contact cursor control system with two click buttons. (Figure 1-6.)

#### Display Panel Latch

This latch locks and releases the display panel. (Figure 1-6.) When the display panel is released it pops up slightly to make it easier to open.

#### Enhancement Unit Alignment Holes

Holes that allow your notebook to align and lock into an Enhancement Unit.

#### LEFT-SIDE PANEL COMPONENTS

##### Power Switch

This switch is the main power switch for your notebook. (Figure 1-7.)

##### PC Card Slots

The PC Card Slots allows you to install two type I or II PC Cards or one type III PC Card. (See pages 109-111 for more information on PC Cards.) The sliding button to the left of the card slots locks the card(s) in place, and the push buttons to the right of the slots eject the cards from the slots. (Figure 1-7.)

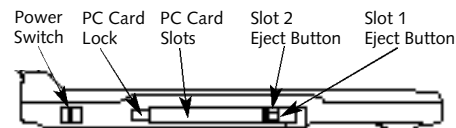


Figure 1-7 LifeBook 600 Series Left-side Panel

## Setting Up Your LifeBook 600 Series

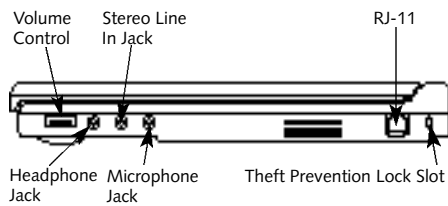


Figure 1-8 LifeBook 600 Series Right-side Panel

**RIGHT-SIDE PANEL COMPONENTS****Theft Prevention Lock Slot**

**This is a slot that allows you to attach a physical lock down device. (Figure 1-8.)**

**RJ-11 Jack**

**This is the jack for attaching a telephone line to the internal modem. (Figure 1-8.)**


**CAUTION**

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

**Microphone Jack**

**The microphone jack allows you to connect an external mono microphone. (Figure 1-8.)**

**Stereo Line In Jack**

**The stereo line in jack allows you to connect an external audio source to your notebook, like an audio cassette player. This jack will not support an external microphone. (Figure 1-8.)**

**Headphone Jack**

**You can connect headphones or powered external speakers to the headphone jack. (Figure 1-8.)**

**Volume Control**

**The volume control is a knob which provides manual control of the sound level of all audio output from your notebook. (Figure 1-8.)**


**CAUTION**

There are software volume controls. The knob setting and the software settings will interact. Software volume off will override the knob setting and the software volume setting will control the maximum knob setting. (See Volume Control on pages 36-37 for more information.)

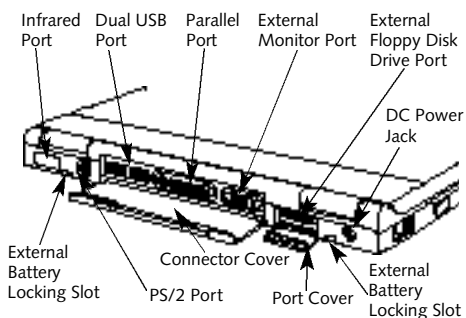


Figure 1-9 LifeBook 600 Series Rear Panel

## REAR PANEL COMPONENTS

### Infrared Port

The fast IrDA (4Mbps) compatible port allows you to communicate with another IrDA compatible infrared device without a cable. (See pages 50-51 for more information.) (Figure 1-9.)

## CAUTION

The connector cover – which closes over the ports on the rear of the notebook – can be damaged if it is left open when the notebook is moved around.

### PS/2 Port

This port allows you to connect an external PS/2 mouse or keyboard. (Figure 1-9.)

### Dual USB Port

This port allows you to connect two Universal Serial Bus devices, such as external game pads, pointing devices, keyboards and speakers. (Figure 1-9.)

### Parallel Port

The parallel port allows you to connect parallel devices, such as a parallel printer to your notebook. (This is also referred to as an LPT port.) (Figure 1-9.)

### External Monitor Port

This port allows you to connect an external VGA or SVGA CRT monitor. (Figure 1-9.)

### External Floppy Disk Drive Port

A port for attaching an optional external floppy disk drive. (Figure 1-9.)

### External Battery Locking Slots

A pair of slots that mate with the locking tabs on the external Lithium ion battery.

### DC Power Jack

The DC power jack allows you to plug in the AC adapter or the optional auto/airline adapter. (Figure 1-9.)

## Setting Up Your LifeBook 600 Series

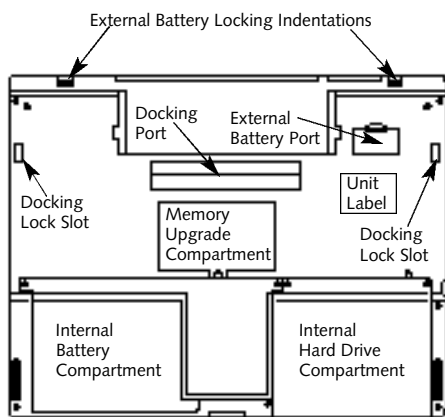


Figure 1-10 LifeBook 600 Series Bottom

### BOTTOM COMPONENTS

**External Battery Locking Indentations**  
These indentations mate with the latches on the external battery to provide secure mating between the battery and your notebook. (Figure 1-10.)

### External Battery Port

This slide covered slot provides for installation of the external battery. (Figure 1-10.)

### Docking Lock Slots

These slots mate with the latch hooks of an Enhancement Unit to lock the Enhancement Unit and the notebook together. (Figure 1-10.)

### Unit Label

This label has the model number and other information about your 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 so that he or she can help you. It exactly identifies the version of various components of your notebook. (Figure 1-10.)

### Docking Port

This port is for connection to an Enhancement Unit. The cover opens automatically when your notebook is installed in an Enhancement Unit. (Figure 1-10.)

### Memory Upgrade Compartment

This compartment houses the memory upgrade module which allows you to expand the system memory capacity of your notebook. (See pages 115-118 for more information on installing added memory capacity.) (Figure 1-10.)

### Internal Hard Drive Compartment

This compartment contains the internal hard drive and should only be accessed for maintenance by an authorized maintenance provider. (Figure 1-10.)

### Internal Battery Compartment

This compartment houses the internal battery and should only be opened to remove the battery for replacement or long term storage. (Figure 1-10.)

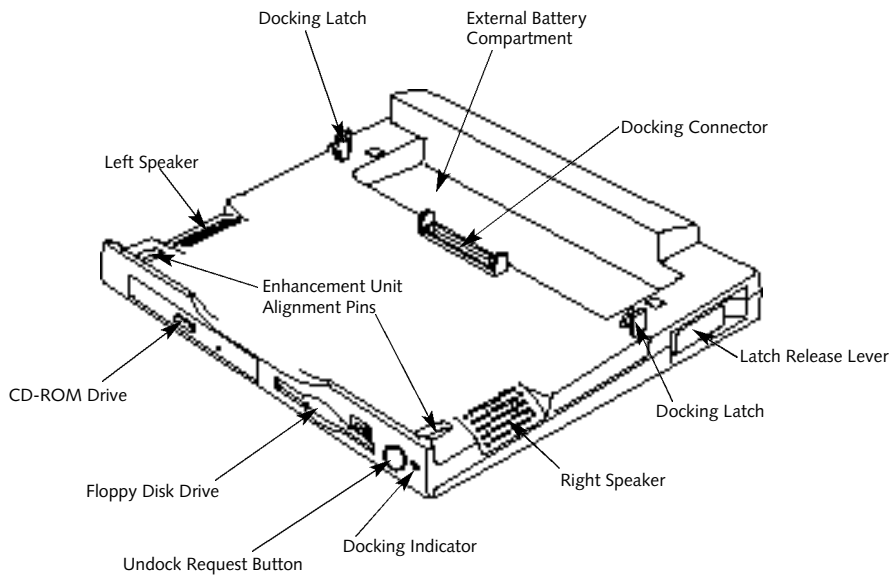


Figure 1-11 LAN Enhancement Unit Front View

## LAN ENHANCEMENT UNIT

### LAN ENHANCEMENT UNIT FRONT AND TOP COMPONENTS

#### Enhancement Unit Alignment Pins

A pair of pins that push into the Enhancement Unit Alignment holes in the front of your notebook to assure proper alignment between the LAN Enhancement unit and your notebook and act as part of the locking between the two.

(Figure 1-11.)

#### Docking Latches

A pair of hooks which fit into the docking lock slots in the bottom of your notebook and lock your notebook and LAN Enhancement Unit together.

(Figure 1-11.)

#### External Battery Compartment

A space that allows your notebook to be installed in the LAN Enhancement Unit with the external battery installed.

#### Docking Connector

This is the connection to the Docking port in the bottom of your notebook.

(Figure 1-11.)

**Latch Release Levers**

The Latch Release levers, (one on each side of the LAN Enhancement Unit), operate the Docking latches. (Figure 1-11.)

**CD-ROM Drive**

This drive provides CD-ROM input to your notebook. (Figure 1-11.)

**CAUTION**

Do not operate the CD-ROM drive unless your LAN Enhancement Unit is sitting on a flat, level surface. Using a CD-ROM drive when it is not level may damage the drive or prevent proper operation.

**CAUTION**

The CD-ROM drive requires the use of a power adapter or both an internal and external battery. It will NOT operate on the internal battery alone.

**Floppy Disk Drive**

This 3.5" floppy disk drive provides your notebook with floppy disk input and output. (Figure 1-11.)

**POINT**

The optional external floppy disk drive and the LAN Enhancement Unit floppy disk drive can NOT both be enabled at the same time. (See pages 54 and 94-95 for more information.)

**Stereo Speakers**

This provides stereo sound output from your notebook. (Figure 1-11.)

**Docking Indicator**

This LED is off when Windows 95 is active or there is no notebook in the LAN Enhancement Unit. The LED is green when undocking has been requested and the system is ready to undock.

**CAUTION**

It is only safe to undock your notebook from the LAN Enhancement Unit when the Docking Indicator is green or the power to the notebook is turned off at the power switch.

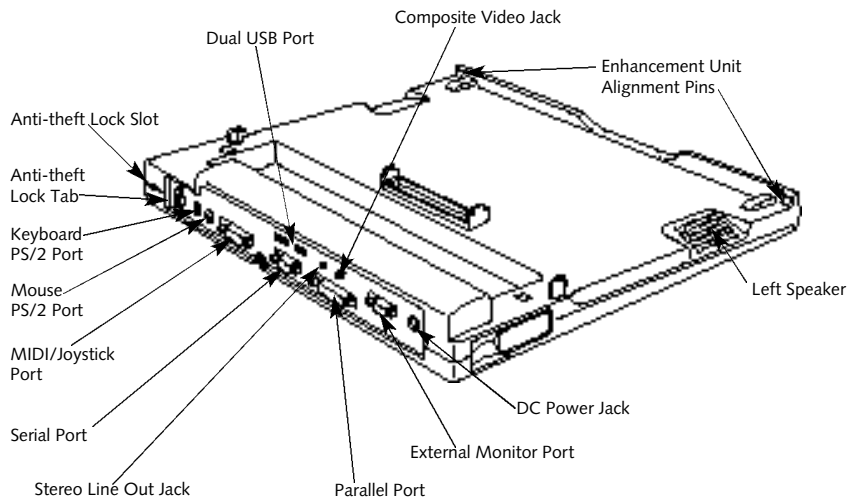


Figure 1-12 LAN Enhancement Unit Rear View

## LAN ENHANCEMENT UNIT REAR COMPONENTS

### Anti-theft Lock Slot

This provides a way to secure your LAN Enhancement Unit to a physical lock down device. (Figure 1-12.)

### Anti-theft Lock Tab

This provides a way to secure your LAN Enhancement Unit to your notebook with the same physical lock down device that is locking your notebook. (Figure 1-12.)

### Dual USB Port

Allows you to connect two USB devices, such as external game pads, pointing devices, keyboards and speakers. (Figure 1-12.)

### Stereo Line Out Jack

This jack allows you to connect stereo sound recording equipment. (Figure 1-12.)

### Composite Video Jack

This jack allows you to connect, and use directly, any Composite Video device (NTSC or PAL), such as a VCR or TV. (Figure 1-12.)

## Setting Up Your LifeBook 600 Series

### Keyboard PS/2 Port

The port allows you to connect an external PS/2 keyboard or numeric keypad. (Figure 1-12.)

### Mouse PS/2 Port

The port allows you to connect an external PS/2 mouse. (Figure 1-12.)

### MIDI/Joystick Port (MPU-401)

This port allows you to connect a music synthesizer, game joystick, or other MIDI device to your notebook via a custom adapter cable which is included with your notebook. (Figure 1-12.)

### Serial Port

The serial port allows you to connect serial RS-232C devices, such as serial printers or scanners. (This is also referred to as a COM port.) (Figure 1-12.)

### Parallel Port

The parallel port allows you to connect parallel devices, such as a parallel printer to your notebook. (This is also referred to as an LPT port.) (Figure 1-12.)

### External Monitor Port

This port allows you to connect an external VGA or SVGA CRT monitor. (Figure 1-12.)

### DC Power Jack

The DC power jack allows you to plug in the AC adapter or the optional auto/airline adapter. (Figure 1-12.)

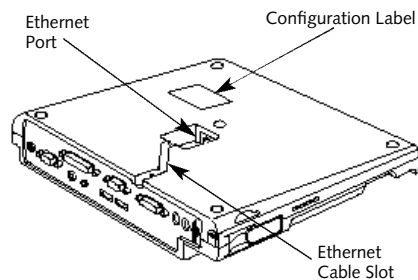


Figure 1-13 LAN Enhancement Unit Bottom View

## LAN ENHANCEMENT UNIT BOTTOM COMPONENTS

### Ethernet Port

This RJ-45 jack allows you to connect to a 10/100 Base-T Ethernet LAN. (Figure 1-13.)

### Ethernet Cable Slot

This slot provides a place for your Ethernet cable so that it does not interfere with your LAN Enhancement Unit sitting level. (Figure 1-13.)

### Configuration Label

This label has manufacturer information that you will need to provide to your support representative if you ever need assistance with your LAN Enhancement Unit. (Figure 1-13.)

## POWER SOURCES

Your notebook has four possible power sources: the internal Smart Lithium ion battery; an external Smart Lithium ion battery; the AC adapter; or an optional auto/airline adapter.

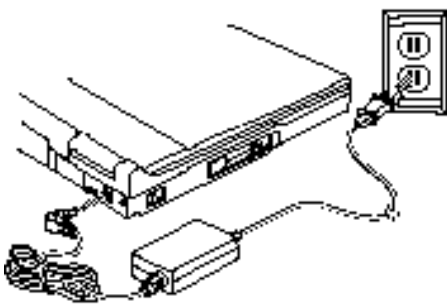


Figure 1-14 Connecting the AC Adapter to your Notebook

#### Connecting the Power Adapters

The AC adapter or an optional auto/airline adapter provides power for operating your notebook, with or without the LAN Enhancement Unit, and charging the batteries. (Figure 1-14.)

To Connect the AC Adapter to your Notebook

1. Plug the DC output cable of the AC adapter into the DC power jack on the rear panel of your notebook.
2. Plug the AC adapter into an AC electrical outlet.

To Connect an Optional Auto/Airline Adapter to your Notebook

1. Plug the DC output cable into the DC power jack on the rear panel of your notebook.
2. Plug the auto/airline adapter connector into the cigarette lighter of a car or other vehicle with the ignition key in the On or the Accessories position. Or plug the auto/airline adapter plug into the power jack on the seat in airplanes that are equipped to support powered electronic devices.

To Switch From AC Adapter Power To Battery Power for your Notebook Alone

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

#### CAUTION

Neither the internal nor the external Lithium ion battery is charged when you purchase your notebook. Initially you will need to connect the AC adapter or an optional auto/airline adapter to use the notebook and charge the batteries. It can take up to 3 hours to charge a single battery if the notebook is Off or in Suspend mode. If your notebook is in use it can take up to 9 hours or more to charge a single battery.

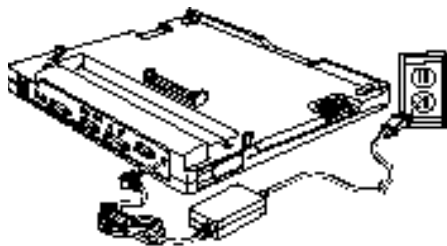
**Setting Up Your LifeBook 600 Series**

Figure 1-15 Connecting the AC Adapter to your LAN Enhancement Unit

To Connect the AC Adapter to your LAN Enhancement Unit

1. Plug the DC output cable of the AC adapter into the DC power jack on the rear panel of your LAN Enhancement Unit.
2. Plug the AC adapter into an AC electrical outlet.

To Connect an Optional Auto/airline Adapter to your LAN Enhancement Unit

1. Plug the DC output cable into the DC power jack on the rear panel of your LAN Enhancement Unit.
2. Plug the auto/airline adapter connector into the cigarette lighter of a car or other vehicle with the ignition key in the On or the Accessories position. Or plug the auto/airline adapter plug into the power jack on the seat in airplanes that are equipped to support powered electronic devices.

To Switch from AC Adapter Power to Battery Power with the LAN Enhancement Unit Installed

1. Be sure that you have both an internal and an external charged battery installed.
2. Remove the AC or auto/airline adapter.

**POINT**

Power to the LAN Enhancement Unit is switched on and off with the notebook power switch.

**DATA SECURITY**

Your LifeBook 600 Series has a built-in hardware control password security feature that allows you to protect the data stored in the notebook from unauthorized access. Your operating system and some applications have software control password security features that allow you to protect all or portions of the data stored in the notebook from unauthorized access.

**Hardware Data Security Features**

When you are using your notebook's built-in hardware control password to gain access to the notebook the actual password will not appear on the screen. This is a safety precaution. The hardware control security parameters are set

from the BIOS setup utility. (See Security Menu on pages 81-85 for more information on setting and clearing passwords and enabling and disabling built-in security features.)

#### Software Data Security Features

The operating system and some applications have security features that are independent of the built-in hardware protection features that are controlled from the BIOS. See your software documentation for more information about these features.

#### CAUTION

Make sure you memorize your passwords, both hardware and software. If you forget, you may not be able to use the notebook, and you will have to contact your service provider and arrange to have them reset the hardware system password. See your software manuals for what to do if you forget your software security password(s).

#### CAUTION

Software security feature passwords may not be the same as the hardware security passwords. Be sure you know which features are controlled from software and which from hardware or you may lock yourself out of your own data or lock up your hardware and not be able to operate your notebook.

## STARTING YOUR NOTEBOOK FOR THE FIRST TIME

### Booting the System

The first time that you turn on your notebook you will need to attach your AC adapter because the battery is not charged when you get your machine. We strongly recommend that you not attach any other external devices and do not put any CD or floppy disk in your drives until you have gone through the initial power on sequence.

When you turn on your notebook for the first time it will display a Fujitsu logo on the screen. If you do nothing the system will read the hard drive for the operating system software, flash the notebook configuration information on the screen, and then the Windows 95 Setup Wizard Screen will appear. (See Power On on pages 27-28 for additional help.) You will then be stepped through the condition of use process. You must complete this initial process before you will be able to use your notebook. (If you wish to access the BIOS setup utility before you go through the condition of use process you must press the F2 key while the Fujitsu logo is still visible. If you press the Esc key while the Fujitsu logo is still present you will get a dialog box which will allow you to select which drive is to be used for finding the operating system.) If you turn off the power without using the on screen Cancel button you will get an error message when you start your notebook again.

## Setting Up Your LifeBook 600 Series

### Conditions of Use

The first time you start your notebook you must confirm your acceptance of the copyright limitations for your pre-installed software. After you complete the Condition of Use process these screens will not appear again. There are six (6) screens to read carefully and respond to.

You cannot use your notebook until this Condition of Use process is completed. The bottom of each screen has a <Back button, a Next> button and a Cancel button which are activated by clicking the integrated TouchPad pointing device button with the cursor on the screen button. The <Back button will return you to the previous screen. The Next> button activates any choices or information you have entered and takes you on to the next screen. The Cancel button allows you to stop the setup process.

If you stop the process before the setup is complete your notebook will start up at the beginning of the Windows 95 Setup Wizard.

The screens you will be required to respond to are described with the required action.

### User Information

Fill in your name and your company name as you want them to appear on the software license. To step from the name blank to the company blank press the Tab key. When the information has been entered click on the Next> button. You will not be allowed to continue until you make an entry.

### License Agreement

Read the agreement carefully. You can scroll through the text using the integrated touchpad, the pointing device on the scroll bar, the up arrow ↑ and down arrow ↓ keys to move up

and down the text one line at a time, or use the Page Up and Page Down keys to move the text one screen at a time. When you finish reading you must point and click to 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 95 or to shut down your notebook.

#### Certificate of Authenticity

Look in the box that your notebook came in and you will find a Windows 95 Certificate of Authenticity shrink wrapped with the Windows 95 User's manual. On the certificate you will find a bar-code with a number above it. This is your product code and the number you should enter on the Certificate of Authenticity screen. When you have entered the number exactly as shown then click on the **Next >** button.

#### Start Wizard

The Start Wizard screen will appear if you have entered a valid product code. When you click on the **Finish** button the display will flash various screens as the system identifies what hardware is installed and runs a virus check.

#### Time Zone

When your notebook has completed identifying all of the installed hardware it will display a dialog box for entering which time zone you wish to set in the clock.

#### Windows Messaging

Once you have selected a time zone you will see a screen announcing that Windows messaging is being set up.

#### Printer Setup

When the messaging setup is complete a dialog box will appear for selecting which printer is to be attached to your notebook. You do not have to select a printer at this time. If you do not wish to select a printer, click on the **Cancel** button. If you do wish to select a printer click on the **Next** button and answer the questions.

#### Windows 95 Setup

Once you have completed the printer setup, or if you have chosen not to set up a printer at this time you will see the Windows 95 Setup screen. This screen lets you set up Internet Explorer 4.01 with Active Desktop on your Lifebook. Follow the on-screen directions to complete installation of Internet Explorer 4.01



#### POINT

If you would like to skip the installation of Internet Explorer 4.01, go to the Start Menu on the desktop, select Shutdown and 'Restart the computer'. After returning to Windows, you can install Internet Explorer 4.01 any time by selecting the icon 'Setup for Internet Explorer 4.0' in the 'Internet Starts Here' folder on the desktop.



#### POINT

You will find a Recovery CD-ROM packet in your accessories box. Please store the packet in a safe place in case there is a loss of data and it becomes necessary to re-install your operating system and/or application programs. (See *Restoring Your Pre-installed Software from the Recovery CD-ROM* on page 145.)

## USER REGISTRATION

There are three ways to register your notebook.

1. The registration card provided in the box with your LifeBook 600 Series which can be filled out and mailed.
2. A registration form behind the Fujitsu Welcome Center icon which can be filled out on your notebook and sent in a variety of ways, including printing and mailing, faxing or e-mailing.
3. Telephone registration by calling the Fujitsu PC service and support line at 1-800-8FUJITSU (1-800-838-5487).

## LEARNING ABOUT YOUR OPERATING SYSTEM AND APPLICATION SOFTWARE.

### Tutorials

All operating systems and most application software have tutorials built-in. We highly recommend that you step through your tutorial before you use an application even if you are familiar with the same application on a different machine, an earlier version of the application, or with a similar product.

### Manuals

In the accessories box you will find manuals for Windows 95 and other pre-installed software. Software manuals of pre-installed software that are not in the accessories box are available online. See the help screens of your pre-installed software. We recommend that you review these manuals for general information on the use of these applications and to get a basic understanding of what is covered in the manual, and how it is organized, should questions arise as you use the applications.

**Using Your LifeBook 600 Series from Fujitsu**

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## SECTION TWO USING YOUR LIFEBOOK 600 SERIES FROM FUJITSU

This section describes the indicators, buttons, connections and operating modes of your LifeBook 600 Series and their use.

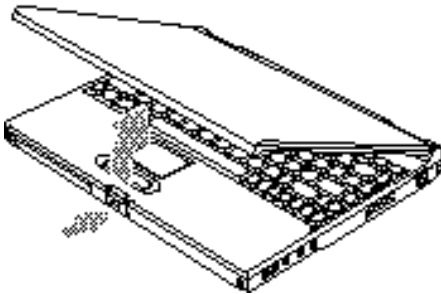


Figure 2-1 Opening the Display Panel

### DISPLAY PANEL

#### Opening the Display Panel

Pressing the latch on the front of your notebook releases the top of the display panel from the

front of the notebook body. When the display panel is released it pops up slightly to make it easier to open. Lift the display panel backward until the screen is at a comfortable viewing angle. (Figure 2-1.)

#### Adjusting the Display Panel

When you turn on your notebook, you may want to adjust the brightness level of the screen for best visibility. To do this, adjust the brightness control slider at the right side of the display panel. (Figure 2-2.) You may need to adjust the brightness periodically for different operating environments.



#### POINT

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

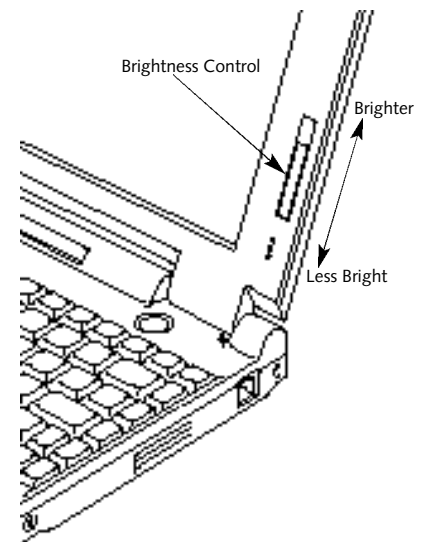


Figure 2-2 Display Adjustments

## Using Your LifeBook 600 Series

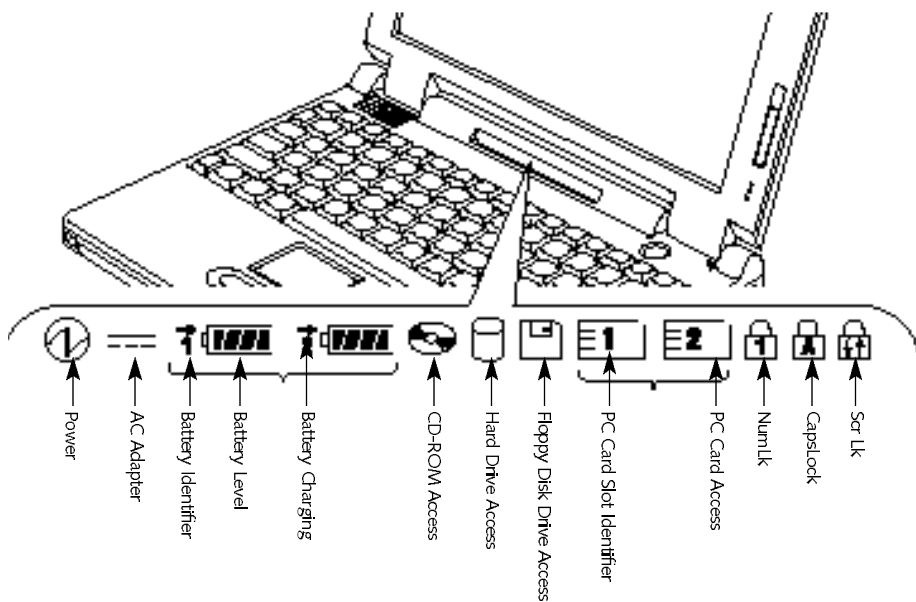


Figure 2-3 Status Indicator Panel

**STATUS INDICATOR PANEL**

The Status Indicator panel is located in the recess just above the keyboard. (Figure 2-3.) The appropriate indicators become visible as you use your notebook.

**Power Indicator**

The Power indicator tells you when the system is operational. It is on steady when there is power to your notebook, and blinks when the system is in Suspend mode. It goes off when the system has entered Save-to-Disk mode, has entered the Windows 95 pseudo-off state, or the power is turned off from the power switch.

**POINT**

When your notebook has been shut down from Windows 95, it is not the same as when it is turned off from the power switch. It is in a pseudo-off state, with all applications closed, but can be turned on by pressing the Suspend/Resume button. It is drawing some current in the pseudo-off state.

 **CAUTION**

Your notebook must be turned off with the power switch to prevent all current draw.

**AC Adapter Indicator**

The AC Adapter indicator tells you whether the system is operating on an AC or auto/airline adapter, or is running on batteries alone. The indicator is On when either of the adapters is active and Off when power comes from the batteries alone. If a battery is charging, the Power Adapter indicator is active regardless of the setting of the power switch. The AC Adapter indicator is also active in the Windows 95 pseudo-off state, regardless of the battery status. If there is no battery charging, and the power switch is Off, then the AC Adapter indicator and the Battery indicators will all be Off.

**Battery Indicators**

The two sets of battery indicators show whether or not the internal Lithium ion Smart battery and the external Lithium ion Smart battery are installed, and indicate the condition of each.

(Figure 2-3.) Battery 1 is the internal Lithium ion Smart battery and Battery 2 is the external Lithium ion Smart battery. The battery indicators are displayed only for a battery which is installed.

A small arrow icon (Battery Charging indicator) appears to the left of each of the Battery Level indicators and above the number (Battery identifier) if that battery is charging. The Battery Charging indicator flashes if the battery is too hot or too cold to charge. (Figure 2-3.)

The Battery Charging indicators operate whether the power switch is Off or On.

The symbols inside the battery outline of the Battery Level indicator show the operating level available in that battery. (Figure 2-4.) If there is no battery charging and the power switch is Off then the AC Adapter indicator and the Battery indicators will all be Off.

 **CAUTION**

A shorted battery is damaged and must be replaced. (Figure 2-4.)

 **CAUTION**

Turning off the power with the power switch or using the Suspend/Resume button when any of the Access indicators are On may cause loss of data and/or system errors.

 **CAUTION**

Batteries should not be subjected to shocks, vibration or extreme temperature as it can cause permanent damage.

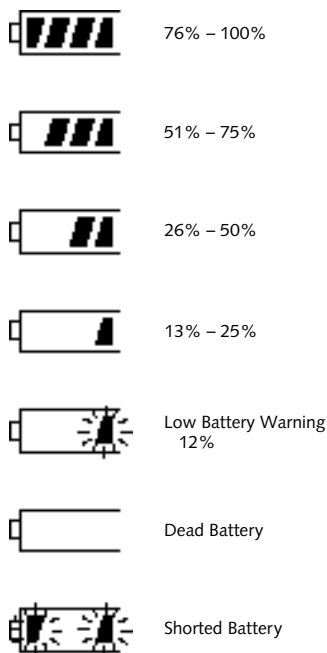


Figure 2-4 Battery Level Indicator

**CD-ROM Access Indicator**

The CD-ROM access indicator tells you the CD-ROM drive is being accessed. The CD-ROM drive Access indicator will flash when the software tries to access an audio CD or a CD-ROM even if no drive is installed.


**POINT**

The Windows 95 CD automatic insertion function will periodically check for a disk installed in the drive, causing the CD-ROM Access indicator to flash. The CD automatic insertion function allows your system to automatically start a disk as soon as it is inserted in the drive and the tray is closed. It will begin playing an audio CD or will start an application if the disk has an auto run file on it.


**POINT**

If you do not wish to have the CD automatic insertion function active you can disable it.

To disable the CD automatic insertion function do as follows:

1. Save all data and close all applications.
2. Click on the Start button.
3. Point to Settings .
4. Click on the Control Panel.  
The control panel window will be displayed.
5. Double click on the System icon.  
The system properties dialogue box will be displayed.
6. Click on the Device Manager tab.  
The device list will be displayed.
7. Click on the + to the left of the CD-ROM icon. The CD-ROM drive manufacturer's name and model will be displayed.
8. Click on the CD-ROM drive manufacturer's name and model.
9. Click on Properties. The CD-ROM drive manufacturer's name and model properties dialogue box will be displayed.

10. Click on the **Settings** tab.
11. Click on the **automatic insertion notification box to toggle it off.**
12. Click on **OK.**
13. Click on **OK** in the **system properties** dialogue box.
14. Restart your notebook according to the message displayed.

You can re-enable the function by repeating the process, except in step 11 change the setting to **On.**

#### Hard Drive Access Indicator

The **Hard Drive Access** indicator tells you when the internal hard drive is being accessed.

#### Floppy Disk Drive Access Indicator

The **Floppy Disk Drive Access** indicator tells you a floppy disk drive is being accessed, regardless of whether the floppy disk drive

being accessed is the one built-in the **LAN Enhancement Unit** or an optional external one. The **Floppy Disk Drive Access** indicator will flash when your software tries to access a floppy disk drive even if no floppy disk drive is installed.

#### PC Card Access Indicators

The **PC Card Access** indicator tells you when an installed **PC Card** is being accessed. **Card 1** is the bottom connector inside the slot and **Card 2** is the upper connector inside the card slot. **Type III** cards are always **Card 1** only. The **PC Card Access** indicator will flash if your software tries to access a **PC Card** even if none are installed.

#### NumLk Indicator

The **NumLk** indicator tells you the internal keyboard is set in **ten-key numeric mode.** (See page 35 for more information on the numeric keypad.)

You can activate the **NumLk** mode by pressing the **Scr Lk/NumLk** key while holding down the **Shift** key. Deactivate the mode the same way that you activated it.

#### CapsLock Indicator

The **CapsLock** indicator tells you when the keyboard is set for all capital letters. Activate the capitals lock mode by pressing the **CapsLock** key on the keyboard. Deactivate the mode the same way that you activated it.

#### Scr Lk Indicator

The **Scr Lk** indicator tells you when you are in scroll lock mode. You can activate or deactivate the scroll lock mode by pressing the **Scr Lk/NumLk** key. Deactivate the mode the same way that you activated it.

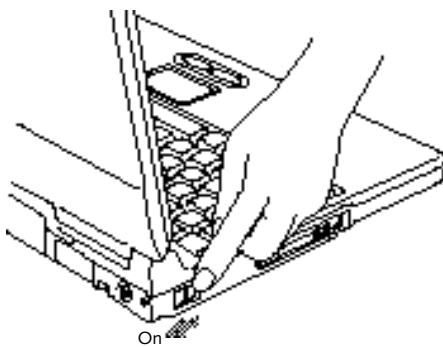


Figure 2-5 Power Switch

**POWER ON**

Facing the keyboard and display panel, move the power switch towards the rear of your notebook. This is the On position. (Figure 2-5.)

When you are done working you can leave your notebook in Suspend mode (see page 47), or you can turn it off. The power switch moved toward the front of your notebook is in the Off position. (See the section Power Off, page 28, for the recommended shutoff procedures.)

**CAUTION**

After turning off your notebook, make sure that it has been Off at least 10 seconds before turning the power switch to On. If you do not you could cause a system error. 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 adapter or the auto/airline adapter is connected and has power.

**CAUTION**

Neither the internal nor the external Lithium ion Smart battery is charged when you purchase your notebook. Initially you will need to connect the AC adapter or an optional auto/airline adapter to use the notebook and charge the batteries. It can take up to 3 hours to charge a single battery if the Notebook is Off or in Suspend mode. If your notebook is in use it can take up to 9 hours or more to charge a single battery.

**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 the power switch is turned on, your notebook carries out a Power On Self Test (POST) to check the internal parts and configuration. If a fault is found a beep will sound and/or an error message will be displayed. (See Troubleshooting on pages 140-142.) Depending on the nature of the problem you may be able to continue by starting the operating system or by entering the setup utility and revising the settings.**

After satisfactory completion of the Power On Self Test (POST) your notebook will load your operating system. (See *Boot Options* on pages 67-68 to see which kind of disk will be the source.)

#### CAUTION

Never turn off your notebook during 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 the *Troubleshooting information* on pages 140-142.)

#### POWER OFF

Before turning off the power by putting the power switch in the Off position, check that the Hard Drive, CD-ROM Drive, PC Card and the Floppy Disk Drive Access indicators are all Off. (See Figure 2-3, page 23.) If you turn off the power while accessing a disk or PC Card there is a risk of loss of data. The Off position is reached by facing the keyboard and display

panel, and moving the switch toward the front of your notebook. To assure that your notebook shuts down without error, use the Windows 95 shut down procedure.

#### CAUTION

Never turn your notebook off while an application is running. 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.

Shutting down your notebook from Windows 95 lets your notebook shut down operations, and turn off the power in the proper sequence to prevent errors. The sequence is:

1. Go to the Start button menu.
2. Click on ShutDown .

3. Verify that Shut down the computer? is selected and click on Yes .

If you are going to store your notebook for a month or more, take the following precautions:

1. Remove any CD and/or floppy disk.
2. After shutting down with Windows 95 turn off your notebook using the power switch.
3. Close your notebook display panel.
4. Disconnect the AC adapter.
5. Remove the batteries and store them separately in a cool dry place.

#### POINT

When your notebook has been shut down from Windows 95, it is not the same as being turned off from the power switch. It is in a pseudo-off state, with all applications closed, but can and must be turned on by pressing the Suspend/Resume button. It is drawing some current in the pseudo-off state.

## RESTARTING THE SYSTEM

When you wish to restart your system be sure that you follow the proper procedure. The procedure is as follows:

1. Go to the Start button menu.
2. Click on ShutDown .
3. Click on Restart the computer?
4. Verify that Restart the computer? is selected and click on Yes .

Windows 95 will shutdown and restart your notebook.

**NOTE:** You may also select Shut down the computer? and once the power is off for 10 seconds or more you can restart your notebook with the Suspend/Resume button. You may also select Shut down the computer? and once the Power indicator is off, turn the power switch to Off for 10 seconds or more and then turn the power switch to On. These alternative methods are not recommended.



### POINT

In Windows 95 pressing the **Ctrl+Alt+Del** keys simultaneously triggers the ShutDown submenu of the Start menu.



### CAUTION

Turning off the power switch without exiting Windows 95 may cause an error when you start the next time. Turning the power to On when it has been Off for less than 10 seconds may also cause an error when you start the next time.



### CAUTION

The external Lithium ion Smart battery in the LifeBook 690Tx is not interchangeable with the regular Lithium ion batteries in the LifeBook 600 series.

## FUJITSU WELCOME CENTER

The Fujitsu Welcome Center is an icon on your Windows 95 desktop. Clicking on it gives you access to product registration forms and instructions, change of address information and forms, contact information including telephone numbers and e-mail addresses, and an accessory catalog with information for ordering accessories for your notebook. Double left-click on the icon and then on the appropriate button for the information selection you wish.

## BATTERIES

The internal Lithium ion Smart battery is rechargeable with an operating time of up to 2 hours, depending on active power management features and user activity levels. Your notebook can be operated on the internal Lithium ion Smart battery alone or in a dual battery configuration with an external Lithium ion Smart battery.

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

- **When used at temperatures that exceed a low of 5°C or a high of 35°C. High 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.)**
- **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.**
- **When using a high current device such as a modem, a LAN card, the CD-ROM drive, or the hard drive frequently.**

Using the AC adapter will conserve your battery when using a high current device such as the modem, a LAN card, or the hard drive frequently.



#### CAUTION

Actual battery life will vary based on screen brightness, applications, features, power management settings, battery condition, and other customer preferences. Hard drive usage may also have a significant impact on battery life.



#### CAUTION

Do not leave a faulty battery in your notebook. It might 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.



#### CAUTION

Under federal, state or local law it may be illegal to dispose of batteries by putting them in the trash. Please take care of our environment and dispose of batteries properly. Check with your local government authority for details regarding recycling or disposing of old batteries. If you cannot find this information elsewhere, contact your support representative at 1-800-8FUJITSU (1-800-838-5487).

#### Shorted Batteries

**If your Status Indicator panel shows a shorted battery, check the installation for that battery by removing and re-installing it. If it still shows that it is shorted, replace it with a new battery.**



#### CAUTION

A shorted battery is damaged and must be replaced so that it does not damage anything else.

### Recharging the Batteries

If you want to check the condition of either the internal Lithium ion Smart battery or the external Lithium ion Smart battery, check the Battery Level indicators located on the Status Indicator panel. These indicators change as the battery levels change. Battery 1 is the internal Lithium ion Smart battery and Battery 2 is the external Lithium ion Smart battery. (Figure 2-3 on page 23.) You can also check the PowerPanel toolbar. (See pages 43-47.)

The Lithium ion batteries are recharged internally using the AC adapter or auto/airline adapter. To recharge the batteries:

- Make sure the battery to be charged is installed, then connect the AC adapter or auto/airline adapter.
- Make sure that the Battery Charging indicator to the left of the Battery Level indicator of the battery to be charged is visible on the Status Indicator panel.
- The percentage charge is shown inside the Battery Level icon. (Figure 2-4 on page 25.)

When two Lithium ion batteries are installed, the charge/discharge rate of the internal and external Lithium ion batteries are the same, when they are connected in parallel and are both charging and/or discharging at the same time. Since the rates are the same, one may finish charging or discharging before the other if they were not at the same charge level when they were installed and/or the AC or auto/airline adapter was connected. You can choose to have the batteries charged in series instead of in parallel, which will change the relative charging rates for the two batteries.

There is no memory effect on the Lithium ion batteries, which means that you do not need to discharge them completely before recharging. A single fully discharged Lithium ion Smart battery will charge in approximately three (3) hours when your notebook is Off or in Suspend mode. The charging time from fully discharged for two Lithium ion batteries together, is approximately 5 hours when your notebook is Off or in Suspend mode. Of course partially charged batteries will not take as long to charge.

The charge times will be significantly longer if your notebook is in use while the batteries are charging (from approximately nine (9) hours for one battery to approximately 15 hours for two batteries with normal operating levels).



### CAUTION

Using heavy current devices such as LAN cards or frequent CD-ROM accesses may prevent charging completely.

### Low Battery State

When the battery is running low, your notebook beeps about every 15 seconds and the Battery Level indicator(s) 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, the Battery Level indicator will show dead battery, and your notebook will go into Suspend mode to try and protect your data as long as possible. Your power management settings do not affect whether the dead

battery alarm level will send your notebook into Suspend mode, it will not go to Save-to-Disk mode. (Figure 2-3 on page 23.)

 **CAUTION**

You may not be able to hear the audio alarms if the volume control is set too low or is turned off by either hardware or software but you will still be able to see the Battery Level indicator(s) flash.

When the low battery alarm occurs you need to save all your active data and put your notebook into Suspend mode until you can provide a new power source. You should provide this power as soon as possible. The new power source can be a charged battery or a power adapter, either AC or auto/airline.

 **CAUTION**

When you are in Suspend mode there must always be at least one power source active. If you turn off the power with the power switch, or remove all power sources, battery, AC adapter, or auto/airline adapter, while your notebook is in Suspend mode any data which has not been saved to the hard drive will be lost.

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 AC adapter, an optional auto/airline adapter, or a charged battery. Dead Battery Suspend mode shows on the Status indicator just like the normal Suspend mode. Once you have provided power, you will need to press the Suspend/Resume button to resume operation. In the Suspend mode, your data can be maintained for sometime. If a power source is not provided promptly, the Power indicator will stop flashing and go out, and you will 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, but the battery trickle charges under these conditions. If you want to charge the battery more quickly, put your notebook into Suspend mode, or turn off your notebook, while the adapter is charging the battery. (See Power Off on page 28 for shutdown procedures.)

 **CAUTION**

There is no guarantee that data will not be lost once your notebook enters the Dead Battery Suspend mode.

**INTEGRATED TOUCHPAD POINTING DEVICE**

The touchpad pointing device is composed of a small rectangular touch sensitive pointer control and two buttons located in front of the keyboard. The touchpad pointing device has the function of a mouse, and moves the cursor around on the screen – up, down, left and right.

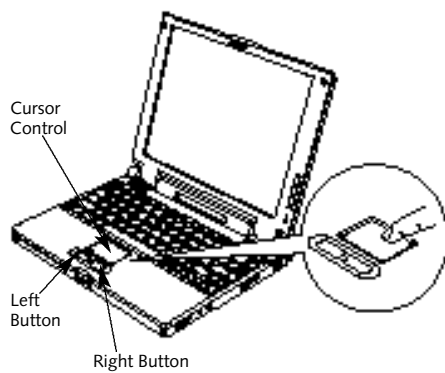


Figure 2-6 Touchpad Pointing Device

A light pressure with the tip of your fingernail is all that is required to operate the touchpad. Pencil erasers, etc. don't work. The faster you move your finger the faster the cursor will move. The second part of the touchpad pointing device – the buttons – function as mouse buttons, and the functions they perform depend on the application you are running. Figure 2-6 shows the position of the touchpad and buttons.

**POINT**  
An external mouse can be connected to the PS/2 port on the rear panel of your notebook, and used at the same time as the touchpad pointing device.

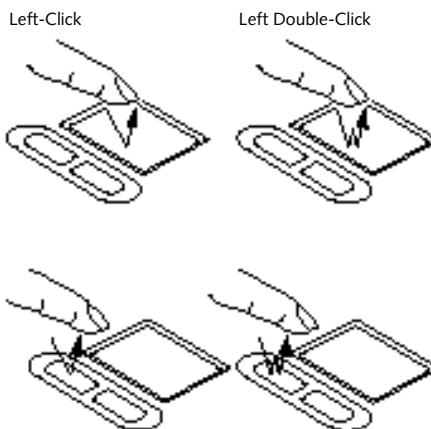


Figure 2-7 Clicking

**POINT**  
The left mouse button functions can also be performed with your finger on the touchpad.

#### Clicking

**Clicking means pushing and releasing a button.** To left-click, move the screen cursor to the item you wish to select, press the left pointing device button once, and then immediately release it. To right-click, move the mouse cursor to the item you wish to select, press the right pointing device button once, and then immediately release it. (Figure 2-7.) You can also left click by a light tap on the touchpad ending with your finger off the pad, instead of using the button.

#### Double-Clicking

Double-clicking means following the preceding Clicking procedure, but pressing the pointing device button twice in rapid succession. Double-clicking works with either the left or the right button. You can also double left click by two light taps on the touchpad ending with your finger off the pad, instead of using the button.

**CAUTION**

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

**POINT**

The interval between clicks for double clicking, and other parameters of pointing and selecting, can be adjusted with the selections in the dialog box of the mouse icon in your Windows Control panel.



Figure 2-8 Dragging

**Dragging**

Dragging means selecting an item with the pointing cursor, and while keeping the left pointing device button depressed, moving the cursor to the desired new location, then releasing the button. (Figure 2-8.) Dragging can also be done on the touchpad – two light taps ending with your fingernail on the pad and then moving, or holding the left button down and moving your fingernail on the pad.

**Touchpad Pointing Device Control Adjustment**

The Windows Control Panel provides customizing of your touchpad pointing device from the mouse icon. There are four (4) aspects of the touchpad pointing device operation which you can adjust.

- **Buttons** – This lets you set up the buttons for right or left handed operation and set the time interval for double clicking.
- **Pointers** – This lets you set up the size and shape of the cursor for different functions.

- **Motion** – This lets you set up the relation of the speed of motion of your finger to the motion of the cursor and to enable a trailing tail for the cursor arrow.
- **General** – This allows you to choose the type of mouse being used. It is already set for your integrated touchpad. You may need to change it for an external mouse.

You may want to try practicing with different adjustments until you find a combination that is comfortable for you.

**USING THE KEYBOARD**

Your notebook has an integral 86-key keyboard. (Figure 2-9.) The keys perform all the standard functions of a 101-key keyboard and also include Windows 95 keys and other special function keys. This section describes only those items specific to your notebook. They are the numeric keypad, the cursor keys, the function keys, the function extension key (Fn) and the Windows 95 keys.

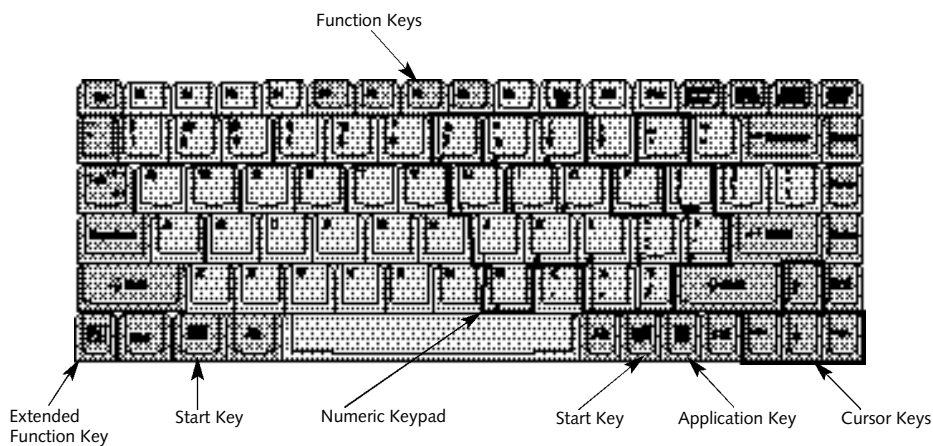


Figure 2-9 Keyboard

### Numeric Keypad

Certain keys on the keyboard perform dual functions as both standard character keys and as a numeric keypad. Figure 2-9 highlights these keys. To switch into numeric keypad mode, press the Scr Lk/NumLk while holding down the Shift key. You can now enter numerals 0 through 9, perform addition (+), subtraction (-), multiplication (\*), or division (/), and enter decimal points (.) using the keys designated as ten-key functions. The keys in the numeric keypad are marked in the lower right corner of the key to indicate their secondary functions.

To return these keys to their normal character function, press the Scr Lk/NumLk while holding down the Shift key again.



### POINT

When an external keypad is connected to the notebook the NumLk mode enables the external keypad and disables the built-in keyboard numeric keypad.

### 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 → as your application allows. (Figure 2-9.)



#### POINT

The integrated touchpad pointing device and/or an external mouse are also used for moving the cursor around the screen.

### Function Keys

Your notebook has twelve function keys, F1 through F12. The functions assigned to these keys differ for each application, and you should refer to your software documentation to find out how these keys are used. (Figure 2-9.)

#### Fn Key

The Fn key provides an extended function for the notebook and is used in conjunction with other keys. (Figure 2-9.)

Pressing F5 while holding down the Fn key 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 pixel resolution will still cover the entire screen.)

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 panel only, external monitor only, or both built-in display panel and monitor.

Pressing the Suspend/Resume button while holding down the Fn key forces the Save-to-Disk mode to activate regardless of the BIOS settings. Be sure you have a Save-to-Disk space allocation on your hard drive before you do this.

#### Windows 95 Keys

Your notebook has three Windows 95 keys, two Start keys and an Application key. The Start key displays the Start button menu. This is the same

as the button on the toolbar which is typically at the bottom of your Windows 95 desktop. The Application key has the same function in Windows 95 as the right mouse button, it displays the Shortcut menu for whatever item is selected. See your Windows 95 documentation for additional information. (Figure 2-9.)

### VOLUME CONTROL

All system and application functions have multiple volume controls which interact with each other. There is the hardware volume control on the right side panel of your notebook. There is a volume control in the ESS AudioRack, your operating system Sound Control panel and any other application with sound.

Each setting source puts an upper limit on the volume which can be set by the other sources. For example if the hardware volume control is turned all the way down, your software volume controls will not make your sound loud no matter how high you make the settings. By the same token, if the ESS AudioRack has the sound turned off, adjusting the hardware or

other application software volume setting will not produce sound. One easy operating method is to use the hardware and ESS AudioRack volume controls to set an upper limit on sound level and then make fine adjustments with other application software.

#### CAUTION

The ESS AudioRack volume setting sets the maximum volume level of the hardware volume control knob.

#### CAUTION

If you use a speakerphone function, be sure that the microphone setting in the ESS AudioRack (recorder portion) is disabled.

### FLOPPY DISK DRIVE

The floppy disk drive which is built-in your LAN Enhancement Unit is a 3.5" drive which can read and write on 1.44MB and 720KB memory capacity floppy disks. Floppy disk format is controlled from your operating system. (See your software documentation for more information.) You can use the optional external floppy disk drive. The system will treat any floppy disk drive in exactly the same way regardless of where it is installed. (See LAN Enhancement Unit on pages 103-107 and Installing an Optional External Floppy Disk Drive on page 107.) When your system boots it will always look first for a floppy disk drive in the LAN Enhancement Unit and then look at the external floppy disk drive port.

#### CAUTION

To get your system to recognize a newly installed floppy disk drive you must restart your notebook.

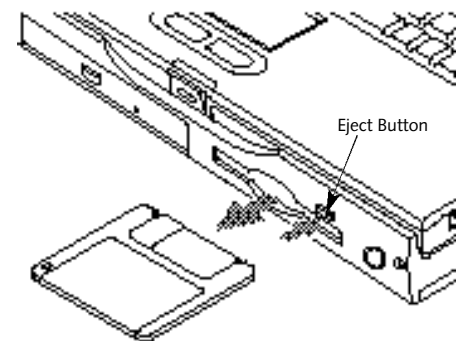


Figure 2-10 Loading/Ejecting a Floppy Disk

#### Loading a Floppy Disk

To load, insert a floppy disk into the floppy disk drive, shutter side first and label up, until the eject button, above the floppy disk drive opening, pops out. (Figure 2-10)

**POINT**

When there is no floppy disk in the drive, the eject button is flush with the front of your LAN Enhancement Unit.

**Ejecting a Floppy Disk**

To eject a disk, check that the Floppy Disk Drive Access indicator is Off, (see page 26) and press the Eject button. (Figure 2-10.)

**CAUTION**

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

**Preparing a Floppy Disk for Use**

Before you can use a new disk, you need to prepare it so your notebook knows where to store information. This preparation is called formatting or initializing a disk. You need to format new 3.5" floppy disks, unless you purchase

preformatted disks. You will use your notebook's operating system software to format a floppy disk. Please refer to the operating system manual for step-by-step instructions.

To prevent data stored on a floppy disk from being erased, slide the write protect tab on the floppy disk to open up the small hole. This makes the disk write protected. When you want to write data to that disk, slide the write protect tab the other way to close the small hole. (Figure 2-11.)

**CAUTION**

Formatting a previously used floppy disk is an effective method of clearing a disk as long as you realize that ALL the information on the disk will be erased.

**Care of Floppy Disk Drives and Disks**

- Avoid storing the floppy disk drive and disks in extremely hot and cold locations, or in locations subject to severe temperature changes.

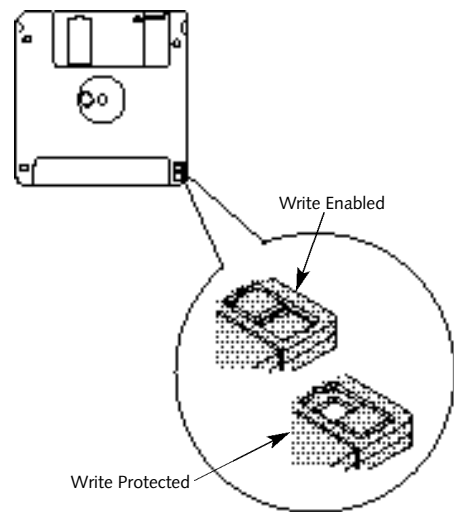


Figure 2-11 Floppy Disk Write Protect

### Using Your LifeBook 600 Series

- Keep the floppy disk drive and disks out of direct sunlight and away from heating equipment.
- Avoid storing the floppy disk drive in locations subject to shock and vibration.
- Avoid using the floppy disk drive and disks in damp and dusty locations.
- Never use the floppy disk drive with any liquid, metal, or foreign matter inside the floppy disk drive or disk.
- Never store a floppy disk near a magnet or magnetic field.
- 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.
- Never disassemble or dismantle your floppy disk drive.

#### CD-ROM DRIVE

The CD-ROM drive is a 20-speed maximum reader which is built-in your LAN Enhancement Unit.

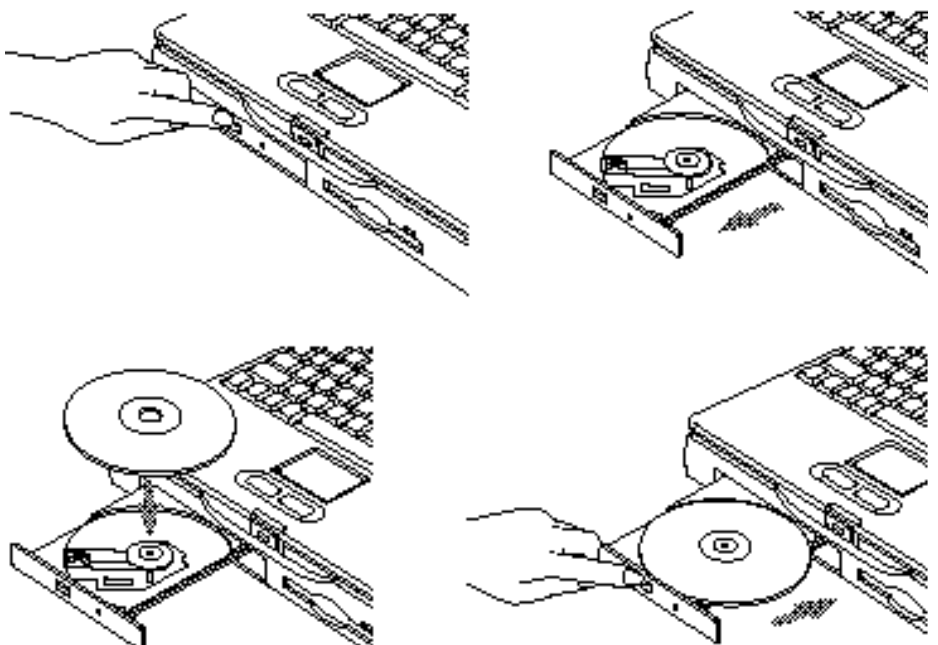


Figure 2-12 Loading/Ejecting a CD-ROM

**CAUTION**

Do not operate your CD-ROM drive unless your notebook and LAN Enhancement Unit combination is sitting on a flat surface. Using a disk when the drive is not level may damage the drive or prevent proper operation.

**Loading a CD**

- **Make sure there is power to your notebook.**
- **Push and release the eject button on the front of the CD-ROM drive to open the holder tray, the tray will come out a short distance. (Figure 2-12.)**
- **Gently pull the tray out until a CD-ROM can be easily placed in the tray.**
- **If there was a protective sheet in the tray when it was shipped, make sure it has been removed.**

- **Place the CD into the tray, label side up, with the hole in the center of the disk snapped onto the raised circle in the center of the tray.**
- **Close the tray.**
- **After the disk is loaded, it will take a short time for your notebook to recognize it.**

**POINT**

If you have disabled your CD automatic insertion function you will have to start the disk from your desktop, as your notebook will not automatically recognize that the disk has been loaded.

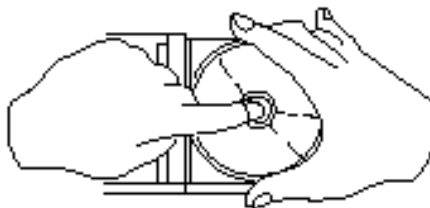


Figure 2-13 CD-ROM Handling

**Care of CD-ROMs**

CD-ROMs are precision devices and will function reliably if given reasonable care.

- **Always store your disk in its case when it is not in use.**
- **When removing the disk from its case, press down on the holder's center while lifting out the disk by its edges. (Figure 2-13.)**
- **Always handle a disk by the edges and avoid touching the surface.**
- **Avoid storing any disk where there are temperature extremes.**
- **Do not bend disks or set heavy objects on them.**
- **Never write on the label surface with a ball point pen, pencil or similar device.**
- **If a disk is subjected to a sudden change from cold to warm, condensation may form on the surface. Wipe the moisture off with a clean, soft, lint free cloth and then let it dry at room temperature. DO NOT use a hair dryer or heater to dry a disk.**

- If a disk is dirty, use only a CD-ROM cleaner or wipe it with a clean, soft, lint free cloth starting from the inner edge and wiping to the outer edge.

#### HARD DRIVE

The internal hard drive capacity is dependent on which model you are using. See Appendix A (pages 152-156) for model information.

#### Formatting the Hard Drive

The hard drive inside your notebook is formatted (initialized) at the factory. You do not need to format it under normal circumstances.



#### CAUTION

If you reformat the internal hard drive ALL data including the operating system and applications software will be erased. Unless data is copied to floppy disks or other data storage media it will be permanently lost. All software will need to be re-installed and data files restored from your back-up disks. See the operating system manual for more information on backing-up your data files.

The factory installed software, including the operating system, can be restored from the Recovery CD-ROM which came in the accessories box when you purchased your notebook. (See *Restoring Your Pre-installed Software from CD-ROM on page 145 for more information.*) Any application software which you have purchased and installed will have to be re-installed from the original source. When doing a recovery remember that you must allocate space for the Save-to-Disk function if you have it enabled. (See *Setting Up Your Save-to-Disk File Allocation on pages 99-100 for more information.*)

#### POWER MANAGEMENT

Your LifeBook 600 Series has many features for conserving power. Some power savings features are automatic and have no user control, such as those for the internal modem, while others depend on the user setting the parameters which best suit their operating needs. Power Savings features include: turning the display

brightness down; limiting the use of high power devices; activating an appropriate power savings profile; and putting your notebook in Suspend mode when not actually performing an operation. As with all mobile, battery-powered computers, there is a trade-off between performance and power savings.

Internal power management for your notebook is controlled from settings made in the BIOS setup utility, PowerPanel by Phoenix Technologies, and the Windows 95 Control panel. If no settings have been made in PowerPanel or the Windows 95 Control panel, then the BIOS settings will be used. The PowerPanel and the Windows 95 Control panel have been pre-set at the factory and will be active unless you disable them. Complete descriptions of the BIOS setup utility parameters are found in Section Three of this guide. Power management parameters are covered under the Power Savings menu. (See pages 86-93.)

Some particular power parameters are only available for setup from one of these places, others can be changed in any one of them.

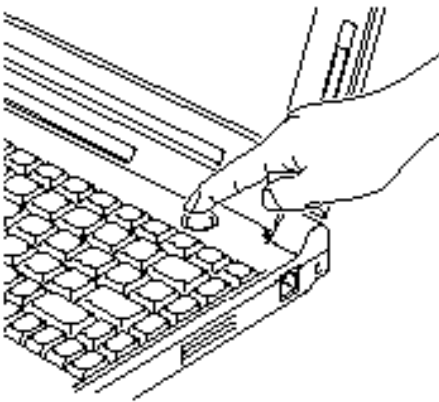


Figure 2-14 Suspend/Resume Button

#### Using the Suspend/Resume Button

When your notebook is active, the Suspend/Resume button, (Figure 1-6 on page 5), can be used to manually put your notebook into Suspend mode, or into the Save-to-Disk mode. Push the Suspend/Resume button, when your notebook is active but no Access indicators are

on, and hold it in until it is acknowledged by activation of the selected mode. Which mode is activated depends on the settings of the BIOS setup utility Power Savings menu. The default is Suspend mode. (See pages 88-89 for how to select Save-to-Disk mode.)

If your notebook is suspended, pushing the Suspend/Resume button will return your notebook to active operation at the point it went into suspension. The Suspend/Resume button is located next to the Status Indicator panel above the keyboard of your notebook. (Figure 2-14.) You can tell whether or not your system is in Suspend mode by looking at the Power indicator. (See page 23.) If it is visible and not flashing, your notebook is fully operational. If it is visible and flashing, your notebook is in Suspend mode. If it is not visible, the power is Off, the power is in the Windows 95 pseudo-off state, or your notebook is in the Save-to-Disk mode. (See pages 47-48.) When you receive your LifeBook 600 Series it will be set for the default which is Suspend mode.

#### CAUTION

Be sure you know what settings are active for the Suspend/Resume button before you use it as misuse can result in data loss. (See the Power Savings Menu of the BIOS setup utility, pages 88-89, for more information.)

#### POINT

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

#### CAUTION

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

**POINT**

If your notebook is active when you enter the Suspend mode or Save-to-Disk mode, changes to open files are not lost. The files are left open and memory is kept active during Suspend mode or the memory is transferred to the internal hard drive during Save-to-Disk mode.

**CAUTION**

If you are running your notebook on battery power, be aware that the battery continues to discharge while your notebook is in Suspend mode, though not as fast as when fully operational. With a fully charged internal Lithium ion Smart battery the Suspend mode will maintain your status for 24 hours or more.

**PowerPanel**

PowerPanel by Phoenix Technologies provides Windows 95 desktop access to a comprehensive combination of power management settings without entering the BIOS setup utility.

The PowerPanel icon looks like an atom with its cloud of electrons. This icon will open the PowerPanel menu. You can view the menu in icon format along the edge of your desktop by moving the cursor against the edge where you have chosen to keep your PowerPanel toolbar and letting it sit there until the toolbar appears. (The default position for the toolbar is the left side of the screen, but you can move it to whichever edge you like by dragging.)

The power management toolbar has ten power profile choices and six activation choices. When you switch to AC powered operation the PowerPanel toolbar will automatically change to indicate AC power operation and will show the AC Power profile as active.

The profiles are groups of system settings designed to fit power operation to specific user operating conditions. The activations are short-cut ways to turn on specific power management features of your notebook. Some of the profiles can be edited and saved from the PowerPanel application, some can be edited and saved from the BIOS setup utility and only viewed from PowerPanel, and some are factory set and can only be viewed from either PowerPanel or the BIOS setup utility.

The profile choices are:

(This group is factory set.)

- Maximum Battery Life.
- Maximum Performance.
- Power Management Off.

(This one is set only from the BIOS setup utility.)

- Custom Settings.

(This group is set from PowerPanel.)

- Presentation.
- Green PC.
- AC Profile.
- Word Processing.
- Communication.
- Games.

The activation choices are:

- System Suspend.
- System Save-to-Disk.
- System Standby.
- Hard Disk Standby.
- Modem Power Toggle.
- Video Standby.

The factory set Maximum Power Savings profile is designed around trade offs of performance and battery life. For truly maximum battery life keep the display and volume levels as low as possible and use the custom settings recommended in Section Three on page 91.



#### POINT

The AC Power profile is activated automatically when a power adapter is being used, unless it is overridden by another selection made after the adapter became active. It can be reactivated by selecting it or activated by selection, even when operating only on battery power.

#### POWERPANEL ONLINE HELP

To access help with your power management settings, move your cursor to the PowerPanel toolbar and right click. (See *Clicking on page 33.*) From the menu that appears select PowerPanel Help Topics.

#### POWERPANEL CUSTOMIZATION

To modify your PowerPanel toolbar or create a custom toolbar, move your cursor to the PowerPanel toolbar and right click. From the menu that appears select Customize. Within the Customize dialog box you can choose to have the toolbar display at all times or to use your custom toolbar. You can also select from the same menu to Hide the toolbar. If you hide the toolbar you will have to double click on the edge where the toolbar was located to display it.

If you select `Exit` from the PowerPanel menu you will turn off the PowerPanel completely. To turn it back on, go to the Program folder of the Start menu, select PowerPanel and click on it.

**MAXIMUM BATTERY LIFE PROFILE**

The Maximum Battery Life profile is a factory installed combination of timeouts and other power savings parameters read directly from the BIOS, and chosen as the settings that will produce the longest possible battery life.

**MAXIMUM PERFORMANCE PROFILE**

The Maximum Performance profile is a factory installed combination of timeouts and other power savings parameters read directly from the BIOS and chosen as the settings that will produce superior performance with reasonable battery life.

**POWER MANAGEMENT OFF**

Turns off power management control from Windows 95 and PowerPanel and turns it over directly to the BIOS.

**CUSTOM SETTINGS PROFILE**

The Custom Settings profile has those power saving parameters that you set in the BIOS setup utility using the Power Savings Menu Customize feature. (See *Power Savings on pages 86-93.*)

**POINT**

The Maximum Power Savings, Maximum Performance, and Power Management Off profiles are read only. The Custom Settings Profile can only be changed from the BIOS setup Utility.

**PRESENTATION PROFILE**

The Presentation profile is the same combination of timeouts and other power savings parameters as the Maximum Battery Life profile except that the display is never turned off. (This profile was designed to enhance the use of your notebook for slide show style presentations.)

**GREEN PC PROFILE**

The Green PC profile has the Video timeout and the Hard Drive timeout enabled but no standby or suspension modes enabled.

**AC PROFILE**

The AC power profile has all timeouts disabled and no other power management features enabled. This profile is activated automatically by plugging in a power adapter.

**WORD PROCESSING PROFILE**

The Word Processing profile is a factory installed combination of timeouts and other power savings parameters chosen as the settings that will produce superior performance with reasonable battery life when using your notebook for doing word processing.

**COMMUNICATION PROFILE**

The Communication profile is a factory installed combination of timeouts and other power savings parameters chosen as the settings that will produce superior performance with reasonable battery life when using your notebook with the modem active such as during Internet, fax or speakerphone activities.

#### GAMES PROFILE

The Games profile is a factory installed combination of timeouts and other power savings parameters chosen as the settings that will produce superior performance with reasonable battery life when playing games on your notebook.

#### SYSTEM SUSPEND ACTIVATION

Clicking on the Suspend button or selecting System Suspend on the PowerPanel menu will put your notebook in Suspend mode. Pressing the Suspend/Resume button turns the power back on and lets you begin where you left off. (See Figure 2-14 on page 42, and Suspend Mode on pages 47 and 88.)

#### SYSTEM SAVE-TO-DISK ACTIVATION

Clicking on the Save-to-Disk button or selecting System Save to Disk on the PowerPanel menu will put your notebook in Save-to-Disk mode. Your notebook will be left in the Windows 95 pseudo-off state. If the power switch is not turned off your notebook can be restarted by pressing the Suspend/Resume

button which will cause the system memory to reload from the hard drive and let you begin where you left off. (See Figure 2-14 on page 42, and Save-to-Disk Mode on pages 47-48.)

#### SYSTEM STANDBY ACTIVATION

Clicking on the System Standby button or selecting System Standby on the PowerPanel menu will put your notebook in Standby mode. You can return your notebook to normal operation by performing any activity such as pressing a key or touching the touchpad joystick.

#### HARD DISK STANDBY ACTIVATION

Clicking on the Hard Disk Standby button or selecting Hard Disk Standby on the PowerPanel menu will turn off your internal hard drive. You can return your notebook to normal operation by performing any hard drive operation.

#### MODEM POWER TOGGLE

Clicking on the Modem Power Toggle button or selecting Modem Power Toggle on the PowerPanel menu will turn the power to your modem on or off. To turn it to the other condition select Modem Power Toggle again.

#### VIDEO STANDBY ACTIVATION

Clicking on the Video Standby button or selecting Video Standby on the PowerPanel menu turns off the power to the display. You can return your notebook to normal operation by performing any activity such as pressing a key or touching the touchpad joystick.

#### Suspend Mode

The Suspend mode saves the contents of your notebook's system memory during periods of inactivity by maintaining power to critical parts while turning off the CPU, the display, the hard drive and all of the other internal components except those necessary to maintain system memory, recognize the Suspend/Resume button and restart. Your notebook can be put in Suspend mode by:

- Pressing the Suspend/Resume button until acknowledged.
- Selecting Suspend from the Windows 95 Start Menu.
- Selecting System Suspend from the PowerPanel toolbar or menu.

- Timing out from lack of activity.
- Battery level reaching the Dead Battery Warning condition.

Your notebook's system memory typically stores the file(s) on which you are working, the open application(s) and any other data required to support the operation(s) in progress. When you resume operation from Suspend mode, it returns to the point in the operation where it left off, before going into the mode. 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

Loss of all power sources, including batteries, while in the Suspend mode will cause loss of data and inability to return to operation with the Suspend/Resume button.

#### Save-to-Disk Mode

The Save-to-Disk function saves the contents of your notebook's system memory to the hard drive whenever you:

- Press the Suspend/Resume button until acknowledged with Save-to-Disk mode enabled in the Power Savings menu of the BIOS setup utility.
- Select Suspend from the Windows 95 Start menu with Save-to-Disk mode enabled by the BIOS setup utility.
- Select Save-to-Disk activation from the PowerPanel toolbar or menu.
- Time out from lack of activity with Save-To-Disk mode enabled from the Power Savings menu of the BIOS setup utility.

Your notebook's system memory typically stores the file(s) on which you are working, the open application(s) and any other data required to support the operation(s) in progress. When the Save-to-Disk function is activated your notebook saves the contents of the system memory

to a file on the internal hard drive, and then automatically shuts off power to your notebook. This is the same pseudo-off state as the Windows 95 power off. When you resume operation by pressing the Suspend/Resume button, you return to the point in the operation where you left off, before going into Save-to-Disk mode.



#### POINT

If power is lost during Save-to-Disk mode the data will be retrieved automatically as soon as power is returned.



#### POINT

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

 **POINT**

The main advantage of using the Save-to-Disk 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 Save-to-Disk mode is that it lengthens the power down and power up sequences and resets peripheral devices.

 **POINT**

Save-to-Disk mode requires allocating a significant amount of hard drive capacity for saving all of 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 Save-to-Disk allocation you will get an error message when you try to activate the Save-to-Disk mode and it will not work. Use the PHDISK Utility to increase the size of the Save-to-Disk file, SAVE2DSK.BIN. (Refer to *Setting Up Your Save-to-Disk File Allocation* on pages 99-100 for more information.) If you need help contact your support representative for recommendations.

**Idle Mode**

**Idle mode is one of the power management parameters. When Idle mode is enabled the CPU is put into low-speed operation when there is no activity (keystroke, pointer action, sound generation, video display change, modem transmission or reception, etc.) on your notebook for 16 seconds. Any activity will cause the normal operation to restart automatically. This feature is independent of the Suspend/Resume button. This parameter is enabled and disabled in the BIOS setup utility. (See page 87.)**

**Standby Mode**

**Standby mode is one of the power management parameters. When Standby mode is activated, your notebook puts the CPU in low-speed operation, shuts off the display and turns off the hard drive when there is no activity (keystroke, pointer action, sound generation, video display change, modem transmission or reception, etc.) on your notebook for the user selected time-out period. (See page 88.) Any activity**

will cause your notebook to return to normal operation automatically. This feature is independent of the Suspend/Resume button. This parameter is enabled and disabled in the BIOS setup utility.

#### Video Timeout

The Video Timeout is one of the power management parameters which 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. This parameter is enabled and disabled in the BIOS setup utility.

#### Hard Disk Timeout

The Hard Disk Timeout is one of the power management parameters which saves power by turning off the hard drive if there is no hard drive access for the timeout period which has been set in the BIOS setup utility. (See page 87.) Any attempt to access the hard drive will cause the hard drive to restart auto-

matically. This feature is independent of the Suspend/Resume button. This parameter is enabled and disabled in the BIOS setup utility.

#### Windows 95 Control Panel

The Power icon in the Windows 95 Control Panel allows you access to enable or disable all the power management settings which can be made from the desktop. Selecting Allow Windows to manage power use on this computer enables PowerPanel by Phoenix Technologies as well as those settings made from the Windows 95 Control panel. When Windows 95 power management is disabled the BIOS setup utility settings will control your power saving parameters. (See pages 86-93 for the BIOS setup utility Power Savings menu.)

The Windows 95 Control Panel Power Management dialog box lets you set different hard drive timeouts for battery and AC power operation and to set PC Card modem power parameters.



#### POINT

You must restart your notebook for Windows 95 Control panel setting changes to take affect.

#### INTERNAL MODEM

Your internal modem is a fax/data/voice modem controlled by Windows 95, LapLink, MegaPhone or other software. The voice functions of the modem include speakerphone and voice messaging capabilities. The answering machine capabilities require the use of third party software not included with your notebook. The other features are accessible via Windows 95, LapLink or MegaPhone.



#### POINT

Your internal 56K modem is upgradeable to the v.90 56K modem standard when it becomes available.

 **CAUTION**

Your internal modem is designed to allow faster downloads from K56flex compliant digital sources. Maximum achievable download transmission rates may not reach 56 Kbps and will vary with line conditions.

**INFRARED PORT**

**Infrared IrDA-compatible communication is a function that allows for wireless data transfer between your notebook and other IrDA-compatible devices. Examples of IrDA-compatible devices are another computer or a printer. When carrying out this kind of communication, both devices must be set so their infrared ports are directly facing each other without obstructions. A distance of 6" to 36" between the device ports is ideal. Dirt or scratches on the lens of your notebook or the other device will degrade performance. This is especially true for Fast IrDA applications such as a transfer to an Ethernet.**

**LapLink software can be used for Infrared file transfers. See your online help for more information.**

**The following conditions may interfere with infrared communications:**

- **When the infrared communication ports are not directly facing each other, or some obstacle is between them.**
- **When the infrared communication ports are too far apart.**
- **When a television or radio remote control unit, or a wireless headphone is being used nearby.**
- **When a strong light such as direct sunlight, fluorescent light, or incandescent light shines on the port.**

 **CAUTION**

Do not move either device during communication as it may interrupt data transmission.

 **CAUTION**

Be careful not to scratch the infrared port lens. Scratches, dirt or other surface marks can effect operation.

**PRE-INSTALLED SOFTWARE**

**Your LifeBook 600 Series comes with pre-installed software for playing audio and video files of various formats. In addition there is file transfer software, telephony software and virus protection software. Some models come with additional application software.**

All of the pre-installed software can be accessed from the Program folder of the Windows 95 Start menu or from the folders above the 'Programs' folder in the Start menu; Communications Software, Internet Software, Multimedia Software, Service and Support Software, and System Management Software. If you aren't sure what software is pre-installed check the Program folder. If you need assistance with an individual application use their online help.

#### SoftPEG MPEG File Player

The MPEG file player displays a screen to find the file which you wish to play. You can setup the list to select from limited to particular types of files or display all files. Opening the desired file will play it. Online help screens are available for more information. (Located in the Multimedia Software folder.)

#### SoftPEG Video CD Player

This control resembles a VCR player front panel and is operated in the same way. When you point to a button, a small explanation of

the use of the button will appear. When you left-click on the button it will activate. Online help screens are available for more information. (Located in the Multimedia Software folder.)

#### ESS AudioRack

The control of the AudioRack player software (AudioRack32) resembles the front panels of a rack of stereo equipment and is operated in much the same way. There is also AudioRack recording software (AudioRecorder). Online help screens are accessible from the AudioDrive panel of AudioRack32; click on the Help button for more information. In the AudioRecorder dialog box, click on Help in the top taskbar.

In AudioRack32 the AudioDrive panel lets you turn on and off the available functions. When you left-click on a button it will activate. When a function is active its button on the AudioDrive shows a green dot and its control panel is in the equipment rack. When it is off the dot on the button is black and the control panel is not in the rack. You activate a slider or

knob on a control panel by dragging it. The functions available are DAT (Digital Audio Tape player), 3D (3D-Stereo sound control), MIDI, Mixer and CD (Audio CD player). (Located in the Multimedia Software folder.)



#### POINT

For maximum frequency response and bandwidth, leave the graphic equalizer levels at the mid-point (zero level). To customize the frequency response to your personal taste, adjust accordingly.



#### CAUTION

The ESS AudioRack volume settings sets the maximum volume level of the hardware volume control knob for that function.

 **CAUTION**

If you use a speakerphone function, be sure that the microphone setting in the ESS AudioRack is disabled.

**LapLink**

**LapLink by Traveling Software provides direct file transfers to other computers; data transfers via internal modem, a PC Card modem, the infrared port, a serial cable, or a parallel cable (cables are not included). See the LapLink online help screens for operating instructions. (Located in the Communications Software folder.)**

**MegaPhone**

**MegaPhone by Cypress Research Corporation is telephony software which provides access to the voice and fax features of your notebook's internal modem. It features dialing, speakerphone and caller ID, and fax functions. See your MegaPhone online help screens for guidance in operating the MegaPhone software. (Located in the Communications Software folder.)**

 **POINT**

For optimum speakerphone performance:

- Speak clearly.
- Limit background noise.
- Speak facing the keyboard from about one (1) foot away.

**McAfee VirusScan**

**Running your McAfee VirusScan program after loading data or programs from a floppy disk, CD-ROM, modem data transfer, or infrared data transfer is a precaution that will protect the data on your hard drive from contamination or destruction. See your VirusScan online help screens for information on how and when to run this program. (Located in the Service and Support Software folder.)**

**PC Doctor**

**PC Doctor by Watergate Software is primarily for use by your support representative when helping you with trouble shooting. (See pages 138–139 for more information.) (Located in the Service and Support Software folder.)**

 **POINT**

If you have an Internet connection configured on your notebook, you can connect to our Service and Support Web site quickly by selecting the 'Fujitsu Service and Support Web site' icon in the 'Service and Support Software' folder.

**Configuring Your LifeBook 600 Series**

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## SECTION THREE

### CONFIGURING YOUR LIFEBOOK 600 SERIES FROM FUJITSU

This section explains the BIOS setup utility. The BIOS setup utility is required to set the date, time, power management modes, data security passwords and other operating parameters of your notebook.

#### BOOT SEQUENCE

Each time you power up or restart your LifeBook 600 Series, it goes through a quiet boot sequence that displays a Fujitsu logo until your operating system is loaded. During quiet boot, your notebook is performing a standard boot sequence including a Power On Self Test (POST). To access the ability to change the drive that will be used for finding the operating system, press the Esc key anytime while the Fujitsu logo is displayed. To enter the BIOS setup utility press the F2 key anytime while the Fujitsu logo is displayed. When the boot sequence is completed without a failure and without a request for the setup utility, the

system displays the Windows 95 opening screen. The boot sequence is executed when:

- You turn on power to the system using the power switch on the right side panel of your notebook. (Figure 2-5 on page 27.)
- You restart your computer from the Windows 95 Shutdown Menu of the Start Menu.
- 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 at the same time. This method is not recommended since it can result in loss of data.



#### POINT

The BIOS setup utility is entered by pressing the F2 key during the boot process while the Fujitsu logo is on the screen.



#### POINT

When error messages occur see Section Five (pages 140-142) for help in understanding the meaning and required actions to be taken.

#### IDENTIFYING THE DRIVES

Your notebook uses drive letters (Example A:, B:, C:, D:, E:) to identify internal and external devices such as hard drives, floppy disk drives, CD-ROM drives and PC Cards. The most commonly assigned drive designators are listed below. If you add other devices, the drive designators may be different. See your operating system manual for setting drive designators.

##### Drive Designators

**A:** Floppy disk drive.

Built-in the LAN Enhancement Unit or the external floppy disk drive.

**B:** Not used with your notebook.

**C:** Hard drive.

Installed inside your notebook.

**D:** CD-ROM drive.

Built-in the Enhancement Unit.

**CAUTION**

A bootable CD-ROM may have either a floppy disk format or a hard drive format. When using a bootable CD-ROM, drive designations will automatically change according to which format is used. (See page 66 for more information.)

**BIOS SETUP UTILITY**

The BIOS setup utility is a program that sets the operating environment for your notebook. It is referred to in this publication as the setup utility. There is no need to set or change the environment to operate. It is set at the factory for normal operating conditions.

The setup utility configures:

- Standard system parameters, such as date and time.
- Device control features parameters, such as I/O addresses, and boot device.
- Power Management parameters that help to conserve your notebook's batteries.

- System Data Security feature parameters, such as passwords.
- You will only have to change the utility settings if you want to:
- Change the date or time. (You can also do this without entering the setup utility, through your operating system.) (See your operating system manual.)
  - Change the primary boot device.
  - Change the power saving parameter settings. (For a more convenient process, see the PowerPanel on pages 43-47.)
  - Change a port address or other parameter.
  - Change an audio parameter setting.
  - Change the selection of whether to use the built-in display, an external monitor or both. (For a more convenient process, see the Fn Key on page 36.)
  - Change the system data security settings.

**Routinely Entering the Setup Utility**

You can enter the setup utility whenever you turn on or reset the system. To do this:

1. Allow the system to start booting.
2. As soon as the Fujitsu Logo appears on the screen, press the F2 key.
3. The Main Menu of the setup utility appears with the current settings of the parameters displayed.
4. If you wish to go to one of the other setup menus, press the ← or the → key to find the menu you require.

**POINT**

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

### Entering the Setup Utility After a Configuration Change or System Failure

If there has been a change in the system configuration that does not agree with the parameter settings stored in your BIOS memory, or there is a failure in the system, the system beeps and/or displays an error message after the Power On Self Test (POST). If the failure is not too severe, it will give you the opportunity to modify the settings of the setup utility, as described in the following steps:

1. When you turn on or restart the computer there is a beep and/or the following message appears on the screen:

Error message - please run SETUP program Press <F1> key to continue, <F2> to run SETUP

2. If an error message is displayed on the screen, and you want to continue with the boot process and start the operating system anyway, press the F1 key.



#### CAUTION

If your notebook beeps a series of beeps that sounds like a code and the display is blank, please refer to the Troubleshooting Section. (See pages 123-139.) The Troubleshooting Section includes a list of error messages and their meanings. (See pages 140-142.)



#### POINT

If your data security settings require it, you may be asked for a password before the operating system will be opened.

3. If an error message is displayed on the screen, and you want to enter the setup utility, press the F2 key.

4. When the setup utility starts with a fault present, the system displays the following message:

Warning!  
Error message  
[Continue]

5. Press any key to enter the setup utility. The system will then display the Main Menu with current parameter values.

## NAVIGATING THROUGH THE SETUP UTILITY

The BIOS setup utility consists of seven menus; MAIN, ADVANCED, SECURITY, POWER BOOT, INFO and EXIT. The remainder of Section Three explains each menu in turn including all submenus and setup items.

The following procedures allow you to navigate the setup utility menus:

1. To select a menu, use the cursor keys: ← , →.
2. To select a field within a menu or a submenu, use the cursor keys: ↑ , ↓.
3. To select the different values for each field, press the Spacebar or + to change to the next higher selection and F5 or - to go to the next lower selection.
4. To activate a submenu press the Enter key.
5. To return to a menu from a submenu, press the Esc key.
6. To go to the Exit Menu from any other menu, press the Esc key.



### POINT

Selecting a field causes a help message about that field to be displayed on the right-hand side of the screen.



### POINT

The BIOS Setup screens on the following pages are only a representation of the actual BIOS Setup screens. Your setup screens may vary.

7. Pressing the F9 key resets all items in the current menu to the default values. You will be asked to verify this action before it is executed.
8. Pressing the F10 key saves the current BIOS configuration and exits the BIOS setup utility. You will be asked to verify this action before it is executed.
9. Pressing the F1 key will give you a general help screen.

### MAIN MENU – SETTING STANDARD SYSTEM PARAMETERS

The Main Menu allows you to set or view the current System Parameters. Follow the preceding instructions for Navigating Through The Setup Utility to make any changes.

Table 3-1 shows the names of the menu fields for the Main menu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.



#### POINT

System Time and System Date can also be set from your operating system without using the setup utility. Use the calendar and time icon on your Control panel for Windows 95 or type time or date from the MS-DOS prompt.

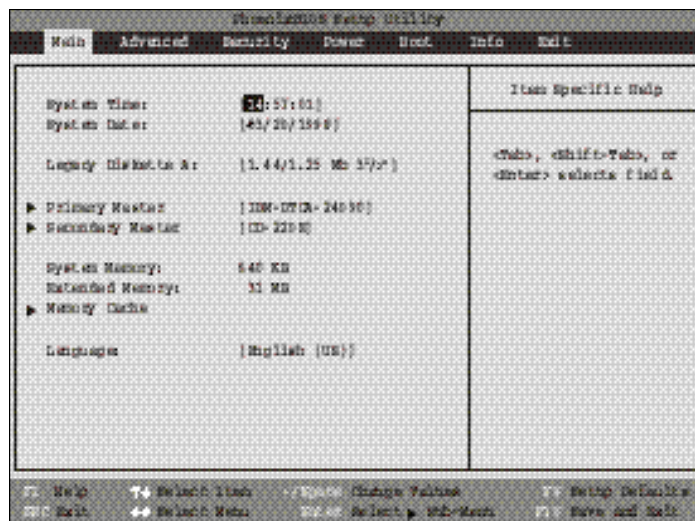


Figure 3-1 Main Menu

Table 3-1 Fields, Options and Defaults for the Main Menu

Menu Field	Options	Default	Description
<b>System Time:</b>	—	—	<b>Sets and displays the current time. Time is in a 24 hour format of hours:minutes:seconds with 2 digits for each. (HH:MM:SS). Example: 16:45:57. You may change each segment of the time separately. Move between the segments with the Tab key and/or Shift + Tab keys.</b>
<b>System Date:</b>	—	—	<b>Sets and displays the current date. Date is in a month/day/year numeric format with 2 digits each for month and day and 4 digits for year. (MM/DD/YYYY) for example: 03/20/1997. You may change each segment of the date separately. Move between the segments with the Tab key and/or Shift + Tab keys.</b>
<b>Diskette A:</b>	<b>1.44/1.25 MB, 3½"; Disabled.</b>	<b>1.44/1.25 MB, 3½"</b>	<b>Sets the format for floppy disk drive A if it is installed.</b>
<b>Primary Master:</b>	<b>Selects the Primary Master Adapter submenu.</b>	<b>[IBM-DTCA-24090]</b>	<b>Displays the type of internal hard drive the BIOS believes is in use. The internal hard drive is connected to the Primary Master Adapter. When this field is selected it opens the Master Adapter submenu. You can then change hard drive parameters to suit your particular drive.</b>

Table 3-1 Fields, Options and Defaults for the Main Menu

Menu Field	Options	Default	Description
<b>Secondary Master:</b>	<b>Selects the Secondary Master Adapter Submenu.</b>	<b>CD-220E</b>	<b>Displays the type of CD-ROM drive the BIOS believes is in use. The display will be different if your notebook is operating in an Enhancement Unit. The CD-ROM drive connects to the Secondary Master Adapter. When this field is selected it opens the Secondary Adapter submenu. You can then change CD-ROM drive parameters to suit your particular drive.</b>
<b>System Memory:</b>	—	<b>640 KB</b>	<b>Displays the size of system memory, which is detected automatically and cannot be changed by the setup utility.</b>
<b>Extended Memory:</b>	—	<b>31 MB</b>	<b>Displays the size of extended memory which is detected automatically and cannot be changed by the setup utility.</b>
<b>Memory Cache:</b>	<b>Selects the Memory Cache Submenu.</b>	-	<b>Allows you to set your system to use external memory cache.</b>
<b>Language:</b>	<b>English (US); Japanese (JP).</b>	<b>[English (US)]</b>	<b>The language selection controls the language in the BIOS screens and the power up screen. It does not change the operating system display so the desktop is not affected.</b>

### Configuring Your LifeBook 600 Series

#### Master Adapter – Submenu of the Main Menu

The Master Adapter and Secondary Adapter submenus are identical. The Master Adapter is connected to the internal hard drive. The Secondary Master is connected to the Enhancement Unit port and from there to the CD-ROM drive. The type of drive is shown at the top of the Menu. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-2 shows the names of the menu fields for the Master Adapter submenu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

Primary Master [IDE-DISK-24000]		Item Specific Help
Type:	[Auto]	User = you enter parameters of hard-disk drive installed at this connection.
Cylinders:	[7944]	Auto = autotype
Heads:	[16]	IDE/IDEK drive installed here.
Sectors:	[63]	CD-ROM = a CD-ROM drive is installed here.
Hardware Capacity:	4.00 MB	IDEK Removable = removable disk drive is installed here.
Multi-Sector Transfers:	[16 Sectors]	
IDE Mode Control:	[Enabled]	
Transfer Mode:	[FIFO X10 / D16]	
Ultra DMA Mode:	[Mode 2]	

F1 Help    F2 Select Item    -/Space+ Change Value    F9 Setup Defaults  
 ESC Exit    F4 Select Menu    Enter Select Sub-Menu    F10 Save and Exit

Figure 3-2 Master Adapter Submenu

Table 3-2 Fields, Options and Defaults for the Master Adapter Submenu

Menu Field	Options	Default	Description
Type:	Auto; None; CD-ROM; User.	[Auto]	Allows you to configure the interface for almost any drive. When Auto is selected the BIOS detects the control parameters from the drive itself and displays them. The user can not change any of the other menu items when Auto is selected. The None selection is to use if there is no drive connected to that Adapter. No parameters are displayed. The CD-ROM selection lets you set the parameters that are displayed. The User selection lets you set the parameters that are displayed except the total capacity which is detected and displayed.
Cylinders: (Available to change only when Type = User. Displayed when Type =Auto and a hard drive is detected. Not displayed for other selections.)	A number between 0 and 65,535.	—	Sets the number of cylinders for the drive. This field can be changed by incrementing (pressing the Spacebar or Hyphen key) or by typing in the number.

Table 3-2 Fields, Options and Defaults for the Master Adapter Submenu

Menu Field	Options	Default	Description
<b>Head:</b> (Available to change only when Type = User. Displayed when Type = Auto and a hard drive is detected. Not displayed for other selections.)	A number between 1 and 16.	—	Sets the number of sectors on the drive. This field can be changed by incrementing (pressing the Spacebar or Hyphen key) or by typing in the number.
<b>Sectors:</b> (Available to change only when Type = User. Displayed when Type = Auto and a hard drive is detected. Not displayed for other sections.)	A number between 0 and 63.	—	Sets the number of cylinders for the drive. This field can be changed by incrementing (pressing the Spacebar or Hyphen key) or by typing in the number.
<b>Maximum Capacity:</b> (Displayed for Type = User and for Type = Auto and a hard drive is detected. Not displayed for other selections.)	Display only.	—	

Table 3-2 Fields, Options and Defaults for the Master Adapter Submenu

Menu Field	Options	Default	Description
<b>Multi-Sector Transfers:</b> (Available to change only when Type = User or CD-ROM. Displayed when Type = Auto and a hard drive or CD-ROM is detected. Not displayed for other selections.)	<b>Disabled; 2 Sectors; 4 Sectors; 8 Sectors; 16 Sectors;MAX 32; MAX 64; MAX 128.</b>	—	<b>Sets the number of sectors allowed in a block transfer.</b>
<b>LBA Mode Control:</b> (Available to change only when Type = User or CD-ROM Displayed when Type=Auto and a hard drive or CD-ROM is detected. Not displayed for other selections.)	<b>Enabled; Disabled.</b>	—	<b>Enables or disables logical Block Addressing in place of Cylinder, Head, Sector addressing.</b>

Table 3-2 Fields, Options and Defaults for the Master Adapter Submenu

Menu Field	Options	Default	Description
<b>Transfer Mode:</b> (Available to change only when Type= User or CD-ROM. Displayed when Type= Auto and a hard drive or CD-ROM is detected. Not displayed for other selections.)	<b>Standard, Fast PIO 1; Fast PIO 2; Fast PIO 3; Fast PIO 4; Fast PIO 3/DMA; Fast PIO 4/DMA.</b>	—	<b>Selects the data movement method for the drive.</b>
<b>Ultra DMA Mode:</b> (Available to change only when Type = User or CD-ROM. Displayed when Type = Auto and a hard drive or CD-ROM is detected. Not displayed for other selections.)	<b>Disabled; Mode 0; Mode 1; Mode 2.</b>	—	<b>Selects the DMA transfer mode for the drive.</b>



**CAUTION**

A bootable CD-ROM may have either a floppy disk format or a hard drive format. When the bootable CD-ROM is used the drive allocations change automatically without changing the BIOS setup. If a floppy disk format CD-ROM is used the CD-ROM becomes Drive A. If a hard disk format CD-ROM is used the internal hard drive becomes Drive D and the CD-ROM becomes Drive C and all other drive designations shift as necessary. The boot sequence ignores the new drive designations, however, your application software will use the new designations.



**CAUTION**

Be careful of the operating environment when booting from a CD-ROM or you may overwrite files by mistake.

### Configuring Your LifeBook 600 Series

#### Memory Cache – Submenu

The Memory Cache submenu provides the ability to enable or disable external cache memory for your processor. Follow the instructions for **Navigating Through the Setup Utility** to make any changes. (See page 77.)

Table 3-3 shows the names of the menu fields for the Memory Cache submenu, all the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

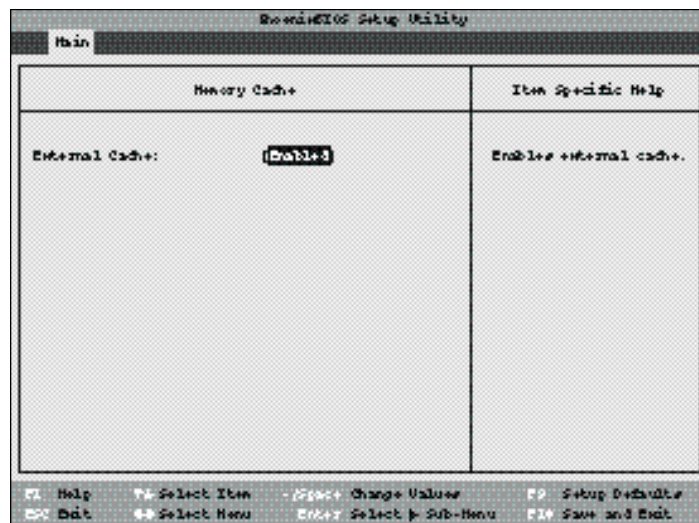


Figure 3-3 Memory Cache Submenu of the Main Menu

Table 3-3 Fields, Options and Defaults for the Memory Cache Submenu

Menu Field	Options	Default	Description
<b>External Cache:</b>	<b>Enabled; Disabled.</b>	<b>[Enabled]</b>	<b>Turns external memory cache on and off.</b>

#### Exiting from the Main Menu

When you have finished setting the parameters on this menu, you can either exit from the setup utility, or move to another menu. If you wish to exit from the setup utility, press the Esc key or use the cursor keys to go to the Exit menu. If you wish to move to another menu, use the cursor keys. See *Navigating Through the Setup Utility* on page 57 for more information.

### Configuring Your LifeBook 600 Series

#### ADVANCED MENU – SETTING DEVICE FEATURE CONTROLS

The Advanced Menu allows you to:

- Set the I/O addresses for the ports.
- Set the communication modes.
- Set audio function I/O address, interrupt level and DMA channel.
- Select between the display panel and an external CRT display.
- Enable or disable compensation for your display.
- Set keyboard and mouse features.

Follow the instructions for **Navigating Through the Setup Utility** to make any changes. (See page 57.)

Table 3-4 shows the names of the menu fields for the Advanced Menu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

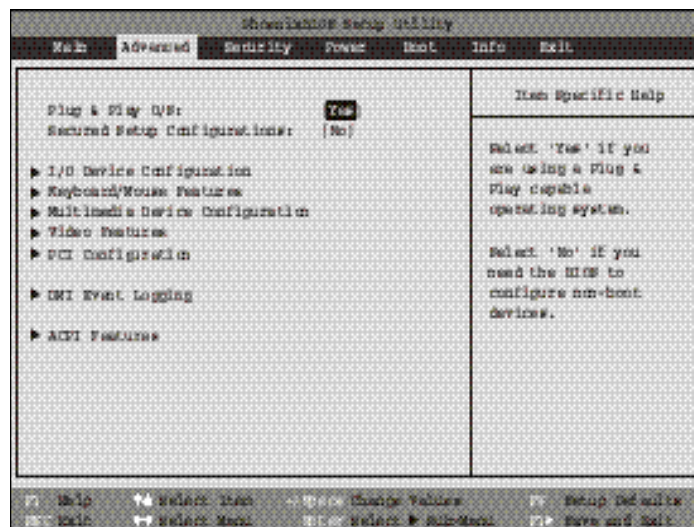


Figure 3-4 Advanced Menu

Table 3-4 Field Names, Options and Defaults for the Advanced Menu

Menu Field	Options	Default	Description
<b>Plug &amp; Play O/S:</b>	<b>Yes; No.</b>	<b>[Yes]</b>	<b>Allows you to inform the BIOS whether your operating system is capable of plug and play operation.</b>
<b>Secured Setup Configurations:</b>	<b>Yes; No.</b>	<b>[No]</b>	<b>Allows you to prevent plug and play operations from changing system settings.</b>
<b>I/O Device Configuration:</b>	<b>Selects the I/O Device. Configuration submenu.</b>	—	<b>This menu allows you to set I/O addresses and interrupt levels for most input/output devices.</b>
<b>Keyboard/Mouse Features:</b>	<b>Selects the Keyboard/Mouse Features submenu.</b>	—	<b>This menu allows changing some of the mouse and keyboard parameters.</b>
<b>Multimedia Device Configuration:</b>	<b>Selects the Multimedia Device Configuration submenu.</b>	—	<b>This menu allows setting of address and interrupts for multimedia devices.</b>
<b>Video Features:</b>	<b>Selects the Video Features submenu.</b>	—	<b>This menu allows setting up the display.</b>
<b>PCI Configuration:</b>	<b>Selects the PCI Configuration submenu.</b>	—	<b>This menu provides access to an additional submenu and allows enabling and disabling of the internal modem.</b>
<b>DMI Event Logging:</b>	<b>Selects the DMI Event Logging submenu.</b>	—	<b>This menu allows setting of the Desktop Management Interface (DMI) parameters.</b>
<b>ACPI Features:</b>	<b>Selects the ACPI Features submenu.</b>	—	<b>This menu allows setting of Advanced Configuration and Power Interface controls.</b>

**CAUTION**

I/O addresses, DMA channels and Interrupt levels can be entered in various ways, including via the BIOS setup utility, the control software for the I/O device, or the hardware. If any two ports or devices, serial or parallel, have the same I/O address assigned your notebook will not function normally. Please keep a record of original settings before making any changes in the event that a restoration is required. See your hardware and software documentation as well as the setup utility to determine settings, limitations, etc.

### I/O Device Configuration

#### Submenu of the Advanced Menu

The I/O Device Configuration submenu provides the ability to set the I/O addresses and interrupt levels for ports of your notebook. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-5 shows the names of the menu fields for the I/O Device Configuration submenu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.



#### POINT

To prevent IRQ and address conflicts, avoid changing the default settings. If you must change the settings, you can call 1-800-8FUJITSU for technical assistance.

I/O Device Configuration		Item-Specific Help
Serial port 2:	[Enabled]	Configure serial port 2 using options:
Base I/O address:	[3F8]	[Disable+Q]
Interrupt:	[IRQ 4]	No configuration
Serial port 3:	[Enabled+Q]	[Enabled]
Base I/O address:	[2E8]	User configuration
Interrupt:	[IRQ 3]	
Base I/O address:	[1F0]	
DMS channel:	[DMS 3]	
Parallel port:	[Enabled+Q]	[Auto]
Base I/O address:	[E0-directional]	BIOS or OS chooses
Interrupt:	[IRQ 7]	
Floppy disk controller:	[Enabled+Q]	
Local bus IDE adapter:	[E+Q]	

F1 Help    F4 Select Item    -/Space Change Value    F7 Setup Defaults  
 Esc Exit    F5 Select Menu    Enter Select Sub-Menu    F10 Save and Exit

Figure 3-5 I/O Device Configuration



#### POINT

All I/O addresses in Table 3-5 are in hexadecimal.

Table 3-5 Fields, Options and Defaults for the I/O Device Configuration Submenu

Menu Field	Options	Default	Description
<b>Serial port A:</b>	<b>Auto; Disabled;Enabled.</b>	<b>[Enabled]</b>	<b>Selects configuration method for serial port A. Serial port A is the external serial port. The selection Auto makes the BIOS or operating system choose the configuration. The Disabled selection means that serial port A is not configured for use. The Enabled selection provides for configuration setup by the user. When Enabled is selected the choices for setting Base I/O address and Interrupt level are displayed.</b>
<b>Base I/O address:</b> (Displayed only when serial port A is set to Enabled.)	<b>3F8; 2F8; 3E8; 2E8.</b>	<b>[3F8]</b>	<b>Sets the Base I/O address for serial port A.</b>
<b>Interrupt:</b> (Displayed only when serial port A is set to Enabled.)	<b>IRQ 4;IRQ 10; IRQ 11; IRQ 3.</b>	<b>[IRQ 4]</b>	<b>Sets the interrupt level for serial port A.</b>

**CAUTION**

The BIOS will warn you that there is a resource conflict by placing a yellow asterisk next to the device(s) in conflict.

Table 3-5 Fields, Options and Defaults for the I/O Device Configuration Submenu

Menu Field	Options	Default	Description
<b>Serial port B:</b>	<b>Auto; Disabled;Enabled.</b>	<b>[Enabled]</b>	<b>Selects configuration method for serial port B. Serial port B is the serial port which is the infrared port. The selection Auto makes the BIOS or operating system choose the configuration except for mode. The Disabled selection means that serial port B is not configured for use. The Enabled selection provides for configuration setup by the user. When Enabled is selected the choices for setting Base I/O address and interrupt level are displayed.</b>
<b>Mode: (Displayed if serial port B is not disabled.)</b>	<b>FIR; IrDA.</b>	<b>[FIR]</b>	<b>Selects the speed and format of the infrared port.</b>
<b>Base I/O address: (Displayed only when serial port B is set to Enabled.)</b>	<b>2E8; 3F8;2F8; 3E8.</b>	<b>[2E8]</b>	<b>Selects the Base I/O address for serial port B.</b>
<b>Interrupt: (Displayed only when serial port B is set to Enabled.)</b>	<b>IRQ 4; IRQ 10; IRQ 11;IRQ 3.</b>	<b>[IRQ 3]</b>	<b>Sets the interrupt level for serial port B.</b>
<b>Base I/O address: (Displayed only when serial port B is set to Enabled.)</b>	<b>118;100; 108; 110.</b>	<b>[118]</b>	<b>Sets the Base I/O address for the FIR mode operation.</b>

Table 3-5 Fields, Options and Defaults for the I/O Device Configuration Submenu

Menu Field	Options	Default	Description
<b>DMA channel:</b> (Displayed only when serial port B is set to Enabled.)	DMA 3;DMA 1.	[DMA 3]	<b>Sets the DMA channel for the FIR mode of operation.</b>
<b>Parallel port:</b>	Auto; Disabled;Enabled.	[Enabled]	<b>Selects configuration method for parallel port. The selection Auto makes the BIOS or operating system choose the configuration. The Disabled selection means that the parallel port is not configured for use. The Enabled selection provides for configuration setup by the user. When Enabled is selected the choices for setting Base I/O address and Interrupt level are displayed.</b>
<b>Mode:</b> (Displayed if the parallel port is not disabled.)	Bi-directional; ECP, Output only.	[Bi-directional]	<b>Selects the mode for the parallel port. Bi-directional (Full Duplex) is two way transfer of information between your notebook and a connected parallel device. Example: if your notebook is connected to a parallel printer, it can transfer data and control information to the printer and receive status and error information from the printer. Output only (Half Duplex) is information transfer in one direction only, it can transfer data and control information to the printer but CANNOT receive status and error information from the printer. ECP allows communication with ECP class devices.</b>

Table 3-5 Fields, Options and Defaults for the I/O Device Configuration Submenu

Menu Field	Options	Default	Description
<b>Base I/O address:</b> (Displayed only when the parallel port is set to Enabled.)	<b>378; 278; 3BC.</b>	<b>[378]</b>	<b>Selects the Base I/O address for the parallel port.</b>
<b>Interrupt:</b> (Displayed only when the parallel port is set to Enabled.)	<b>IRQ 7;IRQ 5.</b>	<b>[IRQ 7]</b>	<b>Sets the interrupt level for the parallel port.</b>
<b>Floppy disk controller:</b>	<b>Enabled; Disabled.</b>	<b>[Enabled]</b>	<b>Turns on and off the floppy disk drive controller.</b>
<b>Local Bus IDE adapter:</b>	<b>Both; Disabled; Primary; Secondary.</b>	<b>[Both]</b>	<b>Sets up the IDE adapter.</b>

### Configuring Your LifeBook 600 Series

#### Keyboard/Mouse Features

##### Submenu of the Advanced Menu

The Keyboard/Mouse Features submenu is for setting the parameters of the integrated and external mouse and keyboard. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-6 shows the names of the menu fields for the Keyboard/Mouse submenu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

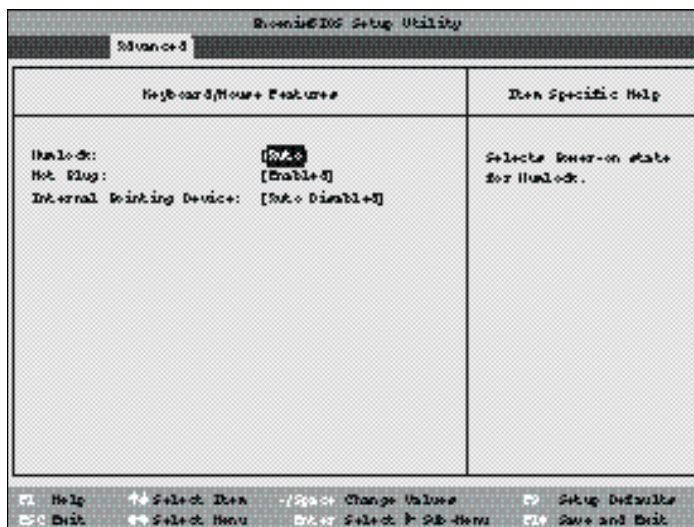


Figure 3-6 Keyboard/Mouse Features Submenu

Table 3-6 Fields, Options and Defaults of the Keyboard/Mouse Submenu

Menu Field	Options	Default	Description
<b>Numlock:</b>	<b>Off; On; Auto.</b>	<b>[Auto]</b>	<b>Sets the NumLock function state when the computer completes booting.</b>
<b>Hot Plug:</b>	<b>Enabled; Disabled.</b>	<b>[Enabled]</b>	<b>Enables and disables the ability to plug a mouse or keyboard into the PS/2 port and have it immediately recognized and active.</b>
<b>Internal Pointing Device:</b>	<b>Auto Disabled; Always Enabled.</b>	<b>[Auto Disabled]</b>	<b>Sets the device controlling the mouse cursor on the screen. Always Enabled makes the touchpad pointing device always enabled whether there is an external mouse or not. Auto Disabled makes the touchpad pointing device turn off when an external pointing device is connected to the PS/2 port.</b>

### Configuring Your LifeBook 600 Series

#### Multimedia Device Submenu of the Advanced Menu

The Multimedia Device submenu is for setting the features of the built-in audio, game and other multimedia functions. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-7 shows the names of the menu fields for the Multimedia Device submenu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.



#### POINT

All I/O addresses in Table 3-7 are in hexadecimal.

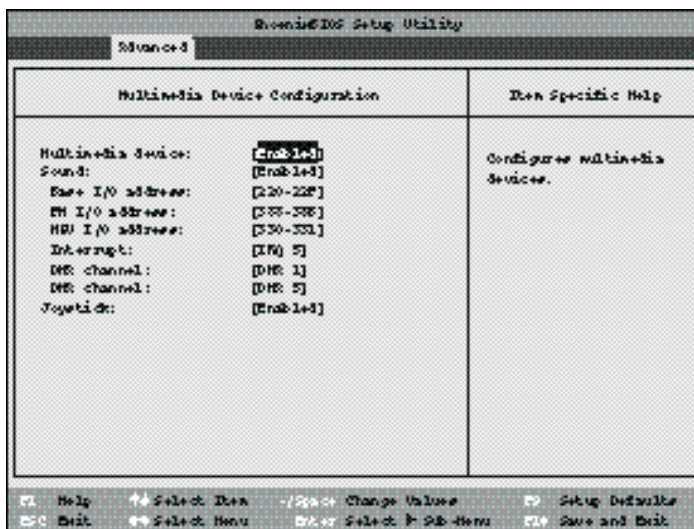


Figure 3-7 Multimedia Device Configuration Submenu

Table 3-7 Fields, Options and Defaults of the Multimedia Device Configuration Submenu

Menu Field	Options	Default	Description
<b>Multimedia device:</b>	<b>Enabled; Disabled.</b>	<b>[Enabled]</b>	<b>Turn sound and game equipment on and off.</b>
<b>Sound: (Displayed only when multimedia is enabled.)</b>	<b>Enabled; Auto; Disabled.</b>	<b>[Enabled]</b>	<b>The selection Auto makes the BIOS or operating system choose the configuration. The Disabled selection means that sound equipment is not configured for use. The Enabled selection provides for configuration setup by the user. When Enabled is selected the choices for setting Base I/O address and Interrupt level are displayed.</b>
<b>Base I/O address: (Displayed only when multimedia and sound are both enabled.)</b>	<b>220 – 22F; 240 – 24F; 260 – 26F; 280 – 28F.</b>	<b>[220 – 22F]</b>	<b>Sets the base addresses for sound equipment.</b>
<b>FM I/O address: (Displayed only when multimedia and sound are both enabled.)</b>	<b>338 – 38B; 38C – 38F; 390 – 393; 394 – 397.</b>	<b>[338 – 38B]</b>	<b>Sets the base addresses for the FM synthesizer functions.</b>
<b>MPU I/O address: (Displayed only when multimedia and sound are both enabled.)</b>	<b>300 – 301; 310 – 311; 320 – 321; 330 – 331.</b>	<b>[330 – 331]</b>	<b>Sets the base addresses for the MIDI functions.</b>

Table 3-7 Fields, Options and Defaults of the Multimedia Device Configuration Submenu

Menu Field	Options	Default	Description
<b>Interrupt:</b> (Displayed only when multimedia and sound are both enabled.)	<b>IRQ 5;IRQ 7; IRQ 9; IRQ 10;IRQ 11.</b>	<b>[IRQ 5]</b>	<b>Sets the interrupt level for sound equipment.</b>
<b>DMA channel:</b> (Displayed only when multimedia and sound are both enabled.)	<b>DMA 0; DMA 1; DMA 3; DMA 5.</b>	<b>[DMA 1]</b>	<b>Sets the DMA channel for the FM synthesizer functions.</b>
<b>DMA channel:</b> (Displayed only when multimedia and sound are both enabled.)	<b>DMA 0;DMA 1; DMA 3;DMA 5.</b>	<b>[DMA 5]</b>	<b>Sets the DMA channel for the MIDI functions.</b>
<b>Joystick:</b> (Displayed only when multimedia is enabled.)	<b>Enabled; Auto; Disabled.</b>	<b>[Enabled]</b>	<b>The selection Auto makes the BIOS or operating system choose the configuration. The Disabled selection means that joystick equipment is not configured for use. The Enabled selection provides for configuration setup by the user. When Enabled is selected the joystick equipment is enabled with the configuration set by the joystick hardware.</b>

**Video Features Submenu of the Advanced Menu**

The Video Features Submenu is for setting the display parameters. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-8 shows the names of the menu fields for the Video Features submenu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

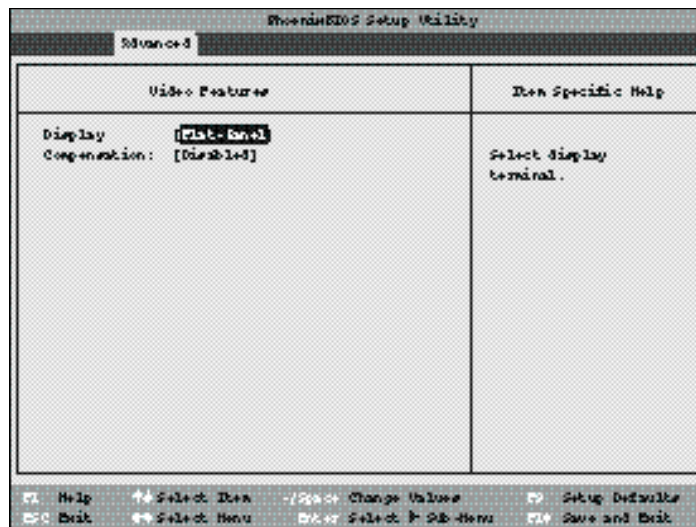


Figure 3-8 Video Features Submenu

Table 3-8 Fields, Options and Defaults for the Video Features Submenu

Menu Field	Options	Default	Description
<b>Display:</b>	<b>Flat-Panel; CRT; Simultaneous.</b>	<b>[Flat-Panel]</b>	<b>Selects where the video signal will be routed.</b>
<b>Compensation:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>Enables or disables compensation which controls spacing on the display. When it is enabled displays with less than 1024 x 768 pixel resolution will still cover the entire screen.</b>

**PCI Configuration Submenu of the Advanced Menu**

The PCI Configuration Submenu is for enabling and disabling the internal modem and setting the interrupt options for legacy ISA devices. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-9 shows the names of the menu fields for the PCI Configuration submenu, all the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

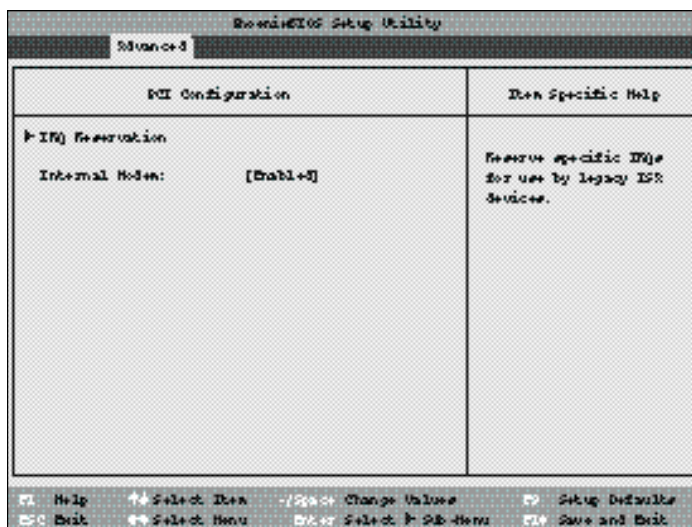


Figure 3-9 PCI Configuration Submenu

Table 3-9 Fields, options and Defaults for the PCI Configuration Submenu

Menu Field	Options	Default	Description
<b>IRQ Reservation:</b>	<b>Selects the IRQ Reservation Submenu.</b>	—	<b>This menu allows you to set aside interrupt levels for legacy ISA devices.</b>
<b>Internal Modem:</b>	<b>Enabled; Disabled.</b>	<b>[Enabled]</b>	<b>Turns the internal modem on and off.</b>

**IRQ Reservation Submenu of the PCI Configuration Submenu**

The IRQ Reservation Submenu is for reserving interrupts for legacy ISA devices. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-10 shows the names of the menu fields for the IRQ Reservation submenu, all the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

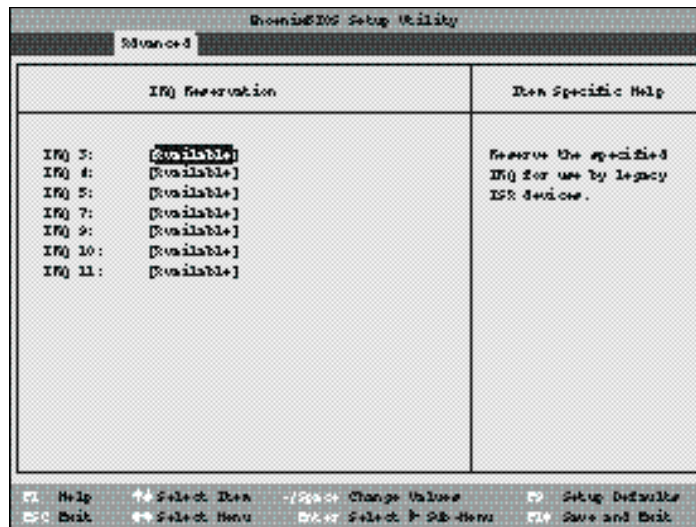


Figure 3-10 IRQ Reservation Submenu

Table 3-10 Fields, options and Defaults for the IRQ Reservation Submenu

Menu Field	Options	Default	Description
<b>IRQ 3:</b>	<b>Available; Reserved.</b>	<b>[Available]</b>	<b>Turns on or off the reservation for that IRQ for legacy ISA devices.</b>
<b>IRQ 4:</b>	<b>Available; Reserved.</b>	<b>[Available]</b>	<b>Turns on or off the reservation for that IRQ for legacy ISA devices.</b>
<b>IRQ 5:</b>	<b>Available; Reserved.</b>	<b>[Available]</b>	<b>Turns on or off the reservation for that IRQ for legacy ISA devices.</b>
<b>IRQ 7:</b>	<b>Available; Reserved.</b>	<b>[Available]</b>	<b>Turns on or off the reservation for that IRQ for legacy ISA devices.</b>
<b>IRQ 9:</b>	<b>Available; Reserved.</b>	<b>[Available]</b>	<b>Turns on or off the reservation for that IRQ for legacy ISA devices.</b>
<b>IRQ 10:</b>	<b>Available; Reserved.</b>	<b>[Available]</b>	<b>Turns on or off the reservation for that IRQ for legacy ISA devices.</b>
<b>IRQ 11:</b>	<b>Available; Reserved.</b>	<b>[Available]</b>	<b>Turns on or off the reservation for that IRQ for legacy ISA devices.</b>

**CAUTION**

Only IRQs 9, 10 & 11 can be reserved without conflict.

**DMI Event Logging Submenu of the Advanced Menu**

The DMI Event Logging Submenu is for setting up the logs DMI event logging. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-11 shows the names of the menu fields for the DMI Event Logging submenu, all the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

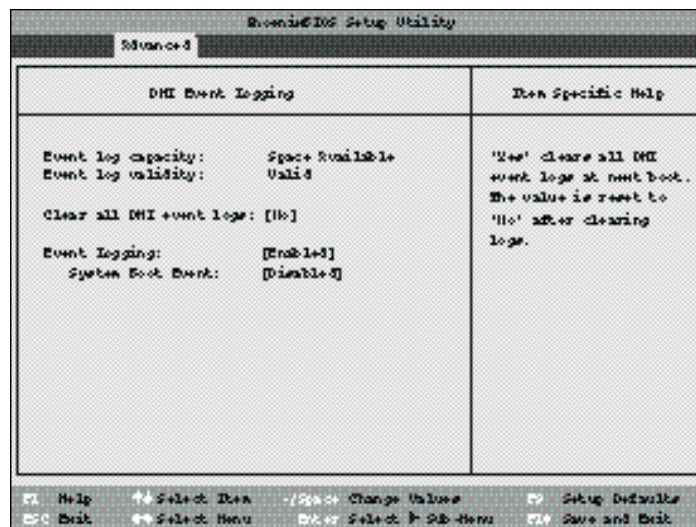


Figure 3-11 DMI Event Logging Submenu

Table 3-11 Fields, options and Defaults for the DMI Event Logging Submenu

Menu Field	Options	Default	Description
<b>Event log capacity:</b>	<b>Display only.</b>	<b>[Space Available]</b>	
<b>Event log validity:</b>	<b>Display only.</b>	<b>[Valid]</b>	
<b>Clear all DMI event logs:</b>	<b>Yes; No.</b>	<b>[No]</b>	<b>A Yes selection causes the event logs to clear at the next boot. Once the logs are cleared this automatically sets to No until reset to yes by selecting yes here.</b>
<b>Event Logging:</b>	<b>Enabled; Disabled.</b>	<b>[Enabled]</b>	<b>Turns event logging on and off for all DMI events.</b>
<b>System Boot Event:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>Turns event logging on and off for DMI system boot events.</b>

**ACPI Features Submenu of the Advanced Menu**

The ACPI Features Submenu is for setting up Advanced Configuration and Power Interface parameters in Windows. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-12 shows the names of the menu fields for the ACPI Features submenu, all the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.



**POINT**

ACPI features will only be fully available in Windows 98.

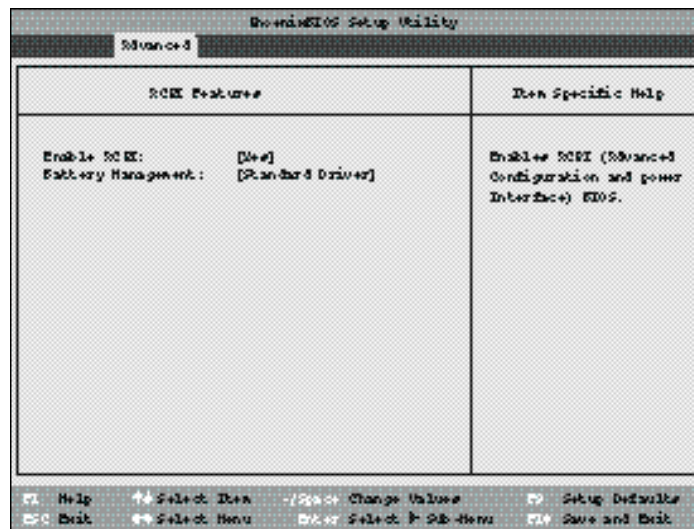


Figure 3-12 ACPI Features Submenu

Table 3-12 Fields, options and Defaults for the ACPI Features Submenu

Menu Field	Options	Default	Description
<b>Enable ACPI:</b>	<b>Yes; No.</b>	<b>[Yes]</b>	<b>Turns on and off the Advanced Configuration and Power Interface.</b>
<b>Battery Management:</b>	<b>Standard Driver; Smart Battery Driver.</b>	<b>[Standard Driver]</b>	<b>Selects battery management interface.</b>

**Exiting from the Advanced Menu**

**When you have finished setting the parameters on the Advanced Menu, you can either exit from setup utility or move to another menu. If you wish to exit from setup utility, press the Esc key to go to the Exit menu. If you wish to move to another menu, use the cursor keys.**

### SECURITY MENU – SETTING THE SECURITY FEATURES

The Security menu allows you to set up the data security features of your notebook to fit your operating needs and to view the current data security configuration. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-13 shows the names of the menu fields for the Security menu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use. The default condition is no passwords required and no write protection.

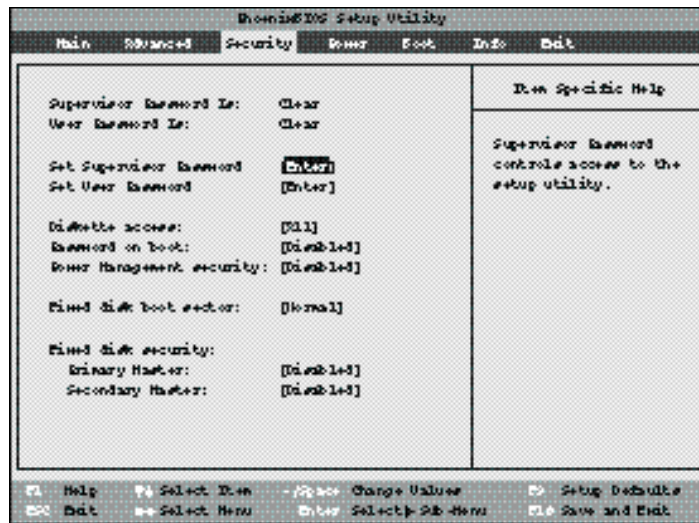


Figure 3-13 Security Menu

**POINT**

If you set a password, write it down and keep it in a safe place. If you forget the password you will have to contact your support representative to regain access to your secured functions and data.

**POINT**

If you make an error when re-entering the password a [Warning] will be displayed on the screen. To try again press the **Enter** key and then retype the password. Press the **Esc** key to abort the password setting process.

**CAUTION**

Entering a password incorrectly 3 times in a row will cause the keyboard and mouse to be locked out and the warning [System Disabled] to be displayed. If this happens restart the computer by turning off and on the power with the power switch and use the correct password on reboot.

**CAUTION**

If the Power Management Security is Enabled and the Password on Boot is Disabled you will not be able to resume operation from the Suspend or Save-to-Disk modes.

Table 3-13 Fields, Options and Defaults for the Security Menu

Menu Field	Options	Default	Description
<b>Supervisor Password is:</b>	—	<b>Clear</b>	<b>A display-only field. Set is displayed when the system supervisor password is set and Clear when it is not.</b>
<b>User Password is:</b>	—	<b>Clear</b>	<b>A display-only field. Set is displayed when the general user password is set, and Clear when it is not.</b>
<b>Set Supervisor Password:</b>	[Enter]	—	<b>Sets, changes or cancels the Supervisor Password. The Supervisor Password may be up to seven characters long and must include only lower-case letters or numbers. To cancel a password press the Enter key instead of entering characters in the Enter New Password field and in the Re-enter New Password field. When a Supervisor Password is set it must be used to access the BIOS setup utility.</b>
<b>Set User Password:</b>	[Enter]	—	<b>(This field can only be accessed if the Supervisor Password is set.) Sets, changes or cancels the User Password. The User Password may be up to seven characters long and must include only lower case letters or numbers. To cancel a password press the Enter key instead of entering characters in the Enter New Password field and in the Re-enter New Password field. When a User Password is set it must be used to access the BIOS setup utility.</b>

Table 3-13 Fields, Options and Defaults for the Security Menu

Menu Field	Options	Default	Description
<b>Diskette access:</b>	<b>All; Supervisor Only.</b>	<b>[All]</b>	<b>Sets the floppy disk access to be secured for access only with Supervisor's password or by all users with a password. The default is all users with a password.</b>
<b>Password on boot:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>When set to Enabled, a password (User or Supervisor) is required after the Power On Self Test (POST) before the operating system will be read from a disk. When set to Disabled no password is required. If no Supervisor Password is set this feature is not available and no password is required.</b>
<b>Power Management Security:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>When set to Enabled, a password (User or Supervisor) is required to resume from Suspend or Save-to-Disk mode. The password required is the same one required by the Password on Boot function.</b>
<b>Fixed disk boot sector:</b>	<b>Normal; Write Protect.</b>	<b>[Normal]</b>	<b>Sets write protection for the sector of the boot disk which contains the operating system. When set to Write Protect, the BIOS will prevent any application from writing into the sector of the internal hard drive containing the operating system. When set to Normal there is no BIOS protection of the operating system.</b>

Table 3-13 Fields, Options and Defaults for the Security Menu

Menu Field	Options	Default	Description
<b>Fixed disk security:</b>	—	—	—
<b>Primary Master:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>When set to Enabled , a password (User or Supervisor) is required to access data on the disk drive on the Primary Master interface.</b>
<b>Secondary Master:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>When set to Enabled , a password (User or Supervisor) is required to access data on the disk drive on the Secondary Master interface.</b>

**POINT**

Boot sector protection must be set to [Normal] to install or upgrade an operating system.

**Exiting from the Security Menu**

**When you have finished setting the parameters on the Security Menu, you can either exit from setup utility or move to another menu. If you wish to exit from setup utility, press the Esc key to go to the Exit Menu. If you wish to move to another menu, use the cursor keys.**

**POWER MENU –  
SETTING POWER MANAGEMENT  
FEATURE CONTROLS**

The Power menu allows you to set and change the power management parameters. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-14 shows the names of the menu fields for the Power menu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

**POINT**

Most power management parameters can also be set from the Windows 95 desktop without entering the setup utility, using PowerPanel by Phoenix Technologies. Changing the settings with PowerPanel does not change what is stored in the CMOS memory. (See pages 43-47.)

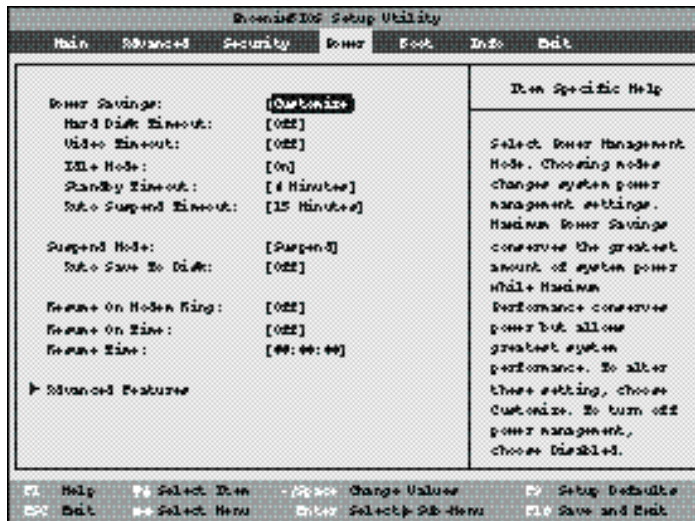


Figure 3-14 Power Menu

Table 3-14 Fields, Options and Defaults for the Power Menu.

Menu Field	Options	Default	Description
<b>Power Savings:</b>	<b>Customized; Maximum Performance; Maximum Power Savings, Disabled.</b>	<b>[Customized]</b>	<b>Sets the power savings parameters to a factory installed combination of parameters, a custom set of parameters set by you or no power saving features.</b>
<b>Hard Disk Timeout:</b>	<b>30 seconds to 20 minutes; Off.</b>	<b>[Off]</b>	<b>Sets the length of time that the hard drive can be inactive before your notebook automatically turns off the power to the hard drive controller and drive motor. If you choose a factory installed combination of parameters this field will display the setting. If you choose to customize the parameters you will be able to set this yourself. The options available vary from Off, which has no inactivity shutoff, to 20 minutes.</b>
<b>Video Timeout:</b>	<b>2 minutes to 20 minutes; Off.</b>	<b>[Off]</b>	<b>Sets the length of time without any user input device activity before the display is turned off. If you choose a factory combination of parameters, this field will display the setting. If you choose to customize the parameters, you will be able to set this yourself. Off has no inactivity shutoff.</b>
<b>Idle Mode:</b>	<b>On; Off.</b>	<b>[On]</b>	<b>Turns on and off the slow down of the CPU during periods of inactivity. When this is turned on the CPU clock slows by the amount set in the Advanced submenu when there is no activity for 16 seconds or more. Normal speed resumes automatically as soon as there is any activity.</b>

Table 3-14 Fields, Options and Defaults for the Power Menu.

Menu Field	Options	Default	Description
<b>Standby Timeout:</b>	<b>1 minute to 16 minutes; Off.</b>	<b>[4 Minutes]</b>	<b>Sets the length of time without any user input device activity before the CPU is set to half speed and the display and the hard drive are turned off. If you choose a factory combination of parameters this field will display the setting. If you choose to customize the parameters you will be able to set this yourself.</b>
<b>Auto Suspend Timeout:</b>	<b>5 to 60 minutes; Off.</b>	<b>[15 Minutes]</b>	<b>Sets the length of time without any I/O activity before your notebook goes into Suspend mode. If you choose a factory combination of parameters this field will display that setting. If you choose to customize the parameters you will be able to set this yourself. Off has no inactivity suspension.</b>
<b>Suspend Mode:</b>	<b>Suspend; Save-to-Disk.</b>	<b>[Suspend]</b>	<b>Sets the form of suspension state. If you choose Suspend, you will suspend operation with power to system memory, and everything else powered down or in a very low power state. If you choose Save-to-Disk your notebook will save all of system memory and the operating parameters to the hard drive before turning your notebook to the pseudo-off condition.</b>

**POINT**

When resuming from a Save-to-Disk suspension there will be a delay while the contents of system memory and operating parameters are loaded from the hard drive.

**CAUTION**

In Save-to-Disk mode there is no indication on the Status Indicator to let you know you are suspended rather than shut off from the power switch. You may want to make a habit of always trying the Suspend/Resume button before using the power switch.

Table 3-14 Fields, Options and Defaults for the Power Menu.

Menu Field	Options	Default	Description
<b>Auto Save to Disk:</b>	<b>Off; After 1 Hour.</b>	<b>[Off]</b>	<b>When set to After 1 Hour your notebook will automatically save all of system memory and the operating parameters to the hard drive and go to the pseudo-off if you leave your notebook in Suspend mode for an hour.</b>
<b>Resume On Modem Ring:</b>	<b>On; Off.</b>	<b>[Off]</b>	<b>Sets whether or not to Resume from a suspension state when a message is received by telephone line. This feature is not available if the Save-to-Disk mode is enabled. This feature applies to internal, external and PC Card modems.</b>
<b>Resume On Time:</b>	<b>On; Off.</b>	<b>[Off]</b>	<b>Sets whether or not to resume from a suspension state at a designated time. This feature is available from either the Suspend mode or the Save-to-Disk mode.</b>
<b>Resume Time:</b>	—	—	<b>Sets the designated time, on a 24-hour clock, when the notebook is to automatically resume operation from the Suspend state. The format of the clock setting is hours:minutes:seconds. Each segment of the time is set separately, either by incrementing or by typing in the numbers. You move between the segments with the Tab key or the Shift+Tab keys. This only applies when Resume on Time is set to On.</b>
<b>Advanced Features:</b>	—	—	<b>When selected, opens the Advanced Features submenu which allows setting additional power saving parameters.</b>

**Configuring Your LifeBook 600 Series**

## Factory Installed Values for Power Saving Profiles

Profile	Hard Disk Timeout	Video Timeout	Idle mode	Standby mode	Auto Suspend mode
<b>Customized:</b>	<b>Off.</b>	<b>Off.</b>	<b>Off.</b>	<b>4 Minutes.</b>	<b>15 Minute.</b>
<b>Maximum Power Savings:</b>	<b>30 seconds.</b>	<b>2 Minutes.</b>	<b>On.</b>	<b>1 Minute.</b>	<b>5 Minutes.</b>
<b>Maximum Performance:</b>	<b>Off.</b>	<b>Off.</b>	<b>Off.</b>	<b>Off.</b>	<b>15 Minutes.</b>
<b>Disabled:</b>	<b>Off.</b>	<b>Off.</b>	<b>Off.</b>	<b>Off.</b>	<b>Off.</b>
<b>Sample Customized Profile:</b> (To get even better battery life keep the display and volume settings as low as possible by using this custom setting.)	<b>2 Minutes.</b>	<b>1 Minute.</b>	<b>On.</b>	<b>1 Minute.</b>	<b>5 Minutes.</b>

### Advanced Features

#### Submenu of the Power Menu

The Advanced Features submenu is for setting some non-time related power saving parameters. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-15 shows the names of the menu fields for the Video Features submenu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

#### Exiting from the Power Menu

When you have finished setting the parameters on the Power menu, you can either exit from the Setup utility or move to another menu. If you wish to exit from Setup utility press the Esc key to go to the Exit menu. If you wish to move to another menu, use the cursor keys.

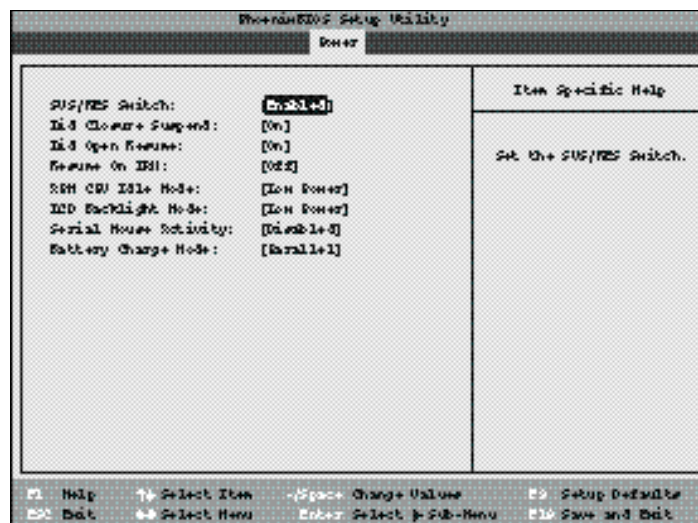


Figure 3-15 Advanced Features Submenu

Table 3-15 Fields, Options and Defaults for the Advanced Features Submenu of the Power Menu

Menu Field	Options	Default	Description
<b>SUS/RES Switch:</b>	<b>Enabled; Disabled.</b>	<b>[Enabled]</b>	<b>Sets the function of the Suspend/Resume button when your notebook is in an active state. The resume function can not be disabled as it works regardless of any other settings.</b>
<b>Lid Closure Suspend:</b>	<b>On; Off.</b>	<b>[On]</b>	<b>Enables and disables having closure of the Display panel put your notebook in Suspend mode.</b>
<b>Lid Open Resume:</b>	<b>On; Off.</b>	<b>[On]</b>	<b>Enables and disables having opening the Display panel acting as an automatic resume.</b>
<b>Resume on LAN:</b>	<b>On; Off.</b>	<b>[Off]</b>	<b>Turns on and off the Magic Packet wake up from Suspend mode when your notebook is installed in the LAN Enhancement Unit.</b>
<b>AMU CPU Idle Mode:</b>	<b>Low Power; Standard.</b>	<b>[Low Power]</b>	<b>Sets the CPU speed during Idle mode.</b>
<b>LCD Backlight Mode:</b>	<b>Low Power; Standard.</b>	<b>[Low Power]</b>	<b>Sets the CPU speed during Video timeout and Lid Closure Suspend activation.</b>
<b>Serial Mouse Activity:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>Enables and disables having activity on the serial port cause the system to reactivate from inactivity timeouts.</b>
<b>Battery Charge Mode:</b>	<b>Serial; Parallel.</b>	<b>[Parallel]</b>	<b>Selects the charging mode for the batteries.</b>

**BOOT MENU – SELECTING THE OPERATING SYSTEM SOURCE**

The Boot Menu is used to select the order in which the BIOS searches sources for the operating system.

Table 3-16 shows the names of the menu fields for the Boot menu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use

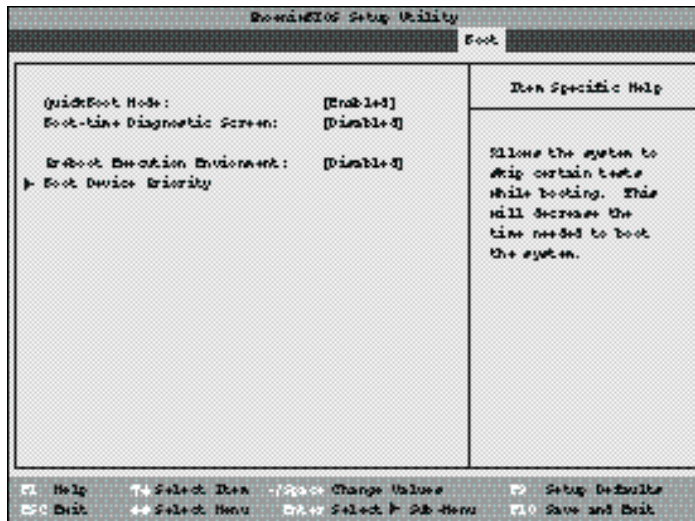


Figure 3-16 Boot Menu

Table 3-16 Fields, Options and Defaults for the Boot Menu

Menu Field	Options	Default	Description
<b>QuickBoot Mode:</b>	<b>Enabled; Disabled.</b>	<b>[Enabled]</b>	<b>Turns on and off booting with a truncated set of Power On Self Test. (Fewer tests mean faster turn on.)</b>
<b>Boot-time Diagnostic Screen:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>Turns on and off display of test results instead of Fujitsu logo screen during Power On Self Test.</b>
<b>Preboot Execution Environment:</b>	<b>Enabled; Disabled.</b>	<b>[Disabled]</b>	<b>Turns on and off the preboot execution environment feature.</b>
<b>Boot Device Priority:</b>	<b>Selects the Boot Device Priority submenu.</b>	—	<b>This menu allows setting up the source for the operating system.</b>

### The Boot Device Priority Submenu of the Boot Menu

The Boot Device Priority Submenu is for setting the order of checking of sources for the operating system. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-17 shows the names of the menu fields for the Boot Device Priority submenu, all the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

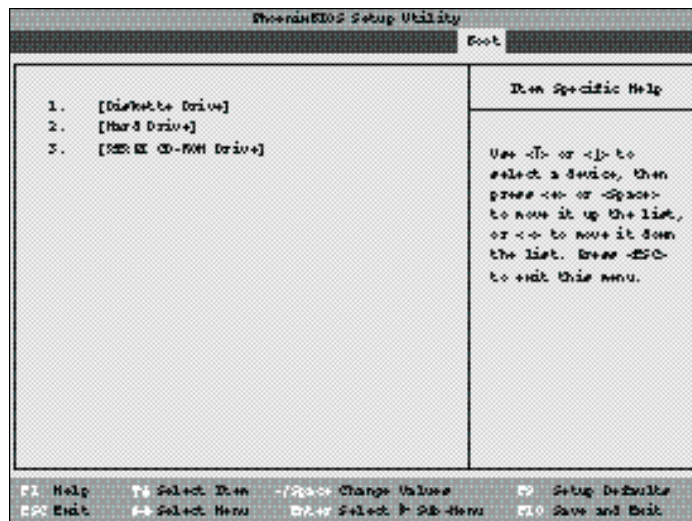


Figure 3-17 Boot Device Priority Submenu

Table 3-17 Fields, Options and Defaults for the Boot Device Priority Submenu

Menu Field	Options	Default	Description
<b>1. Diskette Drive:</b>	---	---	<b>The boot selections determine the order in which the BIOS searches for the operating system during a startup sequence. To change the order highlight one source by using the up ↑, down ↓ cursor keys and then press the + or - key to change the order number for that source. Be sure to save your changed order when you exit the BIOS setup utility.</b>
<b>2. Hard Drive:</b>	---	---	
<b>3. ATAPI CD-ROM Drive:</b>	---	---	

**Exiting from Boot Menu**

**When you have finished setting the boot parameters with the Boot menu, you can either exit from the setup utility or move to another menu. If you wish to exit from the setup utility press the Esc key to go to the Exit menu. If you wish to move to another menu, use the cursor keys.**

### INFO MENU

The Info menu is a display only menu that provides the configuration information for your notebook.

Table 3-18 shows the names of the menu fields for the Info menu, all the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

#### POINT

The Asset Number is an optional user-entered field. An Asset Number can be entered through the use of a 3rd party software, such as LANdesk Client manager.

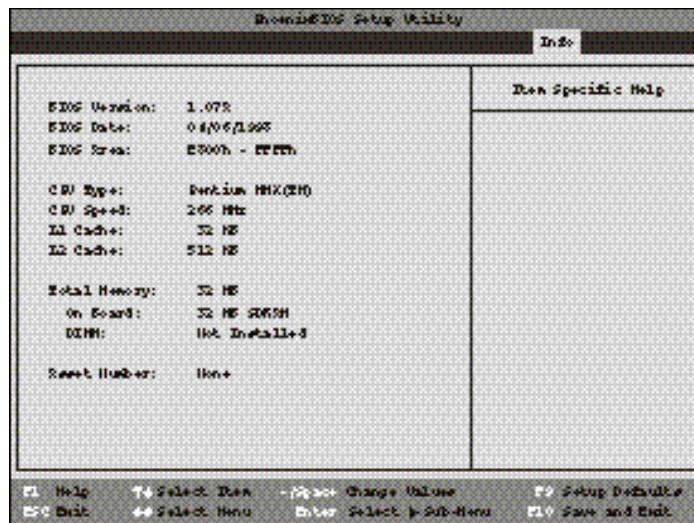


Figure 3-18 Info Menu

Table 3-18 Fields, Options and Defaults for the Info Menu

Menu Field	Options	Default	Description
<b>BIOS Version:</b>	—	<b>1.07A</b>	—
<b>BIOS Date:</b>	—	<b>04/06/1998</b>	—
<b>BIOS Area:</b>	—	<b>E800h - FFFh</b>	—
<b>CPU Type:</b>	—	<b>Pentium MMX™</b>	—
<b>CPU Speed:</b>	—	<b>266 MHz</b>	—
<b>L1 Cache:</b>	—	<b>32 KB</b>	—
<b>L2 Cache:</b>	—	<b>512 KB</b>	—
<b>Total Memory:</b>	—	<b>32 MB</b>	—
<b>On Board:</b>	—	<b>32 MB SDRAM</b>	—
<b>DIMM:</b>	—	<b>Not Installed</b>	—
<b>Asset Number:</b>	—	<b>None</b>	—

### EXIT MENU – LEAVING THE SETUP UTILITY

The Exit Menu is used to leave the setup utility. Follow the instructions for Navigating Through the Setup Utility to make any changes. (See page 57.)

Table 3-19 shows the names of the menu fields for the Exit menu, all of the options for each field, the default settings and a description of the field's function and any special information needed to help understand the field's use.

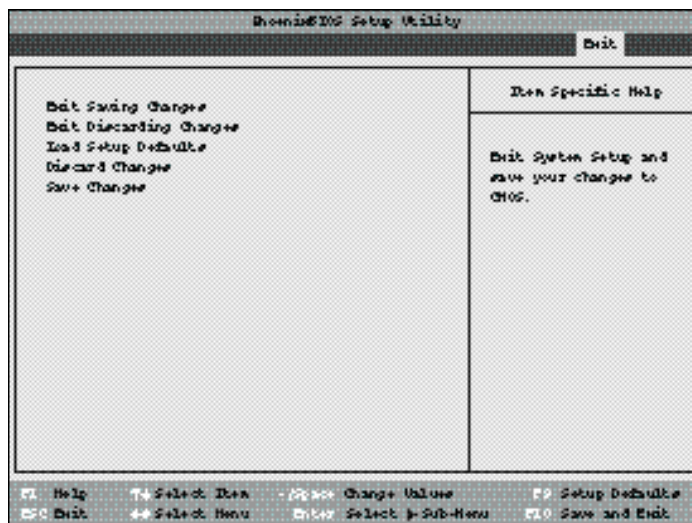


Figure 3-19 Exit Menu

Table 3-19 Fields, Options and Defaults for the Exit Menu.

Menu Field	Options	Default	Description
<b>Exit Saving Changes:</b>	—	—	<b>Selecting Exit Saving Changes will store all the entries on every menu of the setup utility to the BIOS memory and then exit the setup utility. A confirmation message</b> Save Configuration Changes and Exit Now? [Yes] [No] <b>will be displayed.</b>
<b>Exit Discarding Changes:</b>	—	—	<b>Selecting Exit Discarding Changes will exit the setup utility without writing to the BIOS memory. When the BIOS recognizes this selection it will load the operating system and begin operation. A message</b> Warning Configuration Changes have not been saved. Save before exiting? [Yes] [No] <b>will be displayed.</b>
<b>Load Setup Defaults:</b>	—	—	<b>Selecting Load Setup Defaults will load the factory preset default values for all menu fields, then display the message</b> Setup Confirmation Load default configuration? [Yes] [No] <b>When confirmed the setup utility will return to Exit Menu. To return to another menu follow the directions in the Navigating Through the Setup Utility Section. (See page 57.)</b>

Table 3-19 Fields, Options and Defaults for the Exit Menu.

Menu Field	Options	Default	Description
<b>Discard Changes:</b>	—	—	<b>Selecting Discard Changes will load the previous values in BIOS memory for all menu fields.</b> Setup Confirmation Load Previous Configuration now? [Yes] [No] <b>When confirmed the setup utility will return to the Exit menu. To return to another menu, follow the directions in the Navigating Through the Setup Utility Section. (See page 57.)</b>
<b>Save Changes:</b>	—	—	<b>Selecting Save Changes will cause the new settings in all menus to be written to the BIOS memory.</b> Setup Confirmation Save Configuration changes now? [Yes] [No] <b>When confirmed the setup utility will return to the Exit menu. To return to another menu, follow the directions in the Navigating Through the Setup Utility section. (See page 57.)</b>

## SETTING UP YOUR SAVE-TO-DISK FILE ALLOCATION

Your notebook comes with an allocation of space on the internal hard drive adequate to operate the Save-to-Disk function for the amount of memory installed at the factory. If you add a memory upgrade module or do not use the Save-to-Disk function and wish to free up the disk space, you will need to change your allocation. The utility to change the allocations is PHDISK.EXE and is activated from the MS-DOS prompt.

PHDISK allows you to perform five different functions related to the Save-to-Disk space on your internal hard drive. They are:

1. Allocate a space for the Save-to-Disk function.
2. Remove all space allocation for the Save-to-Disk function.
3. Find out details about the hard drive and the current Save-to-Disk space allocation.

4. Re-allocate space and mark bad blocks in the space allocated to the Save-to-Disk function when a disk error has occurred.
5. Find out how much space is needed to perform the Save-to-Disk function with the current memory configuration and how much unused space is available on the internal hard drive.

To find out how much space is needed to perform the Save-to-Disk function with the current memory configuration and how much unused space is available on the internal hard drive, do the following:

1. Restart your notebook in MS-DOS mode.
2. At the DOS prompt type  
CD C:\Fujitsu
3. Type PHDISK
4. Press the Enter key.

The screen will display the amount disk space needed to perform the Save-to-Disk function with the current memory configuration and how much unused space is available on the internal hard drive.

To find out details about the hard drive and the current Save-to-Disk space allocation, do the following:

1. Restart your notebook in MS-DOS mode.
2. At the DOS prompt type  
CD C:\Fujitsu
3. Type PHDISK /INFO
4. Press the Enter key.
5. The screen will display the size of the space currently allocated to the Save-to-Disk function and other parameters about the space and the hard drive.

To remove all space allocation for the Save-to-Disk function, do the following:

**1. Go to the Start Menu and select MS-DOS Prompt.**

**2. Type** `CD C:\Fujitsu`

**3. Type** `PHDISK /DELETE /FILE`

**4. Press the Enter key.**

**The utility will remove the space allocation for the Save-to-Disk function and free that space for other use.**

To create a space allocation for the Save-to-Disk function, do the following:

**1. Restart your notebook in MS-DOS mode.**

**2. Type** `CD C:\Fujitsu`

**3. Type** `PHDISK /CREATE /FILE`

**4. Press the Enter key.**

**5. The utility will create a Save-to-Disk file called SAVE2DSK.BIN in the root directory. It will be of the minimum size needed to support the Save-to-Disk function with the current memory configuration.**

If you have had a read or write error when you tried to perform a Save-to-Disk operation you can re-allocate space to compensate for bad blocks on your drive. To do this:

**1. Go to the MS-DOS prompt.**

**2. Type** `CD C:\Fujitsu`

**3. Type** `PHDISK /REFORMAT /FILE`

**4. Press the Enter key.**

**5. The utility will re-create the Save-to-Disk file called SAVE2DSK.BIN with the same usable size and any bad blocks marked.**



#### CAUTION

Never use PARTITION in place of FILE with the PHDISK Utility or you will reformat your internal hard drive and all data, applications and operating system will be destroyed.

**User Installable Features**

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## SECTION FOUR

### USER INSTALLABLE FEATURES

Your LifeBook 600 Series has a number of user installable features. This section describes how to install and remove equipment for each of the expansion features. The features are:

- PC Card slots in the left side panel of your notebook allow you to install PC Cards, IC memory cards (SRAM card) or Zoomed Video cards (Slot 1 only).
- A compartment in the bottom of your notebook allows you to install a memory upgrade module.
- A Microphone jack on the right side of your notebook allows you to connect a mono microphone.
- A Stereo Line In jack on the right side of your notebook allows you to connect a sound source such as a cassette recorder.
- A Headphone jack on the right side of your notebook allows you to connect headphones or powered speakers.
- A PS/2 port on the rear panel of your notebook allows you to connect an external mouse or an external keyboard or numeric keypad.
- An External Floppy Disk Drive port on the rear panel allows you to connect an optional external floppy disk drive. This allows you to use a floppy disk drive when you are not using the LAN Enhancement Unit.
- A dual USB port in the rear panel of your notebook allows you to connect two Universal Serial Bus devices.
- An RJ-11 jack in the right side panel of your notebook allows you to connect a telephone line to the internal modem.
- A Docking port in the bottom of your notebook allows the connection of a LAN Enhancement Unit or Base Enhancement Unit.
- A Serial port in the back of your LAN Enhancement Unit allows you to connect serial RS-232C devices, such as serial printers or serial scanners.
- A Parallel port in the back of your notebook allows you to connect a parallel printer, a parallel photo or text scanner, etc.
- An External Monitor port in the back of your notebook allows you to connect an external monitor.
- A MIDI/joystick port on the rear panel of your LAN Enhancement Unit allows you to connect MIDI music synthesizers, game joysticks and similar devices to your notebook.
- A Composite Video port (NTSC/PAL) on the rear panel of your LAN Enhancement Unit allows you to connect a TV or other video device to your notebook.



#### POINT

Simultaneous display on a TV and the notebook display panel or an external monitor are not supported.

## User Installable Features

### POINT

You can not switch to the TV display by pressing the **Fn + F10** keys, however you can return to the notebook display panel using those keys. To start the TV display you must use the Windows 95 Control Panel Display dialog box. (See *Windows 95 documentation for help.*)

### POINT

TV output requires that the display resolution be set to 800 x 600 pixels instead of the default setting of 1024 x 768. Use the Windows 95 Control Panel Display dialog box to change this setting. (See *Windows 95 documentation for help.*) If this setting is not correct part of the display may be cut off.

### POINT

If TV output is utilized with *Optimal Settings* checked, the display will automatically drop down to the 640 x 480 resolution. This TV output will block your view of the **OK** button at the bottom of the Display Properties window. To close the Display Properties window, press the **Enter** key.

**NOTE:** With *Optimal Settings* and TV output enabled a small portion of the display will be cut off from viewing.

### LAN ENHANCEMENT UNIT

**The LAN Enhancement Unit is powered from a power adapter, AC or auto/airline, or from a combination of both the internal and external batteries.**

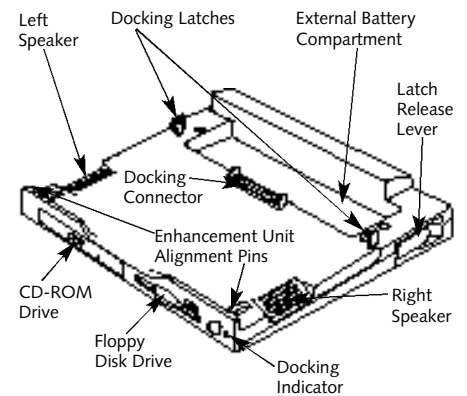


Figure 4-1 LAN Enhancement Unit Front View

### POINT

You can use your notebook in the LAN Enhancement Unit with only the internal battery if you disable the CD automatic insertion function and **DO NOT** use the CD-ROM drive.

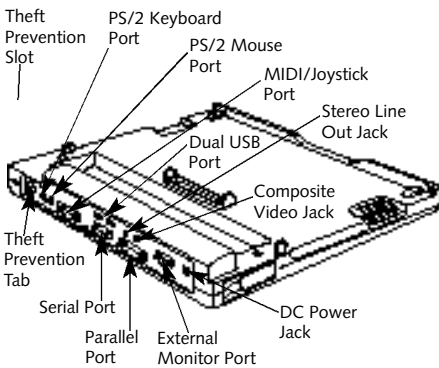


Figure 4-2 LAN Enhancement Unit Rear View



**POINT**

Your Notebook can be docked in an Enhancement Unit with the power On, Off or in Suspend mode.

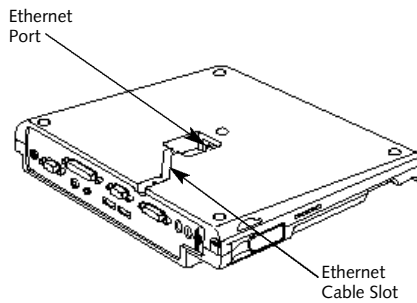


Figure 4-3 LAN Enhancement Bottom View

**To Install your Notebook in an Enhancement Unit**

1. To use an Enhancement Unit it must be on a flat surface.
2. Remove all connections from your notebook. (See Figure 1-9 on page 8.)
3. Make sure the connector covers are closed.
4. Grasp your notebook on both sides with the front facing you and tilt the front about an

inch lower than the back. Slide the alignment pins on the Enhancement Unit into the alignment holes on the front of your notebook. (Figure 4-4.)

5. Pull the notebook as far forward in the Enhancement Unit as it will go.
6. Push the rear of your notebook firmly down onto the Enhancement Unit until it locks in place. (Figure 4-5.)
7. Return your notebook to operation using the Suspend/Resume button or power switch, as appropriate. (When setting up for the first time you must use the power switch.)

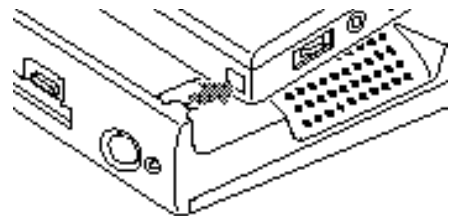


Figure 4-4 Aligning Your Notebook in an Enhancement Unit

## User Installable Features

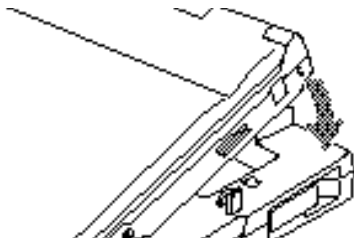


Figure 4-5 Locking Your Notebook in an Enhancement Unit

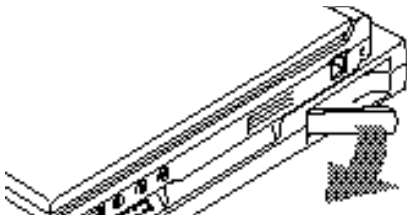


Figure 4-6 Releasing Your Notebook from an Enhancement Unit

### Connecting Devices to the LAN Enhancement Unit or Base Enhancement Unit

Connect devices to your LAN Enhancement Unit or Base Enhancement Unit in exactly the same way you would your notebook. Figures 4-1, 4-2 and 4-3 show the location of LAN Enhancement Unit ports and jacks. Figure 4-16 and 4-17 (pages 119 and 120) show the location of the Base Enhancement Unit ports and jacks.

### Hot Docking/Undocking your LifeBook 690Tx

Your LifeBook 690Tx comes with a new hot docking/undocking feature for the LAN Enhancement Unit.

To Remove Your Notebook from an Enhancement Unit

1. Put your combined notebook and Enhancement Unit on a flat surface.
2. From the Start menu, click on **Eject PC** or push the Undock Request Button on your LAN Enhancement Unit.



### POINT

It is always safe to undock if the power switch is turned off

3. Wait for the Undock LED to illuminate.
4. Your system will not suspend.
5. Pull the levers on both sides of the LAN Enhancement Unit forward until the rear of your notebook rises slightly. (Figure 4-6.)
6. Tilt your notebook forward by grasping the back of it with both hands.
7. Slide your notebook back until the alignment pins clear the alignment holes.
8. Lift your notebook clear.
9. Your notebook is fully operational without going into suspend mode.
10. To return your notebook to the LAN Enhancement Unit, simply follow the procedure on page 120, to install your

**notebook in an Enhancement Unit. You do not have to suspend your notebook to dock it again, but make sure you firmly seat the notebook on the docking connector. (If you do not see the window telling you that Windows is re-configuring docking states, you are not properly docked.)**



#### **POINT**

You may also Suspend your notebook (only while it is undocked) to return it to the LAN Enhancement Unit.



#### **CAUTION**

Never undock your notebook when the system is active if the Undock LED is not illuminated. Hot undocking does not function when the notebook is suspended on the dock.

**Using Your Notebook While It Is Installed In the LAN Enhancement Unit**  
There are a few differences you will notice between using your notebook in and out of the LAN Enhancement Unit.

**In the LAN Enhancement Unit you have added capabilities:**

- A floppy disk drive.
- A CD-ROM drive.
- In the Windows 95 Start menu there is a PC Eject choice between the Suspend mode and Shutdown selections. (Use the PC Eject choice to enable the safe hot undocking of your LifeBook.)
- There is a fast Ethernet port.
- There is a Serial port.
- There is both an external mouse and an external keyboard port.
- There is a MIDI/joystick port.
- There is a Stereo Line Out jack.

- There is a Composite Video jack (NTSC/PAL).



#### **CAUTION**

The CD-ROM drive requires the use of a power adapter or both an internal and external battery. It will NOT operate on the internal battery alone.

## User Installable Features

### EXTERNAL INSTALLATION OF A FLOPPY DISK DRIVE

To install an optional external floppy disk drive, you must purchase an optional external floppy disk drive.

To Connect An Optional External Floppy Disk Drive:

1. Close all files and exit all applications.
2. Turn off power to your notebook, close the display and remove the AC adapter. (See page 28 for more information.)
3. Align the connector of the optional external floppy disk drive with the connector towards the rear of your notebook with the wide side of the connector down. (Figure 4-7.)
5. Insert the connector of the optional external floppy disk drive firmly into the port on your notebook until it clicks.

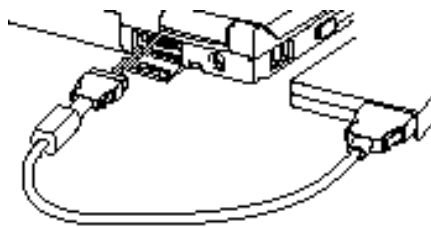


Figure 4-7 External Installation of a Floppy Disk Drive

To Disconnect An Optional External Floppy Disk Drive:

1. Close all files and exit all applications
2. Turn off power to your notebook, close the display and remove the AC adapter. (See page 28 for more information.)
3. Squeeze the releases on the sides of the optional external floppy disk drive connector next to the body of your notebook together. (Figure 4-7.)
4. Pull the connector free.

### EXTERNAL LITHIUM ION SMART BATTERY

Your external Lithium ion Smart battery is a smart battery which is durable and long lasting but should not be exposed to extreme temperatures, high voltages, chemicals or other hazards. Batteries should be removed and stored separately in a cool dry place if your notebook is not going to be used for an extended period of time.

The external Lithium ion Smart battery is for use in a dual configuration with the internal Lithium ion Smart battery and will operate in parallel or series with that battery. Parallel or series operation is set in the BIOS. (See the Advanced Submenu of the Power Menu, pages 104–105).



#### CAUTION

The optional external floppy disk drive must be installed or removed with the power off.

**CAUTION**

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 your old battery, or contact your support representative at 1-800-8FUJITSU (1-800-838-5487).

**POINT**

Either Lithium ion Smart battery can be safely installed or removed with the power off or on.

To Install the External Lithium ion Smart Battery:

1. Close the rear connector cover of your notebook.
2. Set your notebook bottom side up with the rear panel toward you on a flat surface.

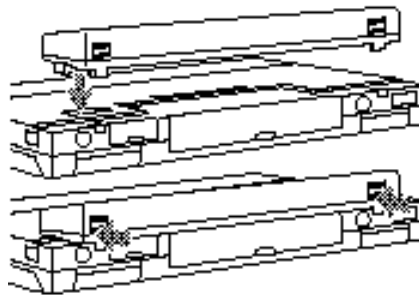


Figure 4-8 Installing and Removing the External Lithium ion Smart battery

3. Slide the battery connector cover in the bottom of your notebook open.
4. Take your external battery and arrange it with the release buttons toward you and the protruding connector down. (Figure 4-8.)
5. Gently set the protruding connector of the battery in the battery connector hole in the bottom of your notebook, with the protruding connector as near the rear of

the notebook as possible and still able to go in the hole.

6. When the battery is flat against the bottom of your notebook.
7. Push the battery toward the front of your notebook until it clicks into place.

To Remove the External Lithium ion Smart Battery

1. Close the rear connector cover of your notebook.
2. Set your notebook bottom side up with the rear panel toward you on a flat surface.
3. Push the two release buttons on the external battery up while gently pulling the battery towards you until it stops.
4. Lift the battery straight up.
5. Slide the battery connector cover in the bottom of your notebook closed.
6. Store your external battery in a cool, dry place where it will not be subject to shocks and vibration.

### User Installable Features

#### PC CARDS

PC Cards perform a wide variety of functions, and are ideal for mobile computers.

Some available PC Cards:

- Fax/data modem cards (Type II).
- Local area network (LAN) cards (Type II).
- Wireless LAN cards (Type II).
- 1MB and 2MB static RAM (SRAM) cards (Type I).
- IDE solid-state disk cards (Type II).
- SCSI card (Type II).
- Zoomed Video cards (Type II, Slot 1 only).
- ATA card (Type III).
- Other PC cards that conform to PCMCIA 2.1 or PC CardBus standards.

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

#### Caring for PC Cards

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

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

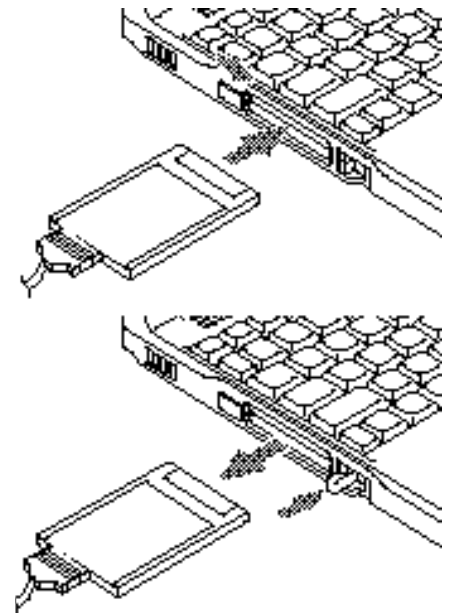


Figure 4-9 Installing and Removing a PC Card

### Installing PC Cards in Your Notebook

PC cards are installed in the PC Card slot in the left side panel of your notebook. Some PC Cards will not work when all possible devices are enabled. If a PC Card is not recognized, you will need to use the Control Panel, System and then Device Manager and choose a system to disable so that the resources can be used by the PC Card.



#### CAUTION

Do not insert a PC Card into a slot if there is water or any other substance on the card. If you do, you may permanently damage the card, your notebook, or both.

To install a PC Card:

1. See your PC Card manual for instructions on installation of that specific card.
2. Make sure that there is not already a PC Card in the slot. If there is, eject it, as described in Removing PC Cards.



#### CAUTION

Some PC Cards can only be installed or removed with the power in Suspend mode or off. Please check the card documentation for correct usage.



#### CAUTION

Installing or removing a card while your notebook is in the process of going through the power on or power off sequence may damage the card and/or your notebook.

3. Insert the PC Card in the card slot, with the product name label facing up. (Figure 4-9.)
4. The PC Card is fully inserted when the eject button pops out.
5. Flip this button toward the front of your notebook to fold it out of the way.
6. When the card is installed, lock it in place by sliding the lock button to the right. (Figure 4-9.)



#### CAUTION

Windows 95 has a shutdown procedure for PC Cards that must be followed before beginning to remove a card.

**Removing PC Cards**

If you wish to remove or replace the PC Card, use the following procedure:

1. Shutdown operation of the card.
2. Click on the PC Card indicator on the Windows taskbar.

From the PC Card Properties Window:

3. Select the card to be removed and click on the Stop button.
4. Verify that the You can safely remove your card message appears.
5. If the device cannot be removed message appears, save all files, close all applications, and exit Windows 95 and then shutoff the power with the power switch. (See *Power Off* on page 28.)
6. Slide the lock toward the rear of your notebook to release the card(s).

7. Flip the eject button(s) toward the rear of your notebook until it is fully extended.
8. Press the eject button in until it is flush with the side of your notebook.
9. Grasp the card and pull it clear of your notebook.

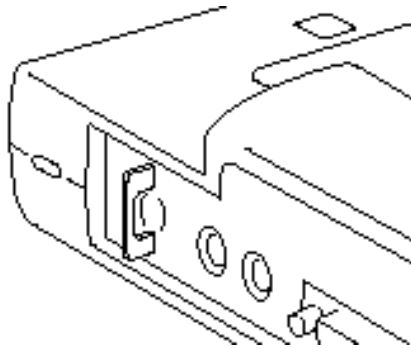


Figure 4-10 Installing a Theft Prevention on the Combined LifeBook 600 and LAN Enhancement Unit


**CAUTION**

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

**THEFT PREVENTION LOCKS**

A physical security system lock can be installed on the right side of your notebook or in the rear panel of your LAN Enhancement Unit. (See Figure 1-8 on page 7 and Figure 1-12 on page 12 for the location of the lock slot and lock tab.) Simply insert the key end of your security system in the lock slot, rotate 90 degrees and lock. When you wish to secure both your LifeBook 600 and LAN Enhancement Unit pull the theft prevention tab out and pass the end of the cable of the security system through the theft prevention tab of the LAN Enhancement Unit and then insert the key end of the security system in the theft prevention slot in your notebook, rotate 90 degrees and lock. (See Figure 4-10.) When you are not using the theft prevention tab, push it in until the opening in the tab is not visible.

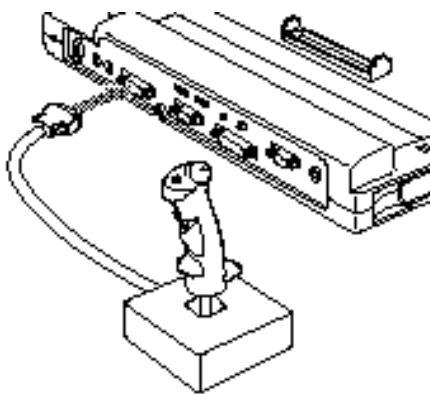


Figure 4-11 Installing a MIDI/Joystick Device

### MIDI/JOYSTICK DEVICES

To connect a MIDI/Joystick Device: (MIDI/joystick devices are installed on the LAN Enhancement Unit, there is no port on your notebook itself.)

1. Close all files and exit all applications.

2. Turn off power to your notebook, close the display and remove the AC adapter. (See pages 14-15 for more information.)
3. Align the connector of the MIDI device with the connector towards the body of your LAN Enhancement Unit. (Figure 4-11.)
4. Insert the connector firmly into the port on your LAN Enhancement Unit until it is seated.
5. Tighten the screw locks on both sides of the connector.

To disconnect a MIDI/Joystick Device:

1. Close all files and exit all applications
2. Turn off power to your notebook, close the display and remove the AC adapter. (See pages 14-15 for more information.)
3. Unscrew the screw locks on both sides of the MIDI/joystick device connector next to the body of your LAN Enhancement Unit. (Figure 4-11.)
4. Pull the connector free.

### MOUSE

Make sure the connector on your device is the correct PS/2 type. Align the arrow on the connector to point to the bottom of your notebook and push it in until the connector seats in the port on the rear panel of your notebook or of the LAN Enhancement Unit. A mouse may be installed and will be automatically recognized by your notebook without restarting or changing setups. (See Figure 1-8 on page 7.) Remember, on the LAN Enhancement Unit, a mouse may only be installed in the mouse port and a keyboard or numeric keypad in the keyboard port, either may be installed in the port of your notebook.



### CAUTION

On the LAN Enhancement Unit a mouse will not be recognized if it is installed on the keyboard port and vice versa.

**KEYBOARD**

Make sure the connector on your device is the correct PS/2 type. Align the arrow on the connector to point to the bottom of your notebook and push it in until the connector seats in the port on the rear panel of your notebook or of the LAN Enhancement Unit. A keyboard or keypad may be installed and will be automatically recognized by your notebook without restarting or changing setups. (See Figure 1-8 on page 7.) Remember, on the LAN Enhancement Unit, a mouse may only be installed in the mouse port and a keyboard or numeric keypad in the keyboard port, either may be installed in the port of your notebook.

**MICROPHONE**

Make sure that your mono microphone is equipped with an 1/8" (3.5 mm) mono mini-plug. Make sure the plug is aligned and push it into the jack on the right side of your notebook until fully seated. (See Figure 1-8 on page 7.)

**STEREO LINE IN DEVICES**

Make sure that your stereo line in audio device, a cassette recorder, for example, is equipped with an 1/8" (3.5 mm) stereo mini-plug. Make sure the plug is aligned and push it into the jack on the right side of your notebook until fully seated. (See Figure 1-8 on page 7.)

**HEADPHONES**

Make sure that your stereo headphones are equipped with an 1/8" (3.5 mm) stereo mini-plug. Make sure the plug is aligned and push it into the jack on the right side of your notebook until fully seated. (See Figure 1-8 and page 7.)

**STEREO LINE OUT DEVICES**

Make sure that your powered speakers set or stereo amplifier is equipped with an 1/8" (3.5 mm) stereo mini-plug. Make sure the plug is aligned and push it into the jack on the rear of your Enhancement Unit until fully seated. (See Figure 4-2 on page 120 and 4-17 on page 136.)

**TELEPHONE LINES**

To attach a telephone line to the internal modem to the right side panel RJ-11 jack. Plug one end of the telephone cable into the telephone line outlet. Orient the telephone cable with the release latch on the connector up. Push it into the jack on the right side of your notebook until it clicks and latches. (See Figure 1-8 on page 7.)

**CAUTION**

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

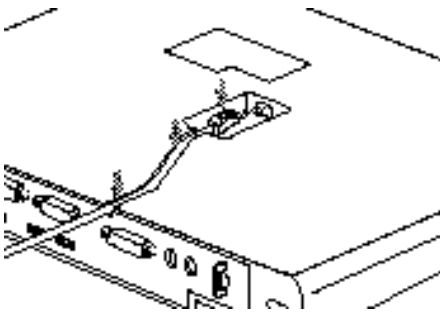


Figure 4-12 Installing a Fast Ethernet Line

#### FAST ETHERNET LINES

A fast Ethernet cable (line) can be installed in the bottom of your LAN Enhancement Unit.

1. Align the tab on your RJ-45 Ethernet cable with the notch in the Ethernet port in the bottom of your LAN Enhancement Unit.
2. Push it in until it clicks into place.

3. Push the cable firmly into the slot in the bottom of the LAN Enhancement Unit so it is flush with the surface. (Figure 4-12.)
4. Turn the LAN Enhancement Unit over and make sure that it sits level on a flat surface.

#### SERIAL PORT DEVICES

To connect an RS-232C device to the serial port, be sure that the connector is the right size and aligned, then push in until it is fully seated in the port on the rear of your notebook or LAN Enhancement Unit. When it is seated tighten the hold-down screws, one on each end of the connector. (See Figure 1-9 on page 8.)

#### PARALLEL PORT DEVICES

To connect a parallel interface device to the parallel port, be sure that the connector is the right size and aligned, then push in until it is fully seated in the port on the rear of your notebook or LAN Enhancement Unit. When it is seated tighten the screw locks on either end of the connector. (See Figure 1-9 on page 8.)

#### USB DEVICES

When installing a device on the dual USB Port, be sure that the connector is the right size, aligned, and fully seated in one of the two ports on the rear of your notebook or LAN Enhancement Unit. (See Figure 1-9 on page 8.)



#### CAUTION

Due to ongoing changes in USB technology and standards, not all USB devices and/or drivers are guaranteed to work.

#### EXTERNAL MONITOR

You may install an external monitor on the external monitor port on the rear panel of your notebook or LAN Enhancement Unit. Make sure that the wide side of the connector is up and attach it to the port by pushing in until it is seated, then tighten the hold-down screw on each end of the connector. (See Figure 1-9 on page 8.)

## User Installable Features

**CAUTION**

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 panel only, external monitor only, both built-in display panel and external monitor, or TV.

**MEMORY UPGRADE MODULE**

Your notebook has 32MB of installed SDRAM. To increase your memory capacity you may install a memory upgrade module in the memory upgrade compartment in the bottom of your notebook. A memory upgrade module is a dual-in-line memory module (DIMM). You may add a module of different capacity. SDRAM memory upgrade modules are recommended but EDO Memory upgrade modules will work. Installing an EDO Memory upgrade module will cause your system to operate at a slower rate.

**CAUTION**

Never remove screws except the ones specifically shown in the directions for installing and removing the memory upgrade module.

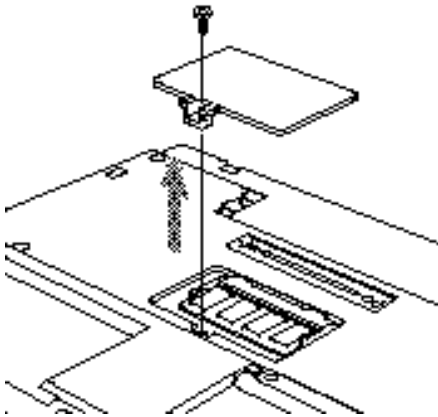


Figure 4-13 Opening the Memory Upgrade Compartment

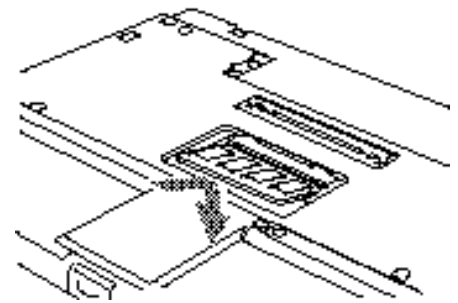


Figure 4-14 Installing a Memory Upgrade Module

**To Install a Memory Upgrade Module**

1. Turn off power to your notebook using the power switch, (see *Power Off on page 28*), and remove any power adapter (AC or auto/airline).
2. Make sure that all the connector covers are closed.
3. Turn the notebook bottom side up, with the front panel toward you.
4. Remove the screw of the memory upgrade compartment. (Figure 4-13.)
5. Remove the cover by lifting it by the notch in the front edge and pulling it toward the front of the notebook.

 **CAUTION**

Memory upgrade modules can be severely damaged by electro-static discharge (ESD). Be sure you are properly grounded when handling and installing the module.

6. Remove the memory upgrade module from its static guarded sleeve.
7. Align the connector edge of the memory upgrade module with the connector slot in the compartment. The notch on the module should be on the right with the part side up and the connector pointing towards the back of the notebook and aligned with the notch in the connector inside the compartment. (Figure 4-14.)
8. Insert the memory upgrade module at a 45° angle. (Figure 4-14.) Press the connector edge of the module firmly down and into the connector.
9. Press the memory upgrade module down into the compartment until it lodges under the retaining clip. You will hear a click when it is properly in place.
10. Replace the cover by sliding the tabs on the rear edge of the cover in the slots in the rear edge of the compartment and pushing the cover gently down starting with the rear edge

and working toward the front until the entire cover is flush with the bottom of your notebook.

11. Replace the screws.

Memory upgrade modules are not something you routinely remove from your notebook. Once it is installed, leave it in place unless you want to increase system memory capacity.

**CAUTION**

Before you install or remove a memory upgrade module, save changes, close all files and turn power off to your notebook. (See *Power Off on page 28*.)

**To Remove a Memory Upgrade Module**

1. Perform steps 1 through 5 of **To Install a Memory Upgrade Module**.
2. Pull clips sideways from each side of the memory upgrade module. (Figure 4-14).
3. While holding clips out, remove the module from the slot by lifting it up and pulling towards the front of your notebook.
4. Store the memory upgrade module in a static guarded sleeve.
5. Replace the cover by following the instructions in steps 10 through 11 of the instructions of **To Install a Memory Upgrade Module**, or install new memory upgrade modules and then replace the cover by following the instructions in steps 6 through 11 of the instructions of **To Install a Memory Upgrade Module**.

**CAUTION**

Memory upgrade modules can be severely damaged by electro-static discharge (ESD). Be sure you are properly grounded when handling and removing the module.

**Checking the Computer****Recognition of New Memory Capacity**

When you have changed system memory capacity by adding or removing memory upgrade modules, be sure to check that your notebook has recognized all of the active memory. You can check memory capacity by looking at the Main Menu of the setup utility:

1. Turn on power using the power switch.
2. Enter the setup utility by pressing the F2 key as soon as the Fujitsu logo appears on the screen. (See page 56.)

3. 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.

**Example:** A system with 32MB of memory will display 640K System Memory, 31M Extended Memory.

When you have installed additional memory, the display should change. For example for:

Total RAM Installed	System Memory	Extended Memory
32MB	640 K	31M
48 MB	640 K	48.5M
64 MB	640 K	64M
96 MB	640 K	95M

If the total memory displayed is not what you believe it should be, check that your memory upgrade module is properly installed. If properly installed and the capacity is not correctly recognized, see the Troubleshooting Section starting on (See page 138.)

#### INTERNAL BATTERY

The internal Lithium ion Smart battery is in a compartment in the bottom of your notebook. Remove it only for replacement or long term storage. (See Figure 1-10 on page 9.)

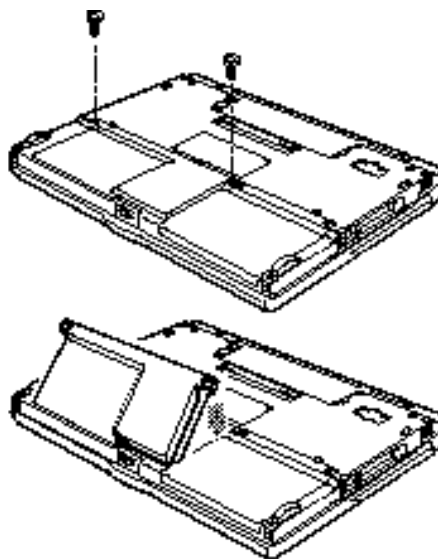


Figure 4-15 Removing and Installing an Internal Battery

#### CAUTION

Never remove screws except the ones specifically shown in the directions for installing and removing the internal Lithium ion Smart battery.

To Remove the Internal Lithium ion Smart battery

1. Make sure that all the connector covers are closed.
2. Turn the notebook bottom side up, with the front panel toward you.
3. Remove the screws of the internal battery compartment. (Figure 4-15.)
4. Using the small screw tabs and your fingernails to tilt the internal battery towards the front of your notebook.
5. Lift out battery.

## User Installable Features

**CAUTION**

If you are storing the internal battery screw the screws back into your notebook so that they don't get lost.

To Install the Internal Lithium ion Smart battery

1. Remove the screws of the internal battery compartment. (Figure 4-15.)
2. Align the tabs on the battery with the recesses on the edge of the compartment.
3. Tilt the battery toward the front of your notebook.
4. Place the battery so that the edge near the front of the notebook is against the bottom of the compartment.

5. Push the rear edge of the battery down gently but firmly until the battery is seated and flush with the bottom surface of your notebook.
6. Replace the screws.
7. Turn your notebook over, attach a power adapter, turn on your notebook and check the Status Indicator panel to verify that the battery is recognized and determine the amount of charge.

**POINT**

If the battery is new it will not be charged and will require that you use a power adapter until it is charged.

**CAUTION**

The CD-ROM drive requires the use of a power adapter or both an internal and external battery. It will NOT operate on the the internal battery alone.

**BASE ENHANCEMENT UNIT**

The Base Enhancement Unit is very similar to the LAN Enhancement Unit but adds fewer additional functions to your notebook. The Base Enhancement Unit does not support hot-docking. Therefore, you must shut down your notebook before docking and undocking.

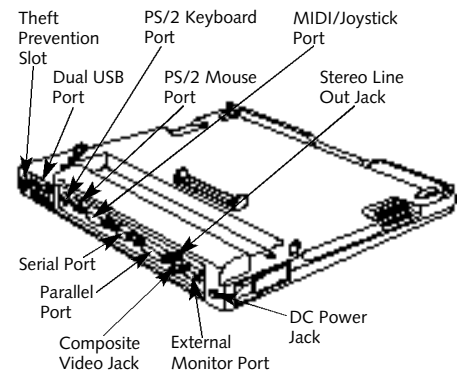


Figure 4-16 Base Enhancement Unit Rear View

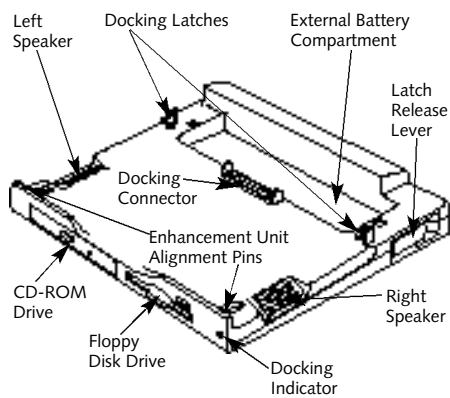


Figure 4-17 Base Enhancement Unit Front View

**Using Your Notebook While It Is Installed In the Base Enhancement Unit**  
**There are a few differences you will notice between using your notebook in and out of the Base Enhancement Unit.**

- **A floppy disk drive.**
- **A CD-ROM drive.**
- **In the Windows 95 Start menu there is a PC Eject choice between the Suspend mode and Shutdown selections. (Use the PC Eject choice to enable the safe undocking of your LifeBook.)**
- **There is an External Monitor port.**
- **There are two USB ports.**
- **There is a Serial port.**
- **There is a Parallel port.**
- **There is both an external PS/2 mouse and an external PS/2 keyboard port.**
- **There is a MIDI/joystick port.**
- **There is a Stereo Line Out jack.**
- **There is a Composite Video jack.**
- **There are stereo speakers.**



**CAUTION**

The Base Enhancement Unit does not support hot-docking. You must shut down Windows 95 and turn the power switch to off before docking or undocking your notebook.

**Troubleshooting**

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Restoring Your Pre-Installed Software From CD-ROM . . . . .	161

## SECTION FIVE TROUBLESHOOTING

The LifeBook 600 Series from Fujitsu 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, go through the following procedure before pursuing complex troubleshooting:

1. Turn off your notebook using the power switch on the right side panel.
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 using the power switch. 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 problem guide table, which follows, for more detailed troubleshooting information. (Page 139 has an index to the table.)



### 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.



### CAUTION

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

8. If you have tried the solutions suggested in Specific Problems without success, contact your support representative: toll free 1-800-8FUJITSU (1-800-838-5487), FAX 1-901-259-5700, e-mail 8fujitsu@fpc.fujitsu.com, Web Site <http://www.8fujitsu.com>. Phone and fax support is available 8:30am to 5:00pm PST.

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.

## T r o u b l e s h o o t i n g

- Conditions under which the problem occurred.
- Any error messages that have occurred.
- Hardware configuration.
- Type of printer connected, if any. See the Unit Label on the bottom of your notebook for configuration and serial numbers. (Refer to Figure 1-10 on page 9.)

### SPECIFIC PROBLEMS

#### Using PC-Doctor

PC-Doctor is a diagnostic program by Watergate Software, Inc. which comes pre-installed on your notebook. If you are an experienced computer user you may find it useful, however, it is intended primarily to help your Fujitsu support representative better serve you. When you call for help your support representative may ask you to setup your notebook for modem operation. You will be told what to do step by step, and then to hang up the phone

and plug your phone line into the back of your notebook. Your support representative will then use the service computer to call your notebook and perform diagnostic tests to find the nature of your problem. Messages will be displayed on the screen explaining what is being done and giving any instructions that you need.

#### User Problem Guides

When you have problems with your notebook, try to find the symptoms under the Symptom column of the 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 Solution. Remember that it helps to keep notes of what you have tried and the results when you are troubleshooting.

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Symptom	Possible Cause	Possible Solution
<p>Audio Problems</p> <p><b>There is no sound coming from the built-in speakers.</b></p>	<ol style="list-style-type: none"> <li><b>1. The volume knob is turned too low.</b></li> <li><b>2. The software volume control is set too low.</b></li> <li><b>3. Headphones are plugged into your notebook.</b></li> <li><b>4. BIOS audio settings are incorrect.</b></li> <li><b>5. Software driver is not configured correctly.</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1. Adjust the volume control knob on the right side of your notebook.</b></li> <li><b>2. Adjust the sound volume control settings in your software, both operating system and applications.</b></li> <li><b>3. Plugging in headphones disables the built-in speakers, remove the headphones.</b></li> <li><b>4. Set the BIOS setup utility, Audio Features submenu of the Advanced menu to the default values. (See pages 77-78.)</b></li> <li><b>5. Refer to your application and operating system documentation for help.</b></li> </ol>
<p>CD-ROM Drive Problems</p> <p><b>Notebook fails to recognize CD-ROM.</b></p>	<ol style="list-style-type: none"> <li><b>1. Shipping card is still in the CD-ROM drive tray.</b></li> <li><b>2. CD-ROM is installed with label face down.</b></li> <li><b>3. CD-ROM is not pushed down onto raised center circle of drive properly.</b></li> <li><b>4. CD-ROM tray is not latched shut.</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1. Remove shipping card and replace CD in tray.</b></li> <li><b>2. Open CD-ROM tray and re-install CD with proper orientation.</b></li> <li><b>3. Open CD-ROM tray and re-install CD.</b></li> <li><b>4. Push on the front of the CD-ROM tray until it latches.</b></li> </ol>

## T r o u b l e s h o o t i n g

### Symptom

**The CD-ROM Access indicator on the Status Indicator panel blinks at regular intervals when no CD is in the tray or the CD-ROM drive is not installed.**

### Possible Cause

5. **Setup utility is set to something other than auto or CD-ROM for the Secondary Master Controller.**
6. **Wrong drive designator was used for CD-ROM in the application.**
7. **Windows CD auto insertion function is disabled.**
8. **Notebook is not properly installed in an Enhancement Unit.**
1. **The Windows CD auto insertion function is active and is checking to see if a CD is ready to run.**

### Possible Solution

5. **Revise BIOS settings to set the Secondary Master correctly.** (See *Main menu and Secondary Master submenu pages 61-66 for more information.*)
6. **Verify the drive designator used by the application is the same as the one used by the operating system. When the operating system is booted from a CD-ROM drive designations are automatically adjusted.** (See *page 66.*)
7. **Start the CD from the desktop or application software or re-enable the Windows CD auto insertion function.** (See *page 25.*)
8. **Remove and re-install your notebook in the Enhancement Unit.**
1. **This is normal. You can disable this function if you wish.** (See *CD-ROM Access Indicator on pages 25-26 for more information.*)

Symptom	Possible Cause	Possible Solution
Docking Problems		
<b>Notebook does not turn on when installed in a LAN Enhancement Unit or Base Enhancement Unit.</b>	<ol style="list-style-type: none"> <li>1. Enhancement Unit AC adapter is not plugged in.</li> <li>2. Notebook is not properly seated in the Enhancement Unit.</li> <li>3. CD auto insertion function is enabled and you are trying to operate on only the internal battery.</li> </ol>	<ol style="list-style-type: none"> <li>1. Provide power to the Enhancement Unit</li> <li>2. Remove and re-dock your notebook and verify that the Docked LED illuminates correctly.</li> <li>3. Install a charged external battery or use a power adapter (AC or auto/airline).</li> </ol>
Floppy Disk Drive Problems		
<b>You cannot access your floppy disk.</b>	<ol style="list-style-type: none"> <li>1. Security is set to protect access to floppy disk data.</li> <li>2. Floppy disk is not loaded correctly.</li> <li>3. BIOS setup utility has Diskette Controller: Disabled</li> <li>4. Your notebook may not be properly installed in the Enhancement Unit.</li> <li>5. You tried to write to a write protected floppy disk.</li> </ol>	<ol style="list-style-type: none"> <li>1. Verify your password and security settings.</li> <li>2. Eject floppy disk, check orientation and re-insert. (See <i>Floppy Disk Drive</i> on pages 37-39.)</li> <li>3. Revise the setup utility Main menu settings. (See <i>Main Menu</i> on pages 58-60.)</li> <li>4. Remove and re-dock your notebook and verify that the Docked LED illuminates correctly.</li> <li>5. Eject the floppy disk and set it to write enabled. (See page 38.)</li> </ol>

## T r o u b l e s h o o t i n g

### Symptom

#### Hard Drive Problems

**You can not access your hard drive.**

### Possible Cause

1. **The setup utility is set to something other than the characteristics of your internal hard drive.**
2. **The wrong drive designator was used by an application when a bootable CD-ROM was used to start the notebook.**
3. **Security is set so operating system can not be started without a password.**

### Possible Solution

1. **Revise BIOS settings to set the Primary Master correctly.** (See *Main Menu and Primary Master Submenu pages 61-66 for more information.*)
2. **Verify drive designator used by application is in use by the operating system. When the operating system is booted from a CD-ROM, drive designations are automatically adjusted.** (See *Primary Master Submenu on pages 61-66.*)
3. **Verify your password and security settings.** (See *Security menu on pages 81-85*)

#### Keyboard or Mouse Problems

**The built-in keyboard does not seem to work.**

1. **The notebook has gone into Suspend mode.**
2. **Your application has locked out your keyboard.**

1. **Push the Suspend/Resume button.**
2. **Try to use the touchpad pointing device to access the Start menu and then the ShutDown menu and restart the System. If this fails then turn your notebook off, wait 10 seconds or more, and then turn it on using the power switch.**

Symptom

**You have installed an external keyboard or mouse, and it does not seem to work.**

Possible Cause

1. **Your external device is not properly installed.**
2. **Your operating system software is not setup with the correct software driver for that device.**
3. **Your mouse or keyboard is connected to the wrong PS/2 port of the Enhancement Unit.**

Possible Solution

1. **Re-install your device.** (See *Mouse or Keyboard on pages 112-113.*)
2. **Check your device and operating system documentation and activate the proper driver.**
3. **Plug the mouse into the PS/2 Mouse port and the external keyboard or numeric keypad into the PS/2 Keyboard port.**

**You have connected an external keyboard or a mouse and it seems to be locking up the system.**

1. **Your operating system software is not setup with the correct software driver for that device.**
2. **Your system has crashed.**

1. **Check your device and operating system documentation and activate the proper driver.**
2. **Restart your system by shutting down and/or turning off the power, waiting at least 10 seconds and then turning the power on again.**

Memory Problems

**Your power on screen or Main menu of the BIOS setup utility information does not show the correct amount of installed memory.**

1. **Your memory upgrade module is not properly installed.**
2. **You have a memory failure.**

1. **Remove and re-install your memory upgrade module.** (See *Memory Upgrade Module on pages 115-118.*)
2. **Make sure display of error messages is enabled** (see *Boot Options Submenu on pages 67-68*), **and check for Power On Self Test (POST) messages.** (See *pages 140-142 for possible messages and their meanings.*)

## T r o u b l e s h o o t i n g

Symptom	Possible Cause	Possible Solution
Modem Problems  <b>Messages about modem operation.</b>	<b>1. Messages about modem operation are generated by whichever modem application is in use.</b>	<b>1. See your application software documentation for additional information.</b>
Parallel, Serial, and USB Device Problems  <b>You have installed a parallel-port device, a serial-port device or a USB device. Your notebook does not recognize the device, or the device does not seem to work properly.</b>	<b>1. The device is not properly installed.</b>  <b>2. The device may have been installed with an application running and your notebook doesn't know it's there.</b>  <b>3. Your software may not have the correct software driver active.</b>  <b>4. You may have the wrong I/O address selected for your device.</b>  <b>5. Your device and another device are assigned the same I/O address.</b>	<b>1. Remove and re-install the device.</b> <i>(See Parallel Port Devices on page 114, Serial Port on Devices on page 114, or USB Devices on page 114.)</i>  <b>2. Close your application and restart your notebook.</b>  <b>3. See your software documentation and activate the correct driver.</b>  <b>4. See your device documentation and software documentation to determine the required I/O address.</b>  <b>5. Check all I/O addresses in the BIOS setup utility and your other installed hardware and software and make sure there are no duplications.</b>



### CAUTION

Due to ongoing changes in USB technology and standards, not all USB devices and/or drivers are guaranteed to work.

Symptom	Possible Cause	Possible Solution
<p>PC Card Problems</p> <p><b>A card inserted in the PC Card slot does not work or is locking up the system.</b></p>	<ol style="list-style-type: none"> <li><b>1. The card is not properly installed.</b></li> <li><b>2. The card may have been installed with an application running and your notebook doesn't know it's there.</b></li> <li><b>3. Your software may not have the correct software driver active.</b></li> <li><b>4. You may have the wrong I/O address selected for your PC Card device.</b></li> <li><b>5. Your PC Card device and another device are assigned the same I/O address.</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1. Remove and re-install the card.</b> <i>(See PC Cards on pages 108-111.)</i></li> <li><b>2. Close your application and restart your notebook.</b></li> <li><b>3. See your software documentation and activate the correct driver.</b></li> <li><b>4. See your PC Card documentation to determine the required I/O address.</b></li> <li><b>5. Check all I/O addresses in the BIOS setup utility and your other installed hardware and make sure there are no duplications.</b></li> </ol>
<p>Power Failures</p> <p><b>You turn on your notebook and nothing seems to happen.</b></p>	<ol style="list-style-type: none"> <li><b>1. The internal battery is completely discharged, there is no external battery installed and there is no power adapter (AC or auto/airline) installed.</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1. When all the batteries are dead there will be a beep when the power switch is turned on and the notebook will immediately go into Dead Battery Suspend mode. (See pages 31-32.) Check the Status Indicator panel to determine the presence and condition of the batteries. (See pages 24-25.) Install the external battery if it is not installed or a power adapter if all batteries are dead or unavailable. (See pages 107, 108 and 11-15.)</b></li> </ol>

## T r o u b l e s h o o t i n g

### Symptom

### Possible Cause

2. **The internal battery is completely discharged, there is no external battery installed and the Power adapter (AC or auto/airline) has no power from the AC outlet, airplane seat jack, or the car's cigarette lighter.**
  
3. **The internal battery is completely discharged, there is no external battery installed and the Power adapter (AC or auto/airline) is faulty.**

### Possible Solution

2. **When the battery is dead there will be a beep when the power switch is turned on and the notebook will immediately go into Dead Battery Suspend mode. (See pages 31-32.) Check the Status Indicator panel to determine the presence and condition of the batteries and adapter. (See Figures 2-3 and 2-4 on pages 23 and 25.) 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.**
  
3. **When the battery is dead there will be a beep when the power switch is turned on and the notebook will immediately go into Dead Battery Suspend mode. (See pages 31-32.) Verify the cause using the Status Indicator panel to determine the presence and condition of the batteries and adapter. (See Figures 2-3 and 2-4 on pages 23-25.) Try a different Power adapter or install a charged optional second battery.**

Symptom

Possible Cause

Possible Solution

- 4. Power switch is already in the On position.
- 5. The internal battery is faulty, there is no external battery installed and there is no Power adapter (AC or auto/airline) installed.
- 6. The battery or batteries are low.

- 4. Try the Suspend/Resume button. If that doesn't work, slide your power switch firmly to the front, pause 10 seconds or more and then firmly to the rear. If you shut down your notebook from Windows 95, you are really in a pseudo-off state, there is some power on and you can restart with the Suspend/Resume button. (See Power Off on page 28.)
- 5. Use the Status Indicator panel to verify the presence and condition of the batteries. (See Figure 2-3 on page 23.) If a battery is indicating a short, remove that battery and operate from another power source or replace that battery.
- 6. If the batteries are dead there will be a beep when the power switch is turned on and the notebook will immediately go into Dead Battery Suspend mode. (See pages 31-32.) Check the Status Indicator panel to determine the presence and condition of the batteries. (See Figure 2-3 on page 23.) Use a Power adapter to operate until a battery is charged or install a charged battery.

## T r o u b l e s h o o t i n g

### Symptom

**Your notebook turns off all by itself.**

### Possible Cause

1. **The power management parameters are set for auto timeouts which are too short for your operating needs.**
2. **You are operating on battery only and have ignored a low battery alarm until the batteries are all at the dead battery state and your machine has gone into Dead Battery Suspend mode.**
3. **You have a battery failure.**
4. **Your Power adapter has failed or lost it's power source.**

### Possible Solution

1. **Use the keyboard or pointer and if that does not restore operation, push the Suspend/Resume button. Check the PowerPanel settings or close your applications and go to the setup utility Power Savings menu and adjust the timeout values to better suit your operation needs. (See the PowerPanel on pages 43-47 and Power Menu on pages 86-93.)**
2. **Install a Power adapter and then push the Suspend/Resume button. (See Low Battery State on pages 31-32.)**
3. **Verify the condition of the batteries using the Status Indicator panel (Figure 2-3 on page 23), and replace or remove any that are shorted.**
4. **Make sure the adapter is plugged in outlet has power.**

Symptom	Possible Cause	Possible Solution
<b>Your notebook won't work on battery alone.</b>	<ol style="list-style-type: none"> <li><b>1. The installed batteries are dead.</b></li> <li><b>2. The batteries are improperly installed.</b></li> <li><b>3. Your installed batteries are faulty.</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1. When the batteries are dead there will be a beep when the power switch is turned on and the notebook will immediately go into Dead Battery Suspend mode. (See pages 31-32.) Replace the battery with a charged one or install a Power adapter.</b></li> <li><b>2. Verify that the batteries are properly connected by re-installing them. (See External Battery on pages 107-108 and Internal Battery on pages 118-119.)</b></li> <li><b>3. Verify the condition of the batteries using the Status Indicator panel, (Figure 2-3 on page 23), and replace or remove any that are shorted.</b></li> </ol>
<b>The batteries seem to discharge too quickly.</b>	<ol style="list-style-type: none"> <li><b>1. You are running an application which uses a great deal of power because of frequent hard drive access or CD-ROM access, use of a modem PC Card or of a LAN PC Card.</b></li> <li><b>2. The power savings features may be disabled.</b></li> </ol>	<ol style="list-style-type: none"> <li><b>1. Use both the internal battery and external battery and/or use a Power adapter for this application when at all possible</b></li> <li><b>2. Check the PowerPanel and/or setup utility settings in the Power Savings menu (see pages 43-47 and 86-93), and adjust according to your operating needs.</b></li> </ol>

## T r o u b l e s h o o t i n g

### Symptom

#### Possible Cause

3. **The brightness is turned all the way up.**
4. **The batteries are very old.**
5. **The batteries have been exposed to high temperatures.**
6. **The batteries are too hot or too cold.**  
(See *Batteries* on pages 29-31.)

#### Possible Solution

3. **Turn down the brightness adjustment. The higher the brightness the more power your display uses.**
4. **Replace the batteries.**
5. **Replace the batteries.**
6. **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.**

1. **The Suspend/Resume button is disabled from the Advanced submenu of the Power Savings menu of the setup utility.**
2. **You did not hold the button in long enough.**
3. **There may be a conflict with the application software.**

1. **Enable the button from the setup utility.**  
(See page 88.)
2. **Hold the button longer. This may need to be a very long time if your application is preventing the CPU from checking for button pushes.**
3. **Close all applications, and try the button again.**

Symptom	Possible Cause	Possible Solution
The system powers up, and displays the power on information, but fails to load operating system.	<ol style="list-style-type: none"> <li>1. The boot sequence settings of the setup utility are not compatible with your configuration.</li> <li>2. You have a secured system requiring a password to load your operating system.</li> <li>3. Internal hard drive was not detected.</li> </ol>	<ol style="list-style-type: none"> <li>1. 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 on page 95.</li> <li>2. Make sure you have the right password. Enter the setup utility and verify the Security settings and modify them as appropriate. (See Security Menu on pages 81-85.)</li> <li>3. Use the BIOS setup utility Main menu, Primary Adapter submenu to try to auto detect the internal hard drive.</li> </ol>
An error message is displayed on the screen during the notebook turn on (boot) sequence.	<ol style="list-style-type: none"> <li>1. Power On Self Test (POST) has detected a problem.</li> </ol>	<ol style="list-style-type: none"> <li>1. See the Power On Self Test (POST) Messages (pages 140-142) to determine the meaning and severity of the problem. Not all messages are errors; some are simply status indicators.</li> </ol>
Your notebook appears to change setup parameters when you start it.	<ol style="list-style-type: none"> <li>1. BIOS setup changes were not saved when you made them and exited the BIOS setup utility thus returning to previous settings.</li> <li>2. The BIOS CMOS hold-up battery has failed.</li> </ol>	<ol style="list-style-type: none"> <li>1. Make sure you select Save Changes And Exit when exiting the BIOS setup utility.</li> <li>2. Contact your support representative for repairs. This is not a user serviceable part but has a normal life of 3 to 5 years.</li> </ol>

## T r o u b l e s h o o t i n g

### Symptom

#### Video Problems

**The built-in display is blank when you turn on your notebook.**

### Possible Cause

1. **Something is pushing on the Closed Cover switch. (See Figure 1-6 on page 5.)**
2. **The notebook is set for an external monitor only.**
3. **The angle of the display and the brightness settings are not adequate for your lighting conditions.**
4. **The power management timeouts may be set for very short intervals and you failed to notice the display come on and go off again.**
5. **The notebook turned on with a series of beeps.**

### Possible Solution

1. **Clear the Closed Cover switch.**
2. **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.**
3. **Move the display and the brightness control until you have adequate visibility.**
4. **Press any key or move the pointer, if this doesn't work press the Suspend/Resume button. (The display may be shut off by Standby mode, Auto Suspend, or Video Timeout.)**
5. **Power On Self Test (POST) has detected a failure which does not allow the display to operate. Contact your support representative.**

Symptom	Possible Cause	Possible Solution
The display goes blank by itself after you have been using it.	<ol style="list-style-type: none"> <li>1. The notebook has gone into Video timeout, Standby mode, Suspend mode or Save-to-Disk mode because you have not used it for a period of time.</li> <li>2. Something is pushing on the Closed Cover switch. (See Figure 1-6 on page 5.)</li> </ol>	<ol style="list-style-type: none"> <li>1. Use the keyboard or pointer and if that does not restore operation, push the Suspend/Resume button. You may want to change your PowerPanel settings (pages 43-47) or close your application and go to the setup utility Power Savings menu (pages 86-93) and adjust the timeout values to better suit your needs.</li> <li>2. Clear the Closed Cover switch.</li> </ol>
The Built-in Display does not close.	<ol style="list-style-type: none"> <li>1. A foreign object, such as a paper clip, is stuck between the display and the keyboard.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove all foreign objects from the keyboard.</li> </ol>
The Built-in Display has bright or dark spots.	<ol style="list-style-type: none"> <li>1. If the spots are very tiny and few in number, this is normal for a large LCD display.</li> <li>2. If the spots are numerous or large enough to interfere with your operation needs.</li> </ol>	<ol style="list-style-type: none"> <li>1. This is normal; do nothing.</li> <li>2. Display is faulty; contact your support representative.</li> </ol>
The application display uses only a portion of your screen and is surrounded by a dark band.	<ol style="list-style-type: none"> <li>1. You are running an application that does not support 1024 x 768 pixel resolution display and display compression is enabled.</li> </ol>	<ol style="list-style-type: none"> <li>1. Display compression gives a clearer but smaller display for applications that do not support 1024 x 768 pixel resolution. You can fill the screen but have less resolution by changing your display compression setting. (See Video Features Submenu of the Advanced Menu on pages 79-80.)</li> </ol>

## T r o u b l e s h o o t i n g

### Symptom

**You have connected an external monitor and it does not come on.**

### Possible Cause

1. **Your BIOS setup is not set to enable your external monitor.**
2. **Your external monitor is not properly installed.**
3. **Your operating system software is not setup with the correct software driver for that device.**
4. **Your external monitor is not compatible with your notebook.**

### Possible Solution

1. **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 of the Advanced Menu on pages 79-80.*)
2. **Reinstall your device.** (See *External Monitor on page 114.*)
3. **Check your device and operating system documentation and activate the proper driver.**
4. **See your monitor documentation and the External Monitor Support portions of Appendix A on pages 152-156.**

### Miscellaneous Problems

**An error message is displayed on the screen during the operation of an application.**

1. **Application software often has its own set of error message displays.**

1. **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 which Phoenix BIOS and/or your operating system can generate and an explanation of each message. Error messages are marked with an \*. Comments in *italic type* are suggestions of possible actions for you to consider or risks resulting from ignoring the message. The most common errors are marked with a #. 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 (POST). (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 (POST) diskette tests.**

Check to see that the drive is defined with the proper diskette type in the Utility Setup, (see page 59,) and that the diskette drive is installed correctly, (see pages 103-107). 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 a memory upgrade module verify that the module is properly installed. If it is properly installed you may want to check your Windows Setup so it is not trying to use 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 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 which might 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) **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 (POST).** Run the Setup Utility to check for the hard disk 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 (POST). Run the Setup Utility to correct the inconsistency.

## T r o u b l e s h o o t i n g

\*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 (POST). 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 failed test.** 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 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 is probably 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 – **is 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.

#Press <F2> to enter SETUP – **message is displayed during Power On Self Test (POST).** The message can be turned off by the Setup Utility Boot Options Submenu, (see pages 67-68), but the F2 key will still perform the same function.

#\*Previous boot incomplete – Default configuration used – **Previous Power On Self Test (POST) did not complete successfully. Power On Self Test (POST) loads default values and offers to run Setup. If the 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.**

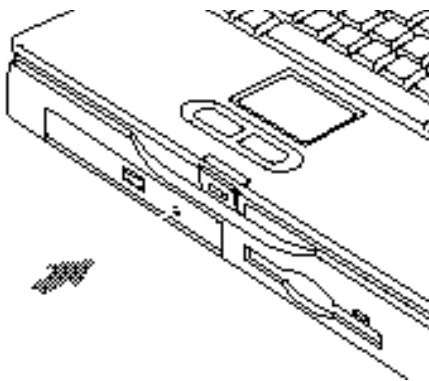
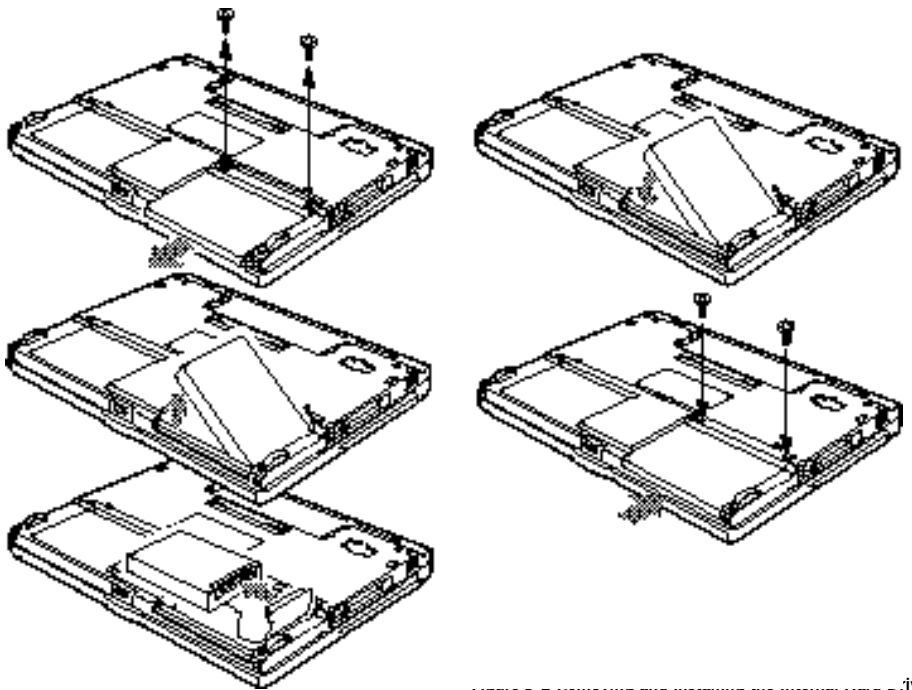


Figure 5-1 Emergency CD-ROM Tray Release

### EMERGENCY CD-ROM DRIVE TRAY RELEASE

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



ive

## INTERNAL HARD DRIVE REPLACEMENT

There is a compartment in the bottom of your notebook (see *Figure 1-10* on page 9) which contains the internal hard drive. The internal hard drive only needs to be replaced if there is a serious drive failure. It is best to have a trained technician make the replacement and re-install your operating system and pre-installed software for you.



### CAUTION

Contact your support representative before making any hard drive replacement, whether you, or a trained technician, makes the change.



### CAUTION

Never remove screws except the ones specifically shown in the directions for installing and removing the internal hard drive.

### To Remove the Internal Hard Drive

1. Turn off your notebook with the power switch and remove and power adapter (AC or auto/airline).
2. Turn the notebook bottom side up.
3. Remove the two (2) screws from the internal hard drive compartment. (*Figure 5-2.*)
4. Slide the cover toward the front of your notebook and then lift it clear.
5. Lift the left edge of your hard drive up until you can lift the drive clear of the compartment.
6. Very carefully pull the connector of the flexible circuit free of the connector.
7. Align the new drive with the flexible circuit so that the flexible circuit connector is flush against the rear edge of the drive connector.
8. Push the connector firmly in until it is seated.
9. Set the drive into the compartment being careful not to kink the flexible circuit.
10. Align the cover so that the rear edge of the cover with the rear edge of the deeper part of the compartment and push it down gently until it is flush with the bottom of the notebook.
11. Slide it toward the back of the notebook until the screw holes line up.
12. Replace the screws.

**MODEM SETUP AND COMMANDS**

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 56000  
 (Connection complete at 56,000 bps.)  
 ERROR  
 FAX  
 RING (This means an incoming call.)  
 BUSY  
 NO ANSWER

**When using the internal modem with applications which are not factory installed see the application documentation.**

**RESTORING YOUR PRE-INSTALLED SOFTWARE FROM CD-ROM**

To restore your pre-installed software from the Recovery CD-ROM follow the instructions with the CD-ROM.

Remember that you must set the Boot menu in the BIOS setup utility to CD-ROM Drive, or use the Esc key during boot-up sequence to change the setting so the BIOS loads the CD-ROM, not the hard disk. (See pages 54 and 94-95 or ways to set the operating system source.)

**CAUTION**

User data and user installed applications can not be recovered from the Recovery CD-ROM.

**Care and Maintenance**

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## SECTION SIX

### CARE AND MAINTENANCE

If you use your LifeBook 600 Series from Fujitsu carefully, you will increase its life and reliability. This section provides some tips for looking after the notebook and the battery.

### CARING FOR YOUR NOTEBOOK

\* The LifeBook 600 Series is a durable but sensitive electronic device. Treat it with respect and care.

- Make a habit of transporting it in a suitable carrying case.
- 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.
- Avoid exposure to water, 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 of your notebook.
- Do not drop your notebook.
- 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.

**INCREASING BATTERY LIFE**

To increase battery life:

1. Power your notebook through the AC or optional auto/airline adapter whenever possible.
2. If your notebook is running on battery power all day, connect it to the AC adapter overnight to recharge the battery.
3. Keep brightness to the lowest level comfortable.
4. Keep the volume level as low as possible for comfortable operation.
5. Set the power management for the maximum Power Savings profile of the PowerPanel settings or set an even longer life combination with the BIOS setup utility. (See pages 43-47 and 87-91 for instruction on these settings.)
6. Put your notebook in Suspend mode when it is turned on and you are not actually using it.
7. Limit your CD-ROM access.
8. Disable the Windows 95 CD automatic insertion function. (See pages 25-26.)
9. Always use fully charged batteries.

**CARING FOR YOUR BATTERIES**

If your notebook is to be stored for a month or longer, turn the machine off and remove all Lithium ion batteries. Store your notebook and batteries separately in a cool, dry location. 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 your notebook.

**Specifications and Glossary**

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## APPENDIX A SPECIFICATIONS

Appendix A provides the hardware and environmental specifications for your LifeBook 600 Series and its peripherals.

### WARRANTY

Your notebook is backed by a limited warranty and includes toll-free technical support; call 1-800-8FUJITSU (1-800-838-5487.) Check the service kit that came with your notebook for warranty terms and conditions.

### LIFEBOOK 690TX WITH LAN ENHANCEMENT UNIT SPECIFICATIONS

#### Microprocessor

Intel Pentium 266MHz with MMX technology, L1 and L2 cache, PCI bus architecture, and CardBus architecture.

#### Memory

System Memory  
32MB SDRAM.

L1 Cache Memory  
32KB within CPU.

L2 Cache Memory  
512KB Pipeline Burst SRAM.

#### Expansion Memory

16MB, 32MB and 64MB SDRAM Modules extend system memory up to 96MB; installable in two DIMM (dual-in-line memory module) slots in a compartment in the bottom of the notebook. SDRAM Modules are recommended but EDO RAM Modules will work.

#### Fujitsu product numbers:

16MB SDRAM, FPCEM05.  
32MB SDRAM, FPCEM06.  
64MB SDRAM, FPCEM07.

Installing an EDO RAM Module will cause your entire system to operate at the slower EDO timing.

8MB EDO RAM, FPCEM01A.  
16MB EDO RAM, FPCEM02A.  
32MB EDO RAM, FPCEM03.  
64MB EDO RAM, Third party only.

BIOS Memory  
512KB Flash ROM.

256 Bytes CMOS-RAM with back-up battery.

#### Video RAM

2MB EDO RAM.

#### Mass Storage

##### Floppy Disk Drive

One fixed 3.5" floppy disk drive which accommodates a 1.44MB or a 720KB floppy disk. (Built-in the LAN Enhancement Unit.)

One optional external floppy disk drive, Fujitsu Model FPCFDD02.

##### Hard Drive

One factory installed 4.0GB, 2.5" (12.7 mm) fixed hard drive unit.

##### CD-ROM Drive

One fixed 20-speed maximum, 2.5" (12.7 mm) drive built-in the LAN Enhancement Unit.

**Audio**

**SoundBlaster-compatible 16-bit stereo PCM/FM sound chip.**  
**Spatializer 3D-Stereo multiple speaker effect support.**  
**MIDI interface built-in the LAN Enhancement Unit.**  
**Stereo headphone jack, 1 Vrms, or less, minimum impedance 32 Ohms.**  
**Stereo line in jack, 880 mVrms or less, minimum impedance 10K Ohms.**  
**Monaural microphone jack, 125 mVp-p or less, minimum impedance 10K Ohms.**  
**One built-in speaker - 28 mm diameter.**  
**Two built-in speakers - 28 mm diameter (Stereo) built-in the LAN Enhancement Unit.**  
**One built-in monaural microphone.**  
**Stereo line out jack built-in the LAN Enhancement Unit.**

**Communication**

**Internal K56flex fax/data/voice modem (56Kbps data/voice transmission; 14.4Kbps FAX transmission, DSVD).**  
**One IrDA compatible infrared port (4Mbps).**

**CAUTION**

Your internal modem is designed to allow faster downloads from K56flex compliant digital sources. Maximum achievable download transmission rates may not reach 56Kbps and will vary with line conditions.

**Video**

**MPEG-1 video data decompression software.**  
**Zoomed Video support via PC Card Slot 1.**  
**3D-Graphics.**  
**NTSC/PAL TV output jack built-in the LAN Enhancement Unit.**

**Pre-Installed Software**

**Microsoft Windows 95.**  
**LapLink by Traveling Software.**  
**VirusScan by McAfee.**  
**Audio Rack 32 for Windows 95 by ESS Technology, Inc.**  
**SoftPEG by CompCore Multimedia Inc.**  
**PowerPanel by Phoenix Technologies.**

**MegaPhone by AVEO, Inc.**  
**PC-Doctor by Watergate Software, Inc.**

**Input/Output Connections****Notebook****Two Type I/II PC Card slots:**

**PCMCIA Standard 2.1 with CardBus support; Zoomed Video support via Slot 1.**  
**One 6-pin mini DIN PS/2 compatible connector, for external mouse, external keyboard, or external numeric keypad.**  
**One 25-pin D-SUB two-way Centronics type connector for parallel input/output devices; Bi-directional, output only or ECP.**  
**One 220-pin connector for a docking station.**  
**One 15-pin D-SUB connector for an external monitor (see Displays specifications).**  
**One 9-pin D-SUB connector for RS-232C serial input/output devices.**  
**Dual connector for 2 USB (Universal Serial Bus) input/output devices.**  
**One 25-pin special connector for external floppy disk drive connection.**

**One modular RJ-11 telephone line connector.**  
**One stereo headphone jack**  
 (see Audio specifications).  
**One mono microphone jack**  
 (see Audio specifications).  
**One stereo line in jack**  
 (see Audio specifications).  
**One DC power jack.**

LAN Enhancement Unit

**Two 6-pin mini DIN PS/2 compatible connector, one for external mouse and one for external keyboard, or external numeric keypad.**  
**One 25-pin D-SUB two-way Centronics type connector for parallel input/output devices; Bi-directional, output only or ECP.**  
**One 220-pin connector for a docking station.**  
**One 15-pin D-SUB connector for an external monitor**  
 (see Displays specifications).  
**One 9-pin D-SUB connector for RS-232C serial input/output devices.**  
**One dual connector for 2 USB (Universal Serial Bus) input/output devices.**

**One 15-pin D-SUB connector for MIDI/joystick devices.**  
**One modular RJ-45 10/100 Ethernet connector.**  
**One stereo line out jack.**  
**One NTSC/PAL TV output jack.**  
**One DC power jack.**

Displays

**Built-in color flat-panel, XGA, TFT active matrix LCD display.**  
**Diagonal dimension: 12.1".**  
**1024 x 768 pixels resolution, 64K colors.**  
**800 x 600 pixels resolution, 16M colors.**  
**640 x 480 pixels resolution, 16M colors.**  
**SVGA, VGA, and XGA compatible.**

External Monitor Support.

**SVGA, VGA, and XGA compatible CRT displays.**  
**1024 x 768 pixels resolution, 64K colors.**

Keyboards

**Built-In Keyboard with all functions of 101 key PS/2 compatible keyboards.**  
**Total number of keys: 86.**  
**Function keys: 12, F1 through F12.**

**Feature extension key: Fn.**  
**Windows 95 keys: 3, two Start keys and one Application key.**  
**Key pitch: 19 mm.**  
**Key stroke: 3 mm.**  
**Built-in touchpad pointing device with left and right buttons.**  
**Built-in palmrest.**

External Keyboard Support

**PS/2 compatible.**

External Numeric Keypad Support

**PS/2 compatible.**

External Mouse Support

**PS/2 compatible.**

Power

Batteries

**One internal Smart Lithium ion battery.**  
**Rechargeable, 10.8V, 3000 mAh. Operating time of up to 2 hours. Rapid charge (notebook off or in suspend mode) in about four (4) hours. Standard charge (normal use with limited CD and hard disk access) in about ten (10) hours.**

**One external Smart Lithium ion battery, Fujitsu Model FPCBP10. Rechargeable, 10.8V, 3000 mAh. Operating time of up to 2 hours. Rapid charge (notebook off or in Suspend mode) in about four (4) hours. Standard charge (normal use with limited CD and hard disk access) in about ten (10) hours.**



#### CAUTION

Actual battery life will vary based on screen brightness, applications, features, power management settings, battery conditioning, and other customer preferences. CD-ROM or hard drive usage may also have a significant impact on battery life.

#### Dual Battery Configuration

**Operating time of up to 4 hours. Rapid charge (notebook off or in Suspend Mode) in about 5 hours. Standard charge (normal use with limited CD and hard disk access) in about twelve (12)**

**hours, using the external Lithium ion battery, Fujitsu Model FPCBP10 in addition to the internal battery.**

#### AC Adapter

**Autosensing 100-240V AC, 44.8W, supplying 16V DC to the Notebook, Fujitsu Model FPCAC07 which includes an AC cable.**

#### Optional Auto/Airline Adapter

**Autosensing 12/24V DC, 43W supplying 16V DC to the Notebook, Fujitsu Model FPCCAA02.**

#### Power Management

**Save-to-Disk, Suspend, Idle and Standby power savings modes. When the battery is fully charged the computer can remain in suspend mode for approximately 24 hours or more.**

#### Dimensions and Weight

##### Overall Dimensions

**Approximately 11.7" x 9.2" x 1.4".  
(297 mm x 232 mm x 35 mm.)**

**Approximately 11.7" x 10.4" x 2.7" with the LAN Enhancement Unit installed.  
(297 mm x 266 mm x 67 mm.)**

#### Weight

**Approximately 4.7 lbs (2.1 Kg) with internal battery installed.**

**Approximately 5.6 lbs (2.5 Kg) with internal and external batteries both installed.**

**Approximately 7.6 lbs (3.5 Kg) with the LAN Enhancement Unit and internal battery installed.**

#### ENVIRONMENTAL REQUIREMENTS

##### Temperature

**Operating: 5 to 35 C (41° to 95° F).**

**Non-operating: -15 to 60 C (5° to 140° F).**

##### 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.**

Electro-Static Discharge (ESD)  
9 kV.

**Theft Prevention Lock**  
Lock slot on the right side panel for use with physical restraining security systems. The locking system by Kensington is recommended.

#### APPROVALS

Emissions  
FCC Part 15, FCC Part 68, FTZ.

Safety  
UL, C-UL, CSA.

FCC Certification  
See statement at the front of the User's Guide.

DOC (Industry Canada) Certification  
See statement at the front of the User's Guide.

#### POPULAR ACCESSORIES

Other accessories are available, contact your authorized Fujitsu reseller.

Additional External Lithium ion battery, Fujitsu Model FPCBP10.

**Base Enhancement Unit, Fujitsu Model FPCDS09.** The Base Enhancement Unit provides:

Floppy disk drive.

CD-ROM drive.

Stereo speakers.

And connections for:

RS-232C serial device.

Parallel device.

VGA/SVGA/XGA monitor.

Mouse (PS/2).

Keyboard (PS/2).

MIDI/joystick device.

Two USB devices.

Stereo line out.

Composite video out (NTSC/PAL TV).

**The Base Enhancement Unit is powered from the power adapter which is included with your notebook or the dual battery configuration.**

## APPENDIX B GLOSSARY

### AC Adapter

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

### ACPI

**Advanced Configuration and Power Interface.** This is a power management specification developed by Intel, Microsoft, and Toshiba. ACPI enables the operating system to control the amount of power given to each device attached to the computer. With ACPI, the operating system can turn off peripheral devices, such as a CD-ROM players, when they're not in use. As another example, ACPI will enable manufacturers to produce computers that automatically power up as soon as you touch the keyboard. (You must upgrade to Windows 98 to take advantage of ACPI.)

### 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.

### 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 notebook.

### BIOS

**Basic Input-Output System.** A computer program and set of default parameters stored in ROM which tests and operates your computer 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 with at least as many wires as there are bits in your words which passes data between the CPU and the sub-assemblies inside your computer.

### Byte

8 bits of parallel binary information.

### Cache Memory

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

### CardBus

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

#### CD-ROM

**Compact Disc Read Only Memory.** This is a form of digital data storage which is read optically with a laser rather than with 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.

#### CHS Translation

**Cylinder, Head and Sector translation.** Conversion of hard disk access addressing to the cylinder, head and sector form. The terminology is historical left from the days when data was stored on a series of cylindrical drums. The head designates the reading device, similar to the head on your cassette recorder only mounted on a movable arm. Another addressing method is LBA.

#### 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 to other equipment.

#### 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 preprogrammed value to be used if you fail to set your own.**

#### DIMM

**Dual-in-line Memory Module.**

#### Disk

**A spinning platter of magnetic data storage media.** If the platter is very stiff it is a hard disk, 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.

## Appendices

**DMI**

**Desktop Management Interface.** An Application Programming Interface (API) to enable software to collect information about a computer environment. A DMI program can determine what software and expansion boards are installed on a computer. DMI is designed to be hardware and operating system independent.

**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.

**DSVD**

**Digital Simultaneous Voice and Data** - A standard for sharing digital voice and data over a single analog telephone line.

**ECP**

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

**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.**

**Gigabyte**

1,073,741,824 bytes  
(2 raised to the thirtieth power).

**Hard disk**

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

**Hexadecimal**

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

**I/O**

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

**I/O Port**

The connector and associated control circuits for data entering and leaving your computer in electronic form.

**IDE**

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

**Impedance**

The amount of resistance to the flow of electric current.

**Infrared**

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

**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.**

**Kilobyte**

1,024 bytes (2 raised to the tenth power).

**K56flex Modem**

The modem protocol co-authored by Lucent and Rockwell that enables high speed internet downloads over standard telephone lines. Traditional modems assume that both ends of a modem communication have an analog connection to the public switched telephone network. K56flex takes advantage of the situation with one end of the communication being a high speed digital connection.

**LAN**

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

**LBA**

**Logical Block Addressing.** A method of locating data stored on a disk.

**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 is not subject to the memory effect that Nickel Cadmium batteries are and which have a high power-time life for their size.

**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.

**MB**

**Megabyte.**

**Megabyte**

1,048,576 bytes  
(2 raised to the twentieth power).

**Megahertz**

1,000,000 cycles per second.

**Memory**

A repository for data and applications which is readily accessible to your computer 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.

**MMX Technology**

MMX technology is an Intel processor enhancement that improves multimedia and communication applications. The Pentium processor with MMX technology boasts three primary architectural design enhancements: 57 powerful new instructions specifically designed to manipulate and process video, audio and graphical data efficiently; Single Instruction Multiple Data (SIMD) enabling one instruction to perform the same function on multiple pieces of data; and more L1 cache for a total of 32KB.

**Monaural**

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

**MPEG Compression**

Moving Pictures Experts Group – An organization under the International Standards Organization which is tasked with generating standards for digital video and audio data compression.

**MPEG-1**

The first standard developed by the MPEG which defined coding for a combined audio-visual signal at a rate of 1.5Mbit/sec. It is intended to process video with a source resolution of 352 x 240 pixels at 30 frames/sec, one fourth the resolution of broadcast television.

**MPEG-2**

The second standard developed by the MPEG which defined coding for a combined audio-visual signal at a rate of 6.0Mbit/sec. It is intended to process video with a source resolution of 720 x 480 pixels at 30 frames/sec, the resolution of broadcast television.

**MPU-401**

A standard for MIDI interfaces and connectors.

**NTSC**

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

**Operating System**

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

**PAL**

Phase Alternation by Line. The standard for color television in Western Europe and most of Asia and Africa.

**Parallel Port**

A connection to another device through which data is transferred as a block of bits simultaneously with a wire for each bit in the block and with other wires only for control of the device not for transfer of data.

**Partition**

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

**PCI**

Peripheral Component Interconnect. A local (internal to a computer) bus standard developed by Intel Corporation.

**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.

**PIO**

Parallel Input/Output.

**Pitch (keyboard)**

The distance between the centers of the letter keys of 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 computer. Status and error messages may be displayed before the operating system is loaded. If failures so serious that operation can not continue are detected the operating system will not be loaded.

**Program**

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

## Appendices

**PS/2**

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

**RAM**

Random Access Memory. A hardware component of your computer 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 Computer this refers to returning to active operation after having been in one of the suspension states.

**ROM**

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

**SCSI**

Small Computer Systems Interface (pronounced scuzzy). An American National Standards Institute (ANSI) standard for connecting multiple (up to 7) high speed parallel devices to a computer.

**SDRAM**

Synchronous Dynamic Random Access Memory. A memory that synchronizes itself with CPU bus.

**SGRAM**

Synchronous Graphics Random Access Memory. A SDRAM dedicated to graphic functions.

**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.

**Shadow RAM**

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

**Smart Battery**

A battery that provides the computer with information about its power status so that the computer can conserve power intelligently. This feature also allows user to control whether batteries are charged in series or parallel.

- SRAM**  
**Static Random Access Memory.** A specific technology of making RAM which does not require periodic data refreshing.
- Status Indicator**  
**A display which reports the condition of some portion of your hardware.** On your Computer this is an LCD screen just above the keyboard.
- Stereo (audio)**  
**A system using two channels to process sound from two different sources.**
- Stroke (keyboard)**  
**The amount of travel of a key when it is pressed from resting to fully depressed.**
- Suspend**  
**To make inoperative for a period of time.** Your notebook uses various suspension states to reduce power consumption and prolong the charge of your battery.
- 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.**
- 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 – A bus standard developed by the PC and telecom industry to allow plug and play of computer peripherals.** USB allows up to 127 devices to be run simultaneously by daisy-chaining. Dual USB ports provide two separate chains.
- V.90**  
**The new 56K modem standard approved by the ITU (International Telecommunications Union).**
- 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.

**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 disk; a file or directory of floppy diskette or hard disk.

**XGA**

Extended VGA.

**Zoomed Video**

A CardBus enhancement which provides a high-speed I/O path for video. The Zoomed Video support on PC Card slot 1 of your notebook provides simultaneous audio and video conversion for use with digital video, digital cameras, MPEG and TV decoders.

**3D-Stereo**

A sound processing system which produces a sound field which gives the sensation of three-dimensional sound from a single set of stereo speakers.

**3D-Graphics**

Visual displays that give the sensation of having three dimensions.

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