DIGITAL HiNote Ultra 2000 Series

Service Quick Reference Guide

Part Number: ER-PF1WW-SR. A01

Digital Equipment Corporation

October 1997

FCC Notice

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

Any changes or modifications made to this equipment may void the user's authority to operate this equipment.

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 on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

All external cables connecting to this basic unit need to be shielded. For cables connecting to PCMCIA cards, see the option manual or installation instructions.

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Preface

This Service Quick Reference Guide describes how to test, troubleshoot, remove and replace the DIGITAL HiNote Ultra 2000 series notebook computer Field Replaceable Units (FRUs).

This guide is written specifically for DIGITAL approved on-site service engineers. On-site repair of systems beyond the approved FRU list is prohibited and may void warranty.

CAUTION: Digital recommends that only A+ certified engineers attempt to repair this equipment. All troubleshooting and repair procedures are detailed to support subassembly/module level exchange. Because of the complexity of the individual boards and subassemblies, no one should attempt to make repairs at the component level or make modifications to any printed circuit board. Improper repairs can create a safety hazard. Any indications of component replacement or circuit board modifications might void any warranty or exchange allowances.

Preface

Overview 1

Introduction

This chapter introduces the DIGITAL HiNote Ultra 2000 series notebook computers. It provides a system overview and describes the controls, indicators, and hot keys.

System Overview

The HiNote Ultra 2000 series are high-performance portable computers designed for the mobile professional.

Figure 1-1 shows a functional block diagram of the notebook computer. The following sections provide an overview of the different functions.

CPU and Chip Set

The HiNote Ultra 2000 series notebook computers use the Intel P54CSLM 120/133 processors and P55C 150/166/175 processors mounted on a daughter card.

The PicoPower Vesuvius chip set is used to implement the core functions of the system.

- The V1 and V2 chips provide the core system functions.
- The V2 chip provides the PCI bus interface and the interface between the V1 chip and memory.
- The V3 chip provides the PCI to ISA bridge interface.

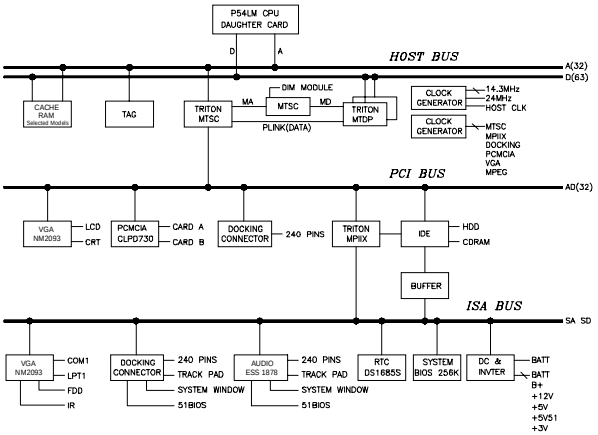


Figure 1-1. Functional Block Diagram

Memory

The system comes with 16 MB of on-board EDO DRAM for system memory and 512KB of L2 cache memory.

System memory can be upgraded to a total of 144 MB. The upgrade is performed by installing 8 MB, 16 MB, 32 MB or 64 MB EDO SO-DIMM modules. There are two slots for additional memory. Either slot can be populated first.

BIOS

The system has an Intel 28F002BX-T 2 MB Boot block Flash ROM for system BIOS (Phoenix BIOS 4.04). The BIOS provides support for the following:

- Suspend to RAM
- Full APM 1.2 supported
- Password protection(System and Docking options)
- Auto-configured with docking options
- Windows 95 ready with PnP
- Various hot-keys for system control

PCI Bus Devices

The internal PCI bus and PCI components operate at 3.3V. The PCI bus is also available to supported docking options. These options contain their own PCI bridge.

Cardbus Controller

Cardbus support is provided by the TI1131 controller. This chip provides the following functions:

- Support for Zoomed Video.
- Support for two PC Card/Cardbus slots with hot removal/insertion.
- Burst transfers to maximize data throughput on the PCI/Cardbus bus.
- Support for serialized ISA IRQs.
- Support for 16-bit distributed DMA.
- Support for Ring Indicate.

Video Controller Chip

Video support is provided by the C&T 65554 Controller Chip. This chip provides the following functions:

- 64-bit memory interface.
- 2MB 3.3V 60ns EDO Video DRAM.
- Support for Zoomed Video.
- DDC 2B support for external monitors.
- Advanced power management features minimize power consumption during:
  - Normal operation
  - Standby mode
  - Panel-off

PCI-IDE Controller

IDE support is provided by the CMD 643 PCI-IDE controller. This chip provides the following functions:

- PCI bus Master device.
- Supports up to mode 5 timing.
- Supports DMA capable drives.
- Supports two IDE controllers (only one used).

ISA Bus Devices

The ISA bus interface is provided by the PicoPower V3 chip.

Audio

Audio support is provided by the ES1878 chip. This chip provides the following functions:

- Monophonic full-duplex operation using two DMA channels.
- I^2S interface to internal stereo D/A for external Zoomed Video port.
- Complete general interrupt mapping including the sharing of all interrupts.
- Support for 16-bit Stereo, FM Synthesizer, MPU-401, and MIDI.
- Self-timed joystick port.
- Hot docking 6-pin interface to expansion audio mixer (ES978).

BIOS

The system BIOS is implemented using the Intel 28F002BX-T 2 MB Boot block Flash ROM.

System Command Processor

The System Command Processor is implemented using the Hitachi H8 IKAP II processor. This processor provides the following functions:

- Simultaneous support of two external PS/2 ports and the internal Touch pad.
- I^2C bus master for communication to:
  - Status LCD
  - EEPROM
  - Docking interface components
- Hot Key interface.
- Secure password protection.
- System power plane control and power sequencing.
- Battery management interface for charging and the Smart battery information.
- Status LCD and device monitoring interface.
- Active thermal interface for CPU thermal management.
- Internal keyboard scanning.

Super I/O

I/O support is provided by the National Semiconductor PC87338 chip. This chip supports the following functions:

- Floppy disk controller with Japanese floppy support.
- IEEE 1284 Parallel port.
- Serial infrared support – IrDa 1.1 (115Kbps and 4Mbps).
- 16550 UARTs.
- Full Plug-and-Play support.

UMI Controller

The DIGITAL HiNote Ultra 2000 notebook computer has an internal type II PCMCIA slot that is available as an UMI slot. This feature provides a flexible method for the support of an internal modem that minimizes the impact of multi-national modem approvals. This slot supports only DIGITAL approved modem cards. The UMI interface is provided by the Cirrus Logic CL-PD6722 dual slot PCMCIA controller (Only one slot is used.) This chip provides the following features and functions:

- PCMCIA 2.1 and JEIDA 4.1 compliant.
- Automatic low power mode (improved power consumption).
- Direct connection to the ISA bus and PCMCIA socket.
- Five programmable memory windows and two I/O windows.
- DMA support.

Docking Options

The DIGITAL HiNote Ultra 2000 notebook computer supports docking options. Active docking options are required to have a NILE PCI-PCI bridge.

DIGITAL HiNote Ultra Multimedia Dock

The DIGITAL HiNote Ultra Multimedia Dock has the following features:

- Three speakers: two tweeters and one sub-woofer.
- Super I/O duplication for port replication the DIGITAL HiNote Ultra Enhanced Port Replicator.
- Nile I PCI-PCI bridge.
- PicoPower V3 PCI-ISA bridge.

- Two Type II or one Type III Cardbus slot.
- Line-in and speaker out support.
- MIDI/Joystick port.
- 3D Sound (ESS398).
- CD-ROM/FDD Module Bay.
- NTSC/PAL video output (switch selectable).
  - Composite video using RCA jack
  - S-Video
- USB controller and USB port.
- Expansion audio mixer support (ES978).

DIGITAL HiNote Ultra Enhanced Port Replicator

The DIGITAL HiNote Ultra Enhanced Port Replicator has the following features:

- Battery charger
- Parallel port
- Serial port
- VGA/CRT port
- Two PS/2 connections for keyboard and mouse
- USB port (pass-through from DIGITAL HiNote Ultra Multimedia Dock)

Components, Controls and Indicators

This section shows the locations and provides a description of the different components, controls, and indicators on your DIGITAL notebook computer.

Front and Right Side Components

Key	Component	Description
❶	Power LED Battery Charging LED	The green Power LED (lower) lights when the notebook is On. The amber Battery Charging LED (upper) lights when the battery is charging.
❷	Lid Release	One of two lid releases. Push in both releases at the same time to open the LCD panel.
❸	Speaker	Right stereo speaker used to hear sound files and system sounds.
❹	CD-ROM/Diskette Drive Bay	Supports a CD-ROM drive or a Diskette Drive module.
❺	Microphone In 	Input connection for external microphone.
❻	Audio Out 	Connection for headphones or external speakers.

continued

Key	Component	Description
❼	Suspend/Resume Button	Turns the notebook computer On, and Suspends or Resumes the system. Press and hold the [fn] + [Suspend/Resume] for four seconds to turn the notebook Off.
❽	Internal Microphone	Used to record voice, music, and sound files.
❾	Status Display	Provides system operating status.
❿	Contrast Control (ASTN only)	Controls the contrast of the LCD display.
⓫	Reset button	Resets the notebook computer. All unsaved data will be lost. Refer to Figure 6-3 for instructions on how to lift the keyboard to gain access to the reset button.

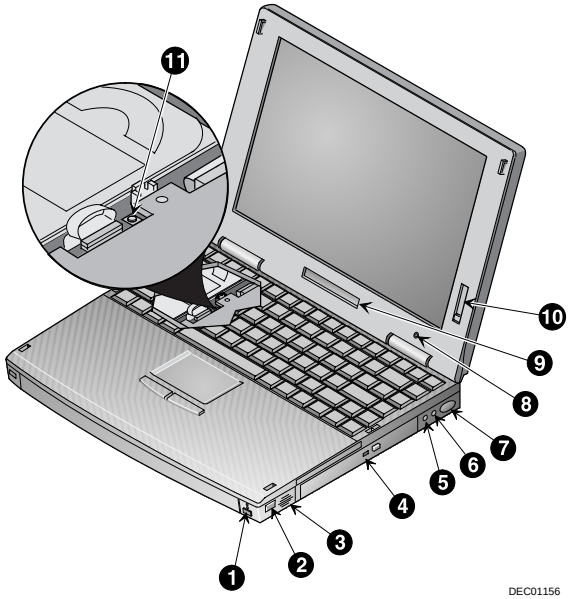


Figure 1-2. Front and Right Side View (12.1” Display)

Front and Left Side Components

Key	Component	Description
❶	Lid Release	One of two lid releases. Push in both releases at the same time to open the LCD panel.
❷	Speaker	Left stereo speaker used to hear sound files and system sounds.
❸	PC Card Ejectors	Ejects a PC Card. Top button releases a PC Card from the top slot; the bottom button releases a PC Card from the bottom slot.
❹	PC Card Slots	Support two Type I or II cards or one Type III card. Zoomed Video cards are supported in the lower slot only.
❺	Keyboard Releases	These latches release the keyboard to allow access to the removable hard drive and the system Reset button.
❻	Removable Hard Drive	Located under the keyboard, the hard drive is easily removable and upgradeable.
❼	Security Lock	Attach a security locking device , such as a Kensington lock, to this port.

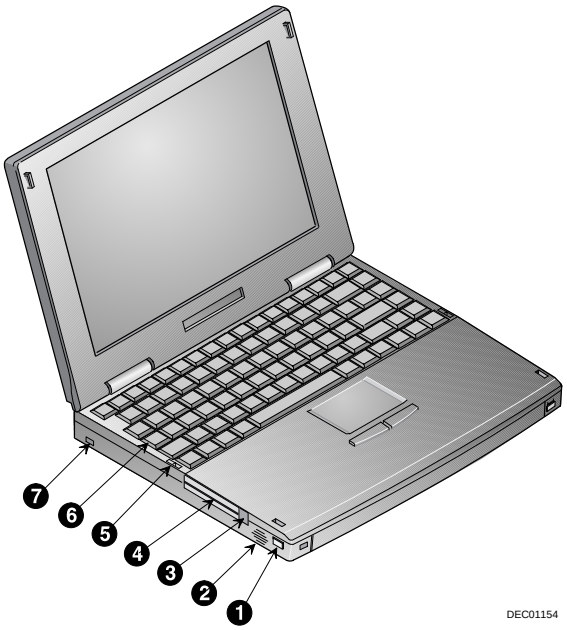


Figure 1-3. Front and Left Side View (12.1” TFT Display)

Back Components

Key	Component	Description
❶	AC In 	The universal AC adapter connects to this port.
❷	External Keyboard/ Mouse Port 	An external keyboard or PS/2 mouse connects to this port.
❸	RJ11 Modem Port	An analog telephone line connects to this port (modem functionality on selected models only).
❹	Serial Port 	A serial device connects to this port.
❺	Parallel Port 	A parallel device, such as a printer, connects to this port.
❻	Video Port 	An external monitor connects to this port.
❼	I/O Connector Cover and Keyboard Support	Covers I/O connectors. Can be flipped down to support the keyboard at a comfortable typing angle.
❽	Fast IR Port	Fast IR interface allows wireless data transfer between the notebook and another device with an IR interface.

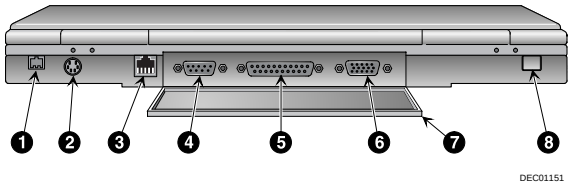


Figure 1-4. Back View

Bottom Components

Key	Component	Description
❶	Battery Release	Releases the LiIon battery from the notebook computer for removal.
❷	LiIon Battery	Provides power to your notebook computer.
❸	CD-ROM/Diskette Drive Module Release	Releases either a diskette or CD-ROM Drive module from the Diskette/CD-ROM Drive Bay.
❹	Memory Door	Provides access to notebook computer's memory.
❺	Docking Connector Door	Provides access to the docking connector when using the DIGITAL HiNote Ultra Multimedia Dock or the DIGITAL HiNote Ultra Enhanced Port Replicator.

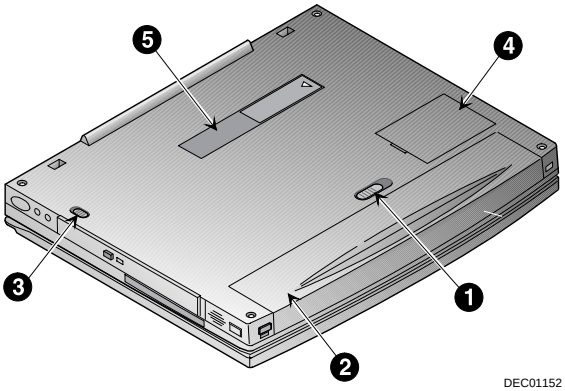
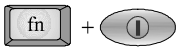


Figure 1-5. Bottom View

Controlling Power

Unique to DIGITAL notebook's, the suspend/resume button not only enables you to take advantage of the built-in power saving features but also turns the notebook on and off.

Action	How to...
On 	Press the Suspend/Resume button to turn the system on.
Suspend 	When the system is on, press this button to place your system in Suspend mode.
Resume 	Press the Suspend/Resume button to resume normal operation from the Suspend mode.
Off 	To completely shut off your notebook, press and hold [fn + suspend/resume] button until a system beep sounds, indicating that the system has been successfully turned off.
Suspend Lid Switch	In its factory default mode, closing the LCD lid will also enter the notebook into Suspend mode. Refer to Chapter 3, in the section labeled *Power Menu* for instructions on how to configure the Lid Switch function.

CAUTION
If you turn the notebook computer off without saving and closing all open files, you may lose some or all of your work.

LCD Status Display

Indicator	Shows...
	AC Power – The computer is connected to and operating from its external AC power supply.
	Standby – The computer is in Standby Mode. Any system activity such as, pressing a key on the keyboard, touch pad, mouse, or other system activity resumes normal operation.
	Hard Drive/CD-ROM Activity – The hard drive or CD-ROM is being accessed.
	The Caps Lock function is enabled..
	NUM Lock – The NUM Lock function is enabled.
	Monitor/Scroll Lock – The external monitor port is enabled and/or the Scroll Lock function is enabled.
	 – External Monitor port enabled
	 – Scroll Lock function enabled
	 – External monitor and Scroll Lock enabled
	Embedded Numeric Key pad – The keyboard's embedded key pad is enabled by a keyboard hot-key.

Keyboard Hot Keys

Hot keys are activated by holding down the [fn] key (located in the lower left corner of the keyboard) and pressing the desired function key.

 +	**Function**
	Places the computer in Standby Mode.
	Sets the computer's operating mode to maximize battery life. A single beep is emitted when the computer switches to this operating mode. If you Suspend/Resume or Reboot the system, the system returns to the settings contained in the system BIOS.
	Sets the computer's operating mode to maximize performance. Two beeps are emitted when the computer switches to this operating mode. If you Suspend/Resume or Reboot the system, the system returns to the settings contained in the system BIOS.
	Used during Power Up Self-Test (POST) to enter the System setup program.
	Enables and disables the computers external display port and the LCD display. There are three display modes: LCD Display LCD Display and External Monitor (simulscan) External Monitor only Each time you press this hot key, the computer changes to the next display setting. The display mode for the External Monitor is shown on the LCD Status display.

continued

fn +	Function
F5	Turns the battery display information On and Off.
F6	Reserved for future use.
F7	Toggles the system sound between mute and unmute.
F8	Enables and disables the keyboard's embedded key pad. The state of this key is shown in the LCD status display. This hot key is used in conjunction with the [F9] hot key to control the embedded key pad.
F9 num lock	Toggles NUM Lock On and Off. The state of NUM Lock is shown in the LCD Status Display. This hot key is used in conjunction with the [F8] hot key to control the embedded key pad.
F10 scroll lock	Toggles Scroll Lock On and Off. The state of Scroll Lock is shown in the LCD Status Display.
▲♪	Depress repeatedly to increase the audio volume.
▼♪	Depress repeatedly to decrease the audio volume.
◀	Depress repeatedly to decrease the LCD screen brightness.
▶	Depress repeatedly to increase the LCD screen brightness.

Related Information

Documentation

DIGITAL HiNote Ultra 2000 Series User's Guide	English	ER-PF1WW-UA
	French	ER-PF1WW-UP
	Italian	ER-PF1WW-UI
	German	ER-PF1WW-UG
	Spanish	ER-PF1WW-US
	Japanese	ER-PF1WW-UJ
	Simple Chinese	ER-PF1WW-U2
DIGITAL HiNote Ultra 2000 Series Quick Reference Card	English	ER-PF1WW-BA
	French	ER-PF1WW-BP
	Italian	ER-PF1WW-BI
	German	ER-PF1WW-BG
	Spanish	ER-PF1WW-BS
	Japanese	ER-PF1WW-BJ
	Simple Chinese	ER-PF1WW-B2
Quick Setup Guide	English, French, Italian, German, Spanish, Japanese	ER-PF1WW-IM
	English, Dutch, Danish, Swedish, Norwegian, Finnish	ER-PF1WW-IX
	English, Simple Chinese	ER-PF1WF-I2
AC Adapter Bulletin	English, French, Italian, German, Spanish, Japanese	ER-PB1WF-DM
DIGITAL HiNote System CD		AG-R49UA-BE

World Wide Web

Information such as drivers, BIOS updates, and on-line documentation is available from DIGITAL's World Wide Web Site.

The URL for the site is:

`HTTP://WWW.WINDOWS.DIGITAL.COM/`

System Restoration 2

Introduction

This chapter provides information on how to restore the operating system and drivers on a DIGITAL HiNote Ultra 2000 series notebook computer. It provides instructions on how to create a bootable floppy for the system and how to restore the system using the bootable floppy or the DIGITAL HiNote System CD.

CAUTION: Do not compress the boot drive using compression utilities. It will cause the notebook computer's Save to File feature to not function properly.

Reinstalling and Installing Drivers

Reinstalling Drivers – The procedures for reinstalling certain drivers over an existing installation is different than installing the drivers on a clean installation. For information on how to reinstall drivers, refer to the latest version of the DIGITAL HiNote System CD.

Installing Drivers – In order to restore the system back to its original DIGITAL factory shipped configuration, you must install the HiNote Ultra 2000 Series audio, video, track pad and network drivers (the need to install the network driver depends upon the individual requirements). If you have installed WinNT, you will also want to install the EPM (Enhanced Power Management) driver located in the Driver/WinNT directory. Please refer to Chapter 5 of the User's Guide in the section labeled *Installing PC Cards in WinNT 4.0*, for information on EPM features. These drivers are located on the DIGITAL HiNote System CD. To install any of these drivers, please refer to the following instructions:

1. Boot to Windows.
2. Insert the DIGITAL HiNote System CD into the CD-ROM drive.
3. From the Taskbar, click on Start and then Run. In the Run command box type X:\CDInstall (X represents the drive letter of the CD-ROM).
4. At the Welcome screen, click on Next. Then at the Install screen, click on Driver Installation Instructions.
5. Select the driver(s) you wish to install. A README.TXT file will appear. Print the file(s). These are the installation instructions to install the selected drivers(s).

Creating a Bootable Floppy

To create a bootable floppy, perform the following:

1. Boot to Windows. Insert the DIGITAL HiNote System CD into the CD-ROM drive. Click on Start and then Run. In the Run dialog box command line type X:\CDInstall
(X: represents the drive letter of the CD-ROM).
2. Click through the Welcome screens until the Install Menu appears.
3. Click on the Utilities box and then click on Next.
4. Click on Create Boot Floppy and click on Next. Click on Next again.
5. Insert a 3½ inch 1.44 MB floppy into the floppy disk drive. Follow the on-screen instructions. The utility (Sysboot.exe) will format the floppy, make the floppy bootable and copy appropriate system files to the floppy. Before creating the boot floppy, ensure that the floppy is NOT write protected. Any previous data on the diskette will be erased.
6. After the bootable floppy has been created, ensure that it is write protected. Paste a label onto the diskette and label it HiNote Ultra 2000 Series Bootable Floppy.

Using the Boot Floppy

The hard drive in the system has been partitioned using the FDISK utility. The hard drive has also been formatted. A "SAVETOFILE.BIN" file has been created for the system by using PHDISKF. Without Save-to-File.bin, it will not be possible to take advantage of the system's Save to Disk power management feature.

System Restoration

FDISK, format and PHDISKF are located on both the DIGITAL HiNote System CD and the bootable floppy, which can be created from the DIGITAL HiNote System CD.

Re-installing the Operating System

To re-install the Windows Operating System on top of the current Operating System, perform the following:

1. Insert the bootable floppy into the floppy disk drive. Power on the system. A list of choices appear.

   NOTE: To exit this menu and go to a DOS prompt, press 2. To re-enter this menu from a DOS prompt, type AUTOEXEC and press the Enter key. AUTOEXEC must be typed from the A: prompt.

2. Insert the Microsoft Operating System CD into the CD-ROM drive.
3. From the bootable floppy Main Menu, choose Option 3 (Re-install).
4. Follow Microsoft's on-screen instructions.
5. Remove the Microsoft Operating System CD and insert the DIGITAL HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.
6. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.
7. After re-installing the Operating System you should re-install all drivers. Please refer to the section on Reinstalling/Installing Drivers for information on installation procedures.

System Installation

To remove all files from the hard drive and re-install Windows Operating System but NOT remove the hard drive partitions, please perform the following.

1. Insert the bootable floppy into the floppy disk drive. Power on the system. A list of choices appear.

   NOTE: To exit this menu and go to a DOS prompt, press 2. To re-enter this menu from a DOS prompt, type AUTOEXEC and press the Enter key. AUTOEXEC must be typed from the A: prompt.

2. Choose Option 4. This Option will Format the hard disk's drive C: and then create a 86016 KB Save-to-file.bin This file is created by the PHDISKF Utility and enables the use of the notebook's Save to Disk feature.
3. Insert the Microsoft Operating System CD into the CD-ROM drive.
4. Choose Option 5 (Install OS) from the bootable floppy Main Menu. This will run Microsoft's OEMSETUP program from the Microsoft Operating System CD. OEMSETUP runs SCANDISK and then installs the OS.
5. Remove the Microsoft Operating System CD and insert the DIGITAL HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.
6. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.

7. After re-installing the Operating System you should re-install all drivers. Please refer to the "Reinstalling/Installing Drivers" section of this chapter for information.

8. Create a directory on the hard drive for the operating system installation files.

Windows 95: Create a directory on the hard drive under C:\Windows called Options and then make a directory under that called Cabs. The new directory path is C:\Windows\Options\Cabs. Copy the Win95 directory from the Microsoft CD onto the hard drive's C:\Windows\Options\Cabs directory.

Windows NT: After completing the installation of Windows NT, locate the directory on the Microsoft O/S CD labeled, I386. Copy this directory to the drive where the operating system is located, most likely drive C:\. The files in this directory are needed when installing certain drivers such as network drivers.

Complete System Restoration

To perform a complete system restoration on a new hard drive or to remove all files and re-partition the hard drive and then install a Microsoft Operating System, please perform the following:

1. Insert the bootable floppy into the floppy disk drive. Power on the system. A list of choices appear.

NOTE: To exit this menu and go to a DOS prompt, press 2. To re-enter this menu from a DOS prompt, type AUTOEXEC and press the Enter key. AUTOEXEC must be typed from the A: prompt.

2. Choose Option 7 from the bootable floppy Main Menu. This will initialize the hard disk using FDISK. Running FDISK will erase all data from the hard drive. During FDISK, you will be prompted for much information.

   When running FDISK, we strongly recommend that you do not enable large disk support,(choose NO, when asked). If you choose [YES] you will not be able to install WinNT or a WIN95 non-SR2 operating system at a later time. Also make sure you set the Active Partition flag to make it bootable.

   NOTE: Although OEMSETUP does FDISK the hard drive, the utility is NOT designed to run with hard drives 2.1 GB or larger. It will cause unexpected results. Use the FDISK Option provided on the boot media.

3. Choose Option 4. This Option will Format the disk and then create a 86016 KB Save-to-file.bin This file was created by the PHDISKF Utility and enables you to use the notebook's Save to Disk feature.
4. Insert the Microsoft Operating System CD into the CD-ROM drive.
5. Choose Option 5 (Install OS) from the bootable floppy Main Menu. This will run Microsoft's OEMSETUP program from the Microsoft Operating System CD. OEMSETUP runs SCANDISK and then installs the OS.
6. Remove the Microsoft Operating System CD and insert the DIGITAL HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.

7. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.

8. After re-installing the Operating System you should re-install all drivers. Please refer to the “Installing Drivers” section of this chapter for information.

9. Create a directory on the hard drive for the operating system installation files.

Windows 95: Create a directory on the hard drive under C:\Windows called Options and then make a directory under that called Cabs. The new directory path is C:\Windows\Options\Cabs. Copy the Win95 directory from the Microsoft CD onto the hard drive’s C:\Windows\Options\Cabs directory.

Windows NT: After completing the installation of Windows NT, locate the directory on the Microsoft O/S CD labeled, I386. Copy this directory to the drive where the operating system is located, most likely drive C:\. The files in this directory are needed when installing certain drivers such as network drivers.

Using the DIGITAL HiNote System CD

This section describes the steps used to install a Microsoft Operating system and drivers onto a new hard drive, or on an existing drive which needs restoration.

Preparing a New Hard Drive

PHDISKF and FDISK are the two utilities needed in order to prepare the hard disk for general use. These utilities can be found on the DIGITAL HiNote System CD. The FDISK utility formats the hard drive while the PHDISKF utility creates a DOS file on the hard drive. This DOS file is necessary in order to take advantage of the notebook’s Save to Disk power management feature.

FDISK and Format Disk Utility

The DIGITAL HiNote System CD is a bootable CD. It boots to the A:\ prompt. In the following instructions we will be running the FDISK Utility on a 1.44 GB hard drive.

1. Insert the DIGITAL HiNote System CD into the CD-ROM tray. The CD should boot to the A:\ prompt. At the A:\ type FDISK the command line should read A:\FDISK.

   Press <Enter>.

2. This will execute the FDISK utility. When asked if you want to enable enlarged disk support, choose [No]. If you choose [Yes], you will not be able to install WinNT or a Win95 non-SR2 operating system.

3. At the FDISK Main Menu, choose 1 to create a DOS partition or logical DOS drive. To choose this option, type the number 1 and press <Enter>.

4. Choose 1 again to create a primary DOS partition by typing 1 and pressing <Enter>.

5. If you wish to make the whole hard drive one large partition, press <Enter> to accept the default Yes. Continue to press the <esc.> key until you have exited FDISK and are at the DOS prompt. Restart the system by pressing Ctrl+Alt+Del. Proceed to step 16. If you wish to create multiple partitions on the hard drive, press the N key (signifying No) and then press <Enter>. Proceed to step 6.

6. FDISK will inform you of the approximate space available on the hard drive and prompts you to enter the percent of disk space or the number of MB you wish to assign for the primary partition. For the purpose of this example, we have chosen to assign drive C: 500 MB.

7. Type 500 and press <Enter>. FDISK displays the partition information. Press the <esc.> key to continue.

8. If you wish to make the primary partition C: bootable, type 2 and then press <Enter>. You will be asked to enter the number of the partition you wish to make active (bootable). Type 1, and press <Enter>. Press <esc.> to return to the FDISK Main Menu.

9. If you wish to make more DOS partitions accessible by Win95, press 1, Create DOS Partition or Logical DOS Drive (recommended) at the FDISK Main Menu. If you do not, press <esc.> to exit the Main Menu and then press <esc.> again to exit FDISK. We have chosen to Create a DOS Partition or Logical DOS Drive.

10. Press 2 to create an Extended DOS partition and then press <Enter>. FDISK will give you the available hard disk space. On our 1.44 GB drive, the space remaining is 878 MB.

11. If you wish to assign the remaining space as the Extended DOS partition, press <Enter>. If you wish to customize the capacity, type in the amount in MB or percentage of the available space (for ex, 50%) and press <Enter>. We will assign the remaining drive space (878 MB) to and Extended DOS partition.

12. After pressing <Enter>, press <esc.>. FDISK will inform you that there are no Logical Drives assigned. Define the size you wish or press <Enter> to accept the default. If you press <Enter> the entire (878 MB) capacity will be assigned as drive D:.

13. Type the amount you wish drive D to be assigned. For our purposes we have chosen to assign drive D 400 MB, so we type 400. Press <Enter>. FDISK will display the information for drive D: and inform you of the remaining capacity (478 MB).

14. Press <Enter> to assign the remaining capacity to drive E:. All Extended DOS partitions have been assigned to logical drives.

15. Press <esc.> to continue. Press <esc.> again to exit the FDISK Main Menu. You will be informed that you need to reboot the system. Press <esc.> to exit FDISK. At the DOS prompt, press Ctrl+Alt+Del to reboot the system.

16. The system will reboot to the CD-ROM. You must now format all partitioned segments of the hard drive.

17. At the DOS prompt, type:

    Format C:/S/U and press <Enter>.

    (There must be a space between the word “format” and “C”)

    This will format the primary partition C, and copy all system files to the primary drive. If you have created more than one partition you must format them as well. To format the D drive for example, at the DOS prompt type:

    Format D:/U and press <Enter> (There must be a space between the word “format” and “D”.)

18. Continue until all partitions have been formatted. At the completion of Format Disk, you will be returned to the DOS prompt. Refer to the following section on how to run the PHDISKF Utility.

PHDISKF Utility

You will need to create a DOS File segment on the hard drive in order to take advantage of the Save to Disk Power Management Feature. The DOS file can be created before or after you install the operating system. Creating the DOS file after the installation of the operating system will NOT erase any data from the hard drive. For the purpose of these instructions, we have decided to first create the DOS file and then install the operating system. To use the PHDISKF utility, please refer to the following instructions:

1. Insert the DIGITAL HiNote System CD into the CD-ROM tray. The CD should boot to the A:\ prompt. At the A:\, type:

   PHDISKF /create 86016

   There needs to be a space between the words "PHDISKF" and "/create"

   and a space between "/create" and "86016".

2. Press <Enter>.

86016 represents the size of the DOS file to be create in KBytes. The equation for determining the DOS file size is 1024 (80 MB + 4 MB). 1024 is the number of KBytes per MegaByte. 80 MB is the maximum amount of system memory and the additional 4 MB is for overhead.

Before you can load the Microsoft Operating System onto the hard drive, you must first load the CD-ROM driver from the DIGITAL HiNote System CD to the hard drive. It is located in the Driver directory.

System Installation

If you want to remove all files from the hard drive and re-install Windows Operating System but NOT remove the hard drive partitions, please perform the following.

1. Insert the DIGITAL HiNote System CD into the CD-ROM drive and power on the system.
2. Run format and then PHDISKF. Please refer to the appropriate sections of this chapter.
3. Remove the DIGITAL HiNote System CD and power off the notebook.
4. Insert the bootable floppy into the floppy drive and turn on the system.

5. At the list of options choose number 2 (exit to DOS). Insert the Microsoft CD into the CD-ROM drive.
6. From the DOS prompt, type the letter that represents the CD-ROM drive, then a colon and a backslash. For example: D:\
7. Enter the command to start the operating system installation:

   Windows 95:

   D:\win95\setup

   Windows NT:

   D:\winnt \b—Use this command string if you do not want to create an Emergency Backup Repair disk (recommended). You must include a space between the “winnt” and the “\b”.

   D:\winnt—Use this command if you want to create an Emergency Backup Repair Disk as a part of the installation.
8. Press <Enter> and follow the instructions that appear on the screen to complete the installation.
9. Remove the Microsoft Operating System CD and insert the DIGITAL HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.
10. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.
11. After re-installing the Operating System you should re-install all drivers. Please refer to the “Installing Drivers” of this chapter for information.

12. Create a directory on the hard drive for the operating system installation files.

Windows 95: Create a directory on the hard drive under C:\Windows called Options and then make a directory under that called Cabs. The new directory path is C:\Windows\Options\Cabs. Copy the Win95 directory from the Microsoft CD onto the hard drive's C:\Windows\Options\Cabs directory.

Windows NT: After completing the installation of Windows NT, locate the directory on the Microsoft O/S CD labeled, I386. Copy this directory to the drive where the operating system is located, most likely drive C:\. The files in this directory are needed when installing certain drivers such as network drivers.

Complete System Restoration

If you have purchased a new hard drive or you want to remove all files and re-partition the hard drive and then install a Microsoft Operating System, please perform the following:

1. Insert the DIGITAL HiNote System CD into the CD-ROM drive and power on the system.
2. Run FDISK, format the hard drive and then run PHDISKF. These instructions are covered in detail in Appendix B of the User's Guide.
3. Remove the DIGITAL HiNote System CD and power off the notebook.
4. Insert the bootable floppy into the floppy drive and turn on the system.
5. At the list of options choose number 2 (exit to DOS). Insert the Microsoft CD into the CD-ROM drive.
6. From the DOS prompt, type the letter that represents the CD-ROM drive, then a colon and a backslash. For example: D:\

7. Enter the command to start the operating system installation:

   Windows 95:

   D:\win95\setup

   Windows NT:

   D:\winnt \b—Use this command string if you do not want to create an Emergency Backup Repair disk (recommended). You must include a space between the “winnt” and the “\b”.

   D:\winnt—Use this command if you want to create an Emergency Backup Repair Disk as a part of the installation.

8. Remove the Microsoft Operating System CD and insert the DIGITAL HiNote System CD. Run CDInstall. Click on the Next buttons until the Main Install screen appears.

9. Click on Enhancements and Updates, and then click on Next. Follow the on-screen instructions. These enhancements update the Microsoft Operating system.

10. After re-installing the Operating System you should re-install all drivers. Please refer to the “Installing Drivers” section of this chapter for information.

11. Create a directory on the hard drive for the operating system installation files.

System Restoration

Windows 95: Create a directory on the hard drive under C:\Windows called Options and then make a directory under that called Cabs. The new directory path is C:\Windows\Options\Cabs. Copy the Win95 directory from the Microsoft CD onto the hard drive's C:\Windows\Options\Cabs directory.

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System BIOS 3

Introduction

This chapter provides information related to the system BIOS and its Setup program.

BIOS Setup Program

The BIOS (Basic Input and Output System) Setup Program is a utility that enables you to change the system configuration and tailor the operation of your notebook to suit individual work needs. It is a ROM-based (Read Only Memory) utility that displays the system's configuration status and allows you to set system parameters. The parameters are stored in non-volatile battery backed-up CMOS RAM, which saves information even when power is turned off. When power is restored, the system is configured with the values found in CMOS.

NOTE: The CMOS battery receives a charge when the system is operated on AC power. If the system is off for more than one year, the CMOS battery will drain and the ROM data will be lost.

The settings made in the Setup program affect how the notebook performs. It is important to try to understand all the Setup options and to make settings appropriate for the way you use the notebook.

System Setup Utility

To run System Setup:

1. Turn on or reboot your notebook computer.
2. During system boot, press [fn] + [F3] when prompted. After the prompt appears you have two to three seconds to press [fn] + [F3] and enter System Setup.

Helpful Hints

When updating your setup information there are several keyboard keys assigned to help you select menus and sub-menus, options, and to change option values.

Key	Function
→ ←	Cursor keys move the cursor to the right and left
↑ ↓	Cursor keys move the cursor up and down
Tab	Moves the cursor between menu items
Esc	Closes the current menu
Enter	Accepts the current selection
Space bar	Selects the current option or enables (check mark) or disables (no check mark) the option
Alt	Moves the cursor to the menu bar at the top of the screen

Updating Your Ultra 2000 Configuration

There are number of hardware options that can be configured on your notebook computer.

Feature	Selections
Power	Disabled Maximum Battery Life Maximum Performance Advanced Lid Switch Suspend Beep
System	Date/Time CD-ROM Boot Floppy Boot Quick Boot NUM Lock
Device	Serial Port Infrared Port Parallel Port Parallel Port Mode Audio Joystick
Security	Set User Password Set Supervisor Password Modify Password Mode Dock Security
Defaults	Save User Default Settings Load User Default Settings Load Factory Default Settings
Exit	Save Quit About

Power Options

The Ultra 2000 is factory-configured with preset power management values. If you are not an advanced user, start by using the default factory-configured power management settings. If you find that the factory settings do not fit your specific needs, enter the System Setup Program and make the needed changes.

Option	Settings	Comments
Disabled		Disables power management options supported by the system. Power management options are still available.
Maximum Battery Life		Maximizes the time between battery charges.
Maximum * Performance		Maximize performance while retaining some power savings for extending battery life.
Advanced		Use to set your own power saving options. Use this option only if youunderstandthe effects various settings have on battery life and system performance. Refer to Advanced Power Management for a description of available settings.

continued

Option	Settings	Comments
Lid Switch	Suspend/ Resume* Desktop Mode	Configure how the notebook responds to opening and closing the LCD display panel. If Suspend/ Resume is selected, the computer enters Suspend Mode when the lid is closed and Resumes operation when the lid is opened. With Desktop is selected, the external video port is enabled when the lid is closed.
Suspend Beep	Disabled* (No Check Mark)	Allows you to enable or disable the suspend beep option. When enabled, the notebook emits two quick beeps before entering Suspend mode.

*Factory default setting

Advanced Power Options

These options are accessed by selecting the Advanced field.

Field	Settings	Comments
Hard Disk Timer	Disabled Selected times	Specify how long the hard disk must be inactive before it spins down. Press “Tab” to move between AC and Batterytimer entries .
Display Timer	Disabled Selected times	Specify how long the system must be inactive before the LCD backlight is turned off. Press “Tab” to move between AC and Batterytimer entries .
Standby Timer	Disabled Selected times	Specify how long the system must be inactive before Standby mode is entered. Press “Tab” to move between AC and Batterytimer entries . **Note:** The selected period for inactivity is measured from the last monitored system activity: a keystroke, mouse movement, or hard disk activity resets the timer.
Suspend Timer	Disabled Selected times	Specifyhow long the system is in Standby before entering Suspend mode. Press “Tab” to move between AC and Batterytimer entries . To resume operation from Suspend mode press the Suspend/Resume button.

*Factory default setting

System Options

Option	Settings	Comments
Date/Time	Current Date/Time	Sets your notebook to a specified date and time.
CD-ROM Boot	Enabled Disabled* (No Check Mark)	Enables or disables the ability to boot from a CD-ROM installed in the notebook. When enabled, the CD-ROM is the first device in the boot sequence.
Floppy Boot	Enabled* (Check Mark) Disabled	Enables or disables the ability to boot from the Diskette Drive. When enabled, the Diskette Drive is the second device in the boot sequence if CD-ROM Boot is enabled. If CD-ROM Boot is disabled the Diskette Drive is the first device in the boot sequence.
Quick Boot	Enabled Disabled* (No Check Mark)	Enables or disables a faster boot sequence. When enabled certain diagnostic tests are skipped to speed up system boot.
NUM Lock	Enabled Disabled* (No Check Mark)	Turns the embedded numeric key pad On or Off every time the system is booted.

*Factory default setting

NOTE: If the CD-ROM (if enabled) and hard disk drive boot devices are not found at system boot, the Diskette Drive is enabled as the boot device for the current boot sequence.

Device Options

Option	Settings	Comments
Serial Port	Disabled	Disables the onboard Serial Port.
		Enables and automatically configures the port.
	Auto*	Enables and allows you to manually configure the I/O address and Interrupt Request (IRQ) line for the port.
	Manual	
InfraRed Port	Disabled*	Disables the onboard Infrared Port.
		Enables and automatically configures the port.
	Auto	Enables and allows you to manually configure the I/O address and Interrupt Request (IRQ) line for the port.
	Manual	
Parallel Port	Disabled	Enables or disables the onboard Parallel Port.
	Auto*	Enables and automatically configures the port.
	Manual	Enables and allows you to manually configure the I/O address and Interrupt Request (IRQ) line for the port.

continued

Option	Settings	Comments
Parallel Port Mode	Standard Bi-directional (PS/2)* Enhanced Parallel Port (EPP) Extended Capabilities Port (ECP)	Selects proper mode for your printer or other parallel port device. See the device User's Guide for details.
Audio	Disabled	Disables onboard Stereo Audio.
	Auto*	Enables and automatically configures the onboard audio.
	Manual	Enables and allows you to manually configure the I/O addresses, Interrupt Request (IRQ) line, and DMA channel for onboard audio.
Joystick	Disabled	Enables or disables the Joystick Port on Multimedia Dock.
	Auto*	Enables and automatically configures the port.
	Manual	Enables and allows you to manually configure the port.

*Factory default setting

NOTE: It is recommended that you use Auto configure settings when available. If you manually configure a device, it is recommended that you use the "System" application located in the Windows "Control Panel."

Security Options

Option	Settings	Comments
Set User Password	Enter a password of up to eight alphanumeric characters.	Set a User Password required during:System Boot, Resume, and Undock operations. Dock Security and Modify Password Mode options select operations that will require a password. Be sure to write the password down and store it in a safe place.
Set Supervisor Password	Enter a password of up to eight alphanumeric characters.	Set a Supervisor Password required to enter System Setup. This password can also be used in place of the User Password. Be sure to write the password down and store it in a safe place.

continued

Option	Settings	Comments
Modify Password Mode	Password on Boot Only	When set, you will be prompted for a password on each system boot.
	Password on Boot and Resume	When set, you will be prompted for a password each time the system boots or resumes operation from Suspend mode.
Dock Security	Enabled (Requires a User password to be set.)	Enable password protection for the undocking mechanism on docked options. When enabled and a User Password is set, the option cannot be undocked unless the system is powered on and the User or Supervisor Password is supplied. If the system is not powered on, the option cannot be undocked when Dock Security is enabled.
	Disabled*	

*Factory default setting

Notebook Computer Security

Notebook Computer Security is important to avoid theft or accidental loss of your computer software and hardware. The DIGITAL HiNote Ultra 2000 provides the following levels of protection:

- User Password – Used to prevent unauthorized access to files on your notebook computer and unauthorized removal of a docked option.
- Supervisor Password – Used to prevent unauthorized access to your notebook computer's System Setup.
- Dock Security – Utilizes the User or Supervisor password to allow a docked device to be undocked. Requires a User password be set.

CAUTION
It is important that you remember your User and Supervisor Password after you have set one on your notebook computer. If you forget the password and want to have it reset, you must send the notebook computer along with proof of ownership to a DIGITAL Service Center for service.

User Password

Your notebook has a User password that you can set to prevent unauthorized access to your computer files and unauthorized removal of a docked option.

Setting/Changing the User Password

Perform the following steps to set or change the User password:

1. Turn on your notebook computer.
2. After POST successfully completes, press [fn] + [F3] to access System Setup.
3. The System Setup main menu appears on the screen.
4. Highlight the Security Setup menu and press [Enter].
5. Highlight the Set User Password field and press [Enter].
6. Type in up to an eight character User password and press [Enter].
7. To confirm, type in your User password a second time and press [Enter].

NOTE: If a password already exists, you will be prompted to enter the *old password* before a new one can be set.

8. Select the Exit menu and choose Save to save your new settings and exit System Setup.

   Depending on the settings of the Password Mode and Dock Security features, your notebook computer will prompt you for a password each time it powers on, resumes operation, or when you request to remove a docked option.

Deleting the User Password

To delete a previously set User password and disable the feature:

1. Open the User password dialog box.
2. With the cursor in the “Enter new password” field, press [Enter].
3. The cursor will move to the “Re-enter new password” field. Press [Enter].
4. When the Notice dialog box appears notifying you that changes have been saved, press [Enter].
5. Select the Exit menu and choose Save to save your new settings and exit System Setup.

Supervisor Password

Your notebook computer has a Supervisor password option that you can set to prevent unauthorized access to the System Setup. If you set a Supervisor password, you need to enter it each time you want to access the System Setup.

NOTE: The Supervisor password can be used in place of the User password.

Setting/Changing the Supervisor Password

Perform the following steps to set or change the Supervisor password:

1. Turn On your notebook computer.
2. After Power On Self-Test (POST) successfully completes, press [fn] + [F3] to access System Setup.
3. The System Setup main menu appears on the screen.
4. Highlight the Security Setup menu and press [Enter].
5. Highlight the Set Supervisor Password field and press [Enter].
6. Type in up to an eight character Supervisor password and press [Enter].

   To confirm, type in your Supervisor password a second time and press [Enter].

NOTE: If a password already exists, you will be prompted to enter the *old password* before a new one can be set.

7. Select the Exit menu and choose Save to save your new settings and exit System Setup.

When you access System Setup, you are prompted for the Supervisor password.

Deleting the Supervisor Password

To delete a previously set Supervisor password and disable the feature:

1. Open the Supervisor Password dialog box.
2. With the cursor in the “Enter new password” field, press [Enter].
3. The cursor will move to the “Re-enter new password” field. Press [Enter].
4. When the Notice dialog box appears notifying you that changes have been saved, press [Enter].
5. Select the Exit menu and choose Save to save your new settings and exit System Setup.

Dock Security

Setting a User password and enabling Dock Security password protects the undocking of options from the system. When a request is made to undock an option such as the DIGITAL HiNote Ultra Multimedia Dock, you will be prompted for a password. Enter either the User or Supervisor password (if set) to complete the undock request and undock the option.

Default Options

Option	Settings	Comments
Save User Default Settings		Stores the current Setup values as the user default values in non-volatile memory.
Load User Default Settings		Loads all values stored under User Defaults as the new system values.
Load Factory Default Settings		Loads all values to their Factory Default Settings.

Exit Options

Option	Settings	Comments
Save		Saves all Setup values and exit Setup.
Quit		Ignores all changes to Setup values and exits Setup.
About		Supplies some BIOS and system version information.

Restoring the Flash BIOS

To restore a corrupted Flash BIOS, a Crisis Recovery diskette is required.

To restore the Flash BIOS:

1. Turn the computer Off by pressing [fn] + Standby/Resume button.
2. Make sure the Diskette Drive Module is installed in the computer.
3. Enable Crisis Recovery mode by placing a jumper across resistor R744. This resistor is located in the expansion memory compartment on the bottom of the unit. To locate the resistor:
    a) Place the unit in front of you with the bottom up and the battery closest to you.
    b) Remove the cover on the memory compartment.
    c) The resistor is located in the lower left corner of the memory compartment.
4. Place the Crisis Recovery disk in the drive.
5. Turn On the system. When the BIOS is restored, turn Off the system by pressing [fn] + Suspend/Resume button.

Remove the jumper across resistor R744.

Troubleshooting 4

Introduction

This chapter provides a systematic method of isolating problems with the DIGITAL HiNote Ultra 2000 series of notebook computers. It is assumed that you have a basic understanding of DOS-based computer systems as well as a knowledge of standard troubleshooting procedures. This manual is written under the assumption that the problems are indeed related to the notebook computer itself. The improper usage of the system and application software problems are excluded in this chapter.

The system BIOS power on self-tests (POST) are integral to the system and detect certain errors with the system board. They use a series of beep codes to identify certain system board problems.

The troubleshooting procedures when followed step by step, can help isolate system problems.

Troubleshooting Tips

In general, troubleshooting involves an organized system of approach to problem solving. Try to isolate the problem and identify the defective device (hardware) or improper setting (software). When you have a problem, you should do a thorough visual inspection of the notebook computer.

- If none of the indicators are lit and you cannot hear the HDD spinning, then the notebook computer is probably not receiving power.
- Make sure the power cord is plugged in, and the AC adapter is securely connected. The LEDs on the AC adapter and the system should be on when connected to a working AC source.
- If you are using a power strip or surge protector, ensure that these devices are turned on.

Often problems are caused by improperly connected cables.

- If you are using peripherals such as the mouse or keyboard, make sure they are properly connected to their respective ports. Ensure that none of the connectors' pins are bent or broken.
- Check all cables connected to the notebook computer. If any are cut, frayed, or damaged in any way, replace them right away. Never use a damaged cable. A damaged cable is not only a fire hazard, it may also cause a short circuit, resulting in irreparable damage to the notebook computer.
- Check all internal connections to ensure that they are secure. Often problems can occur because a connection is loose or backwards.

Verify that all test equipment works before using it to test a malfunctioning component.

Verify that a component is the only malfunctioning part of the computer by replacing the malfunctioning component with a properly functioning one, and then try to run the system. For example, if you have tested an FDD in a test computer and found it to be bad, you should also try a good FDD in the malfunctioning FDD's computer to be sure that another component (such as the FDD controller) is not bad as well.

As with assembly and disassembly, make sure you have adequate lighting, the right tools, and a stable clean working environment.

The examples that follow provide useful tips and information that will help isolate and solve some of the more common problems that may be encountered.

System Start Failure

When you turn on the computer, the system hangs before completing or starting the POST (power on self test). Power supply failure, post failure, and boot-up failure can result in a system start failure.

Power Supply Failure

Problem	Troubleshooting Procedure
You turn on the power switch and the following conditions apply: • There is no panel display • There is no noise coming from the HDD • The power indicator light is off.	If you are operating the notebook computer using the battery: • The system could be in suspend. Press the Suspend/Resume button. • The battery connection is loose. Remove and reinstall the battery. • The battery power is depleted. Plug in the AC adapter, or replace the battery. • The battery needs to be reformed. Reform the battery. • The system could be experiencing a hang. Press the reset button (Figure 1-3). If you are operating the notebook computer using the AC adapter: • Check that the AC adapter is plugged into an operational power supply. Check that the AC adapter is connected securely to the notebook computer's AC adapter socket.

continued

Problem	Troubleshooting Procedure
You turn on the power switch and the following conditions apply: • There is no panel display • There is no noise coming from the HDD The power indicator light is off.	• Check to see if the Power LED on the computer is lit and the LED on the AC adapter is lit. If not lit, then the AC adapter is bad. Replace the AC adapter, and test the notebook computer again. • Press the Suspend/Resume button • Press the system's "Reset Button" located on the back of the unit between the serial and parallel port connectors. If the above items are functioning, then the notebook computer's internal power circuit is probably damaged. Check the power circuit of the notebook computer.

Boot-up Failure

Problem	Troubleshooting Procedure
You turn on the notebook computer and the following conditions apply: • The notebook computer's power is on. • There is no screen display	• System in Suspend Mode. Press the Suspend/Resume button. • System hung possibly hung after using a screen saver. Press the Reset button located on the back on the unit (Figure 1-3). Check the DRAM connections to be sure that they are secure. • Check the LCD connections. • Check the system board power circuit.

Post Failure

Problem	Troubleshooting Procedure
You turn on the computer and the following happens: • There is power to the system. • The HDD seems to be spinning. • The screen is operational, and error codes and messages are displayed.	• A POST failure usually indicates a keyboard, memory, or HDD failure. • Check the error code or message against the error codes and messages in this chapter.

Cardbus Failure

Problem	Troubleshooting Procedure
The Cardbus slots do not work.	• Reseat the Cardbus assembly cable • Replace the Cardbus assembly • Replace the Motherboard

LCD Panel Failure

Problem	Troubleshooting Procedure
You turn on the computer and one of the following conditions apply: • The system is working, but there is no LCD panel display. • The system is working, but the LCD panel display vertical or horizontal lines. • The backlight comes on, but there is no display. • There is a display, but you have garbled characters on the screen.	• Make sure that the LCD cable is securely connected to the Motherboard. • Make sure that the LCD cables are securely connected to the inverter. • If the cables are securely connected and the LCD still doesn't work, replace the LCD panel and test the system again. • If the display is garbled, verify the video setup in the operating system's Control Panel Display application. If these are correct, there is probably a VGA chip failure. Replace the motherboard.

CRT Failure

Problem	Troubleshooting Procedure
The notebook computer has power, the notebook computer's LCD panel is working and one of the following conditions apply: • The notebook computer's LCD panel is working. • There is no display on the CRT. • The color of the CRT is wrong. • There is a display, but the display is not stable.	• Make sure the CRT output is enabled. • Make sure that the CRT's power is on anf the power cables are securely connected. • Make sure that the CRT to notebook computer cable connection is secure. Check the CRT port on the notebook computer to make sure the connection is secure, and that there are no damaged pins or connectors. • Make sure the settings in the operating system's Control Panel Display application are supported by the monitor. • If the CRT still doesn't work, change to a different CRT and try again. • If the color is bad, adjust the Monitor's color controls (if any).

Notebook Computer Keyboard Failure

Problem	Troubleshooting Procedure
The notebook computer is fully powered-on. However, when pressing any of the keys on the keyboard, one of the following events occurs:	• If incorrect characters are displayed, check the COUNTRY.SYS settings in the operating system to see if an incorrect language is being used by the system.
• Pressing on the key doesn't have any effect.	• Make sure that the keyboard cable is securely connected into the keyboard connector.
• Incorrect characters are displayed on the screen.	• Check the keyboard circuit. • Replace the keyboard and check again.
• One stroke of a key produces too many characters on the screen.	• Replace the keyboard controller BIOS chip located in the memory compartment on the bottom of the system unit.

External Keyboard or PS/2 Mouse Failure

Problem	Troubleshooting Procedure
The notebook computer's power is on, and the keyboard is working. One of the following conditions occurs: • Pressing keys on the external keyboard has no effect. • Pressing the key on the external keyboard gives incorrect characters. • The mouse cursor on the screen doesn't move in conjunction with the external mouse.	• Make sure that the external mouse or keyboard's connection to the notebook computer's PS/2 mini-DIN connector is secure. • Make sure the mouse trackball and postion sensors are clean and free of dust. • Replace the external mouse or keyboard and try again. • If the system still doesn't work, test the mini-DIN keyboard circuit. • If incorrect characters are displayed, check the COUNTRY.SYS settings in DOS to see if an incorrect language is being used by the system.

HDD Failure

Problem	Troubleshooting Procedure
When you try to access the HDD, one of the following conditions occurs: • There is a message indicating that the HDD doesn't exist. • You can't read from the HDD. • You can't write to the HDD.	• Check to make sure that the BIOS settings are correct. Refer to Chapter 2 for BIOS information. • Make sure that the HDD connection is secure. • Install the HDD into another HiNote VP 550, VP 575notebook computer and test it. • If the HDD works in a test notebook computer, the HDD controller on the motherboard is probably bad. Test the motherboard.

FDD Failure

Problem	Troubleshooting Procedure
The notebook computer's power is on. The HDD is functioning correctly. When you try to access the FDD, one of the following conditions occurs: • You can't read from the FDD. • You can't write to the FDD. • You can't hear the FDD motor spinning, and the LED indicator light isn't on.	• Make sure the CD-ROM/FDD module is properly seated. • Switch to a different floppy disk and try again. Make sure that the floppy isn't write protected. • Clean the FDD's heads. • Change the CD-ROM/FDD module and test again. • If the FDD is OK, than there is probably an I/O chipset failure. Replace the main board.

CD-ROM Failure

Problem	Troubleshooting Procedure
The notebook computer's power is on. The HDD is functioning correctly. When you try to access the CD-ROM, one of the following conditions occurs: • You can't read from the CD-ROM. • You can't hear the CD-ROM motor spinning, and the LED indicator light isn't on.	• Make sure the CD-ROM/FDD module is properly seated. • Switch to a different CD-ROM disk and try again. • Clean the CD-ROM's lens. • Change the CD-ROM/FDD module and test again. • If the CD-ROM is OK, than there is probably an I/O chipset failure. Replace the main board.

Battery Failure

Problem	Troubleshooting Procedure
The notebook computer's AC power works. When trying to use battery power, the notebook computer doesn't operate. However, when the AC Adapter is connected, the battery charge indicator flashes.	• Make sure that the battery contacts are in good condition. • Make sure that the battery terminals are clean. If need be, clean the terminals with contact cleaner. • Form the battery and try again. • Change the battery and try again. • Make sure the AC power supply adapter and adapter cord) are OK. If they are not supplying the correct voltage, it could damage the system.

Touchpad Failure

Problem	Troubleshooting Procedure
The notebook computer's Touchpad does not work.	• Check the BIOS settings for the Touchpad. Refer to Chapter 2. • Check the Toucpad settings in the operating system's Control Panel. • Make sure the UMI cable connection to the Daughtercard is properly seated. This connector is located under the Keyboard Deck behind the Touchpad. Note: If both the Touchpad and modem do not work, this cable is most likely not connected. • Make sure the Touchpad cable is properly seated.

Internal Modem (UMI) Failure

Problem	Troubleshooting Procedure
The internal modem (if installed) does not work. You cannot make a connection to a phone line.	• Make sure the Modem Card, UMI adapter are properly seated. • Make sure the modem software is properly configured. • Verify that the modem port is enabled. This is done using the System icon in the Control Panel of the operating system. • Make sure the UMI cable is properly connected to the Daughtercard. This connector is located under the Keyboard Deck behind the Touchpad. Note: If both the Touchpad and modem do not work, this cable is most likely not connected.

External Audio Failure

Problem	Troubleshooting Procedure
No sound from external speakers connected to external audio port.	• Make sure the connections are properly seated. • Make sure power is applied to the speakers (if necessary). • Reseat the Audio Connector cable on the Daughtercard. Note: If this cable is not connected the internal speakers will not work.

Check Points and Error Messages

At the beginning of each POST routine, the BIOS outputs the test point error code to I/O address 80h. Use this code during troubleshooting to establish at what point the system failed and what routine was being performed.

If the BIOS detects a terminal error condition, it halts POST after:

- Issuing a terminal error beep code and
- Attempting to display the error code on upper left corner of the screen and on the port 80h LED display

If the system hangs before the BIOS can process the error, the code displayed at port 80h is that of the last test performed. In this case, the screen does not display the error code.

Beep Codes

The power on self-tests will issue a sequence of short and long beeps to indicate that an error has occurred. The following is a list of the beep code sequences and the error condition.

Beep Code Sequence	Error Condition
s,s,s,s	No RAM detected
s,s,s,l	RAM test failed
s,s,l,s	BIOS is not shadowed
s,l,s,s	BIOS Checksum bad
l,s,l,s	No CR code or CR is bad
s,s,s,s,s,s,s,s l,l,l,l l,l,l,l,	Crisis Recovery required

s = short beep l = long beep

Phoenix BIOS Test Points

The following is a list of the checkpoint codes written at the start of each test and the beep codes issued for terminal errors:

Code	Beeps	POST Routine Description
02		Verify Real Mode
04		Get CPU type
06		Initialize system hardware
08		Initialize chipset registers with initial POST values
09		Set in POST flag
0A		Initialize CPU registers
0C		Initialize cache to initial POST values
0E		Initialize I/O
0F		Initialize the local bus IDE
10		Initialize Power Management
11		Load alternate registers with initial POST values
12		Jump to UserPatch0
14		Initialize keyboard controller
16	2-2-3	BIOS ROM checksum
18		8254 timer initialization
1A		8237 DMA controller initialization
1C		Reset Programmable Interrupt Controller
20	3-1-1	Test DRAM refresh
22	3-1-3	Test 8742 Keyboard Controller

continued

Code	Beeps	POST Routine Description
24		Set ES segment register to 4 GB
28		Autosize DRAM
2A		Clear 512K base RAM
2C	3-4-1	Test 512K base address lines
2E	3-4-3	Test 512K base memory
30		Base 64K RAM Error
32		Test CPU bus-clock frequency
34		Test CMOS RAM
35		Initialize alternate chipset registers
37		Reinitialize the chipset
38		Shadow system BIOS ROM
39		Reinitialize the cache
3A		Autosize cache
3C		Configure advanced chipset registers
3D		Load alternate registers with CMOS values
40		Set Initial CPU speed
42		Initialize interrupt vectors
44		Initialize BIOS interrupts
46	2-1-2-3	Check ROM copyright notice
47		Initialize manager for PCI Option ROMs
48		Check video configuration against CMOS
49		Initialize PCI bus and devices

continued

Code	Beeps	POST Routine Description
4A		Initialize all video adapters in system
4C		Shadow video BIOS ROM
4E		Display copyright notice
50		Display CPU type and speed
51		Initialize EISA board
52		Test keyboard
54		Set key click if enabled
56		Enable keyboard
58	2-2-3-1	Test for unexpected interrupts
5A		Display prompt "Press F2 to enter SETUP"
5C		Test RAM between 512 and 640k
60		Test extended memory
62		Test extended memory address lines
64		Jump to UserPatch1
66		Configure advanced cache registers
68		Enable external and CPU caches
6A		Display external cache size
6C		Display shadow message
6E		Display non-disposable segments
70		Display error messages
72		Check for configuration errors
74		Test real-time clock

continued

Code	Beeps	POST Routine Description
76		Check for keyboard errors
7C		Set up hardware interrupt vectors
7E		Test coprocessor if present
80		Disable onboard I/O ports
82		Detect and install external RS232 ports
84		Detect and install external parallel ports
86		Re-initialize onboard I/O ports
88		Initialize BIOS Data Area
8A		Initialize Extended BIOS Data Area
8C		Initialize floppy controller
90		Initialize hard-disk controller
91		Initialize local-bus hard-disk controller
92		Jump to UserPatch2
94		Disable A20 address line
96		Clear huge ES segment register
98		Search for option ROMs
9A		Shadow option ROMs
9C		Set up Power Management
9E		Enable hardware interrupts
A0		Set time of day
A2		Check key lock
A4		Initialize typematic rate

continued

Code	Beeps	POST Routine Description
A8		Erase F2 prompt
AA		Scan for F2 key stroke
AC		Enter SETUP
AE		Clear in-POST flag
B0		Check for errors
B2		POST done-prepare to boot operating system
B4		One beep
B6		Check password (optional)
B8		Clear global descriptor table
BC		Clear parity checkers
BE		Clear screen (optional)
BF		Check virus and backup reminders
C0		Try to boot with INT 19
DO		Interrupt handler error
D2		Unknown interrupt error
D4		Pending interrupt error
D6		Initialize option ROM error
D8		Shutdown error

continued

Code	Beeps	POST Routine Description
DA		Extended Block Move
DC		Shutdown 10 error
The following Error Codes are related to the Boot Block in the Flash ROM:		
E2		Initialize the chipset
E3		Initialize refresh counter
E4		Check for Forced Flash
E5		Check HW status of ROM
E6		BIOS ROM is OK
E7		Do a complete RAM test
E8		Do OEM initialization
E9		Initialize interrupt controller
EA		Read in the bootstrap code
EB		Initialize all vectors
EC		Boot the Flash program
ED		Initialize the boot device
EE		Boot code was read OK

If the BIOS detects error 2C, 2E, or 30 (base 64K RAM error), it displays an additional word of information reflecting the bit or address line that failed. For example, if "2C 0002" is displayed, address line 1 (represented by bit one) has failed. If "2E 1020" is displayed, then data bits 12 and 5 have failed in the upper 16 bits.

The BIOS sends the same information to the port 80h LED display. The check point code is followed by a delay, the high order byte, another delay, and then the low order byte of the error. This is be repeated continuously.

Warning Messages

The following is an alphabetic list of error and status messages which the PhoenixBIOS can generate and an explanation of each message. Many of the messages below refer to the built in Setup program.

Message	Description
nnnn Cache SRAM Passed	nnnn is the amount of system cache in kilobytes successfully tested.
Diskette drive A error	Drive A: is present but fails the BIOS POST diskette tests. Check to see that the drive is defined with the proper diskette type in Setup and that the diskette drive is attached correctly.
Entering SETUP	Starting Setup program
Extended RAM Failed at offset: nnnn	Extended memory not working or not configured properly.
nnnn Extended RAM Passed	nnnn is the amount of RAM in kilobytes successfully tested.
Failing Bits: nnnn	The hex number nnnn is a map of the bits at the RAM address (in System, Extended, or Shadow memory) which failed the memory test. Each 1 (one) in the map indicates a failed bit.
Fixed Disk 0 Failure or Fixed Disk 1 Failure or Fixed Disk Controller Failure	Fixed disk is not working or not configured properly. Check to see if fixed disk is attached properly. Run Setup to ensure that the fixed-disk type is correctly identified.
Incorrect Drive A type run SETUP	Type of floppy drive A: not correctly identified in Setup.

continued

Message	Description
Invalid NVRAM media type	Problem with NVRAM access.
Keyboard controller error	The keyboard controller failed test. You may have to replace keyboard or controller.
Keyboard error	Keyboard not working.
Keyboard error nn	BIOS discovered a stuck key and displays the scan code for the stuck key.
Keyboard locked Unlock key switch	Unlock the system to proceed.
Monitor type does not match CMOS	Run SETUP Monitor type not correctly identified in Setup
Operating system not found	Operating system cannot be located on either drive A: or drive C:. Enter Setup and see if fixed disk and drive A: are properly identified.
Parity Check 1 nnnn Parity error found in the system bus	BIOS attempts to locate the address but failed and display it on the screen.
Parity Check 2 nnnn Parity error found in the I/O bus	BIOS attempts to locate the address but failed and display it on the screen.
Press <F1> to resume, <F2> to Setup	Displayed after any recoverable error message: Press <F1> to start the boot process or <F2> to enter Setup and change any settings. <F2> Press <F2> to enter SETUP Optional message displayed during POST.

continued

Message	Description
Previous boot incomplete	Default configuration used
Previous POST did not complete successfully	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.
Real time clock error	Real-time clock fails BIOS test. May require board repair.
Shadow RAM Failed at offset: nnnn	Shadow RAM failed at offset nnnn of the 64k block at which the error was detected.
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 CMOS clock battery indicator shows the battery is dead. Replace the battery and run Setup to reconfigure the system.
System BIOS shadowed	System BIOS copied to shadow RAM.
System cache error	Cache disable RAM cache failed the BIOS test. BIOS disabled the cache.
System CMOS checksum bad - run SETUP	System CMOS has been corrupted or modified incorrectly, perhaps by an application program that changes data stored in CMOS. Run Setup and reconfigure the system.

continued

Message	Description
System RAM Failed at offset: nnnn	System RAM failed at offset nnnn of in the 64k block at which the error was detected.
nnnn System RAM Passed	nnnn is the amount of system RAM in kilobytes successfully tested.
System timer error	The timer test failed. Requires repair of system board.
UMB upper limit segment address: nnnn	Displays the address of the upper limit of Upper Memory Blocks, indicating released segments of the BIOS which may be reclaimed by a virtual memory manager.
Video BIOS shadowed	Video BIOS successfully copied to shadow RAM.

FRU Replacement 5

Introduction

This chapter provides detailed procedures for replacing the DIGITAL HiNote Ultra 2000 series notebook computer Field Replaceable Units (FRUs). Unless otherwise noted the replacement procedures for the FRUs are the reverse of the removal procedures.

SHOCK OR STATIC SENSITIVE: Static electricity collects on non-conductors such as paper, cloth, or plastic. A static discharge can be damaging even though you often cannot see or feel it. To prevent damage to circuit boards and/or components:

- Before touching any circuit board or component, touch the metal frame of your workstation to discharge any static electricity.
- Keep circuit boards and components away from non-conductors.

Required Tools

You will need the following tools to remove and replace the HiNote Ultra 2000 series FRUs:

- #0 and #1 Phillips Head Screwdrivers
- 3/16 inch and 7/32 inch Nut Drivers

Field Replaceable Units

Key No.	Option Part Number	Orderable Spare Part	Mfg Part No.	Description
1	N/A	30-49174-01	TBD	Assy, LCD Display 12.1" Lg/XGA
	N/A	30-49175-01	TBD	Assy, LCD Display 14.1" LG/XGA
2	FR-PCPXF-AA	30-48364-01	6911B00005A	Li-Ion Battery Pack, 8C, Sony
	FR-PCPXF-AB	30-48365-01	6911G00004A	Li-Ion Battery Pack, 12C, Sony
3	N/A	30-48321-01	6742B50001A	Assy, Floppy Disk Drive
4	N/A	30-48322-01	6735B00007A	Assy, CD-ROM, 11x, Toshiba (XM-1502B)
	N/A	30-49019-01	TBD	Assy, CD-ROM, 20x, Toshiba (XM-1602B)
5	N/A	30-48372-01	3823B32202A	Keyboard, US/ American, Ultra 2000
6	FR-PCPMF-AA	30-48536-01	TBD	Memory Module 8MB SO-DIMM 144 Pin EDO 3.3v
	FR-PCPMF-AB	30-48537-01	TBD	Memory Module 16MB SO-DIMM 144 Pin EDO 3.3v
	FR-PCPMF-AC	30-48538-01	TBD	Memory Module 32MB SO-DIMM 144 Pin EDO 3.3v
	FR-PCPMF-AD	30-48539-01	TBD	Memory Module 64MB SO-DIMM 144 Pin EDO 3.3v
		30-48986-01	TBD	Memory Module 16MB SO-DIMM 144 Pin EDO 3.3v

continued

Key No.	Option Part Number	Orderable Spare Part	Mfg Part No.	Description
7	FR-PCPRF-AA	30-48573-01	TBD	2.1 GB Removable HDD, Ultra 2000
	FR-PCPRF-AB	30-49156-01	TBD	3.2 GB Removable HDD, Ultra 2000
8	N/A	29-33869-01	TBD	12.1" XGA TFT Replacement On-Site Shell
	N/A	29-33870-01	TBD	14.1" XGA TFT Replacement On-Site Shell
*	N/A	74-52295-01	3580BM3005A	Memory Door
*	N/A	30-48352-01	5006BM3006A	Cover, Hinge, R
*	N/A	30-48353-01	5006BM3005A	Cover, Hinge, L
*	FR-PCPEF-AC	30-48885-01	TBD	Ultra Enhanced Port Replicator N
*	FR-PCPDF-BW	30-48571-02	TBD	AC Adapter, without Power Cord, Ultra 2000
*	FR-PCPJF-W1	30-48572-01	TBD	DIGITAL HiNote Ultra Multimedia Dock
*	N/A	17-04105-01	N/A	Power Cord, US/American

* Items marked with an asterisk (*) are not illustrated in Figure 5-1.

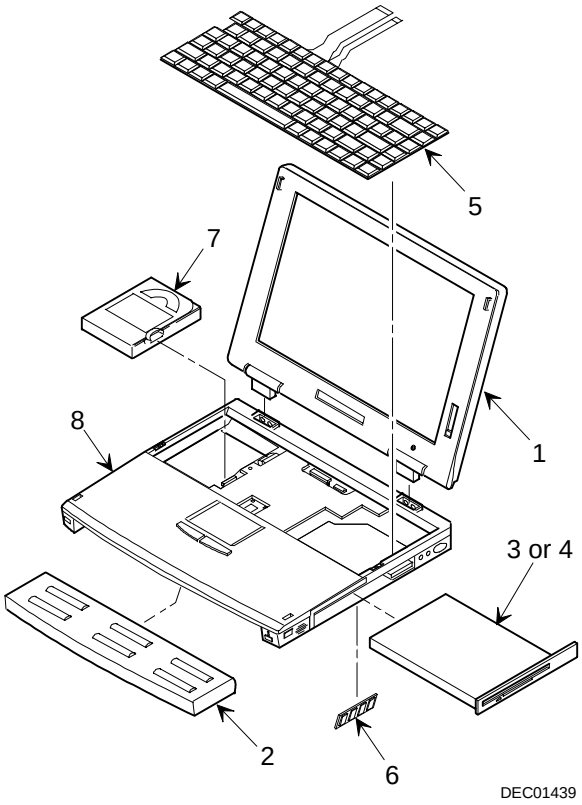

Figure 5-1. DIGITAL HiNote Ultra 2000 Series

Removing the Battery

The battery is located on the bottom of the system unit (Figure 5-2).

To remove the battery pack:

1. Close any open applications and shutdown the operating system.
2. Power Off the computer by pressing [fn] + the Standby/Resume button.
3. Press down on the battery in front of the latch and slide the latch in the direction shown
4. Remove the battery by lifting it up and away from the system unit (Figure 5-2).

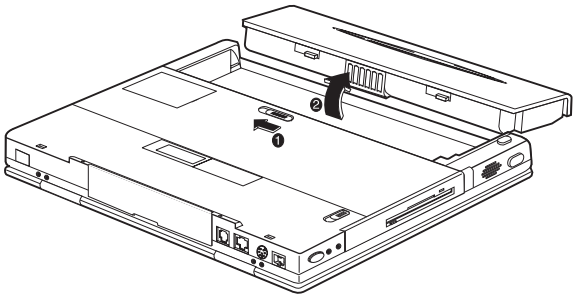

Figure 5-2. Removing the Battery

Removing the CD/FDD Module

To remove the 12x CD/FDD Combination module or supplementary battery:

1. Press in on the CD-ROM/FDD module and slide the latch in the direction shown in (Figure 5-3).
2. Slide the module out of the system unit.

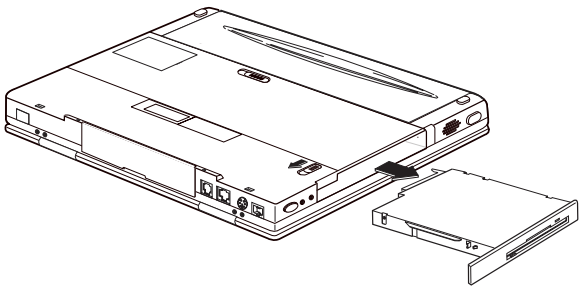

Figure 5-3. Removing the CD/FDD Module

Removing the Keyboard

To remove the keyboard:

1. Unlatch the keyboard by sliding the Keyboard latches toward the LCD display (Figure 5-4).
2. Carefully lift the keyboard up and rotate it toward the LCD display (Figure).

CAUTION
Be careful not to damage the flat cables that connect the keyboard to the notebook computer (Figure 5-5).

3. Release the keyboard cables from the connectors and slide the cables out of the connectors (Figure 5-4).

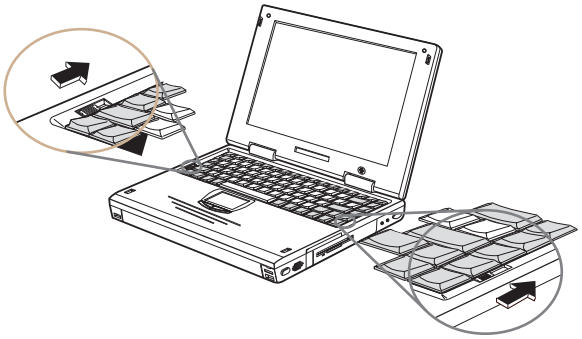

Figure 5-4. Releasing the Keyboard

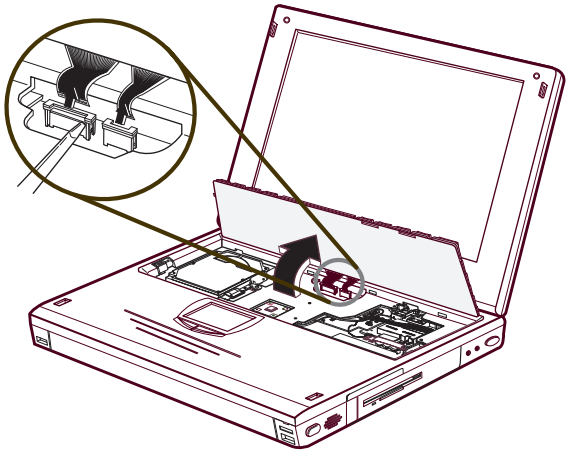

Figure 5-5. Removing the Keyboard

Removing the HDD Assembly

To remove the HDD:

1. Remove the keyboard (Figure 5-4 and 5-5).
2. Slide the latch that holds the hard drive in place to the unlocked position (Figure 5-6)..
3. Pull up on the attached ribbon loop to disconnect the drive and remove the drive from the system (Figure 5-7).

NOTE: If the HDD assembly is installed upside down, the screws on the assembly may get caught on some plastic inside the system. To remove the drive slide a piece of paper (yellow sticky) between the unit and the plastic and slide the HDD assembly out of the system.

Figure 5-6. Releasing the HDD

Figure 5-7. Removing the Hard Drive

Removing the Keyboard Deck and LCD Assembly

To remove the keyboard deck and LCD Assembly:

1. Remove the Battery (Figure 5-2).
2. Remove the CD-ROM/FDD Module (Figure 5-3).
3. Remove the Keyboard (Figure 5-4, Figure 5-5).
4. Remove the HDD (Figure 5-6, Figure 5-7).
5. Remove the UMI slot cover (Figure 5-8).

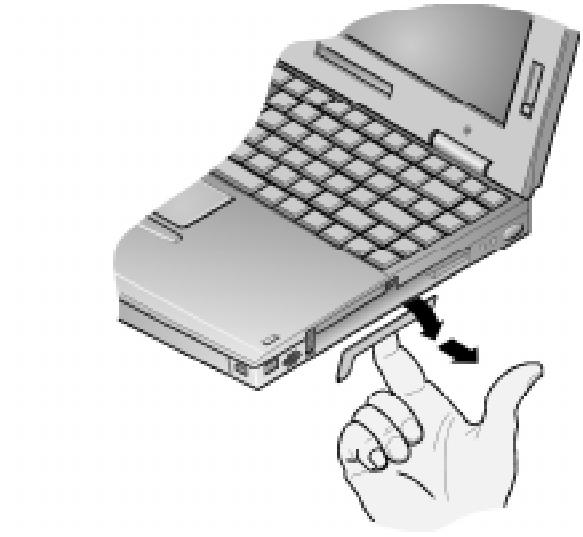

Figure 5-8. Removing the UMI Slot Cover

6. Close the LCD Display and remove the two hinge covers (Figure 5-9). To remove the hinge covers:

    a) Use a small pointed tool such as a pair of tweezers to release the inside edge of the hinge cover.

    b) With your fingers, release the rest of the hinge cover and wiggle it to remove the hinge cover. Note: The left and right hinge covers are different.

7. Remove the four flat-head hinge screws (Figure 5-9).

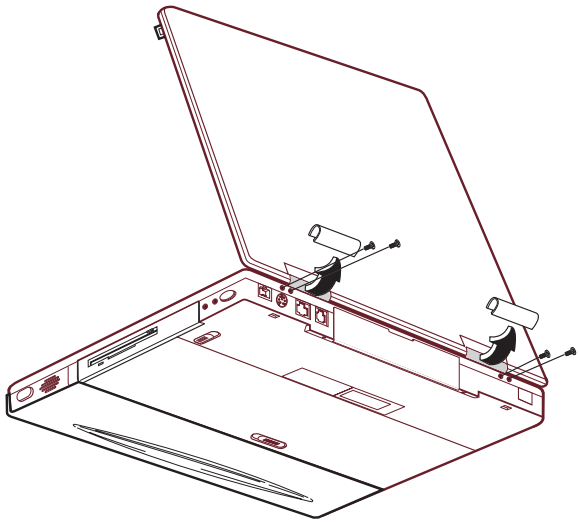

Figure 5-9. Removing Hinge Covers and Screws

8. Turn the system unit over so the bottom is up. Remove the two rubber feet and seven screws (Figure 5-10). Note: one screw is located in the battery compartment.
9. Turn the system unit over so the top is up and open the LCD Display.
10. Remove the eight screws that hold the keyboard deck and LCD and Audio cables in place (Figure 5-10). Note: the LCD and Audio cables are secured to the top of the DC-to-DC Converter.
11. Disconnect the two LCD cables from the Motherboard and the Daughter card.

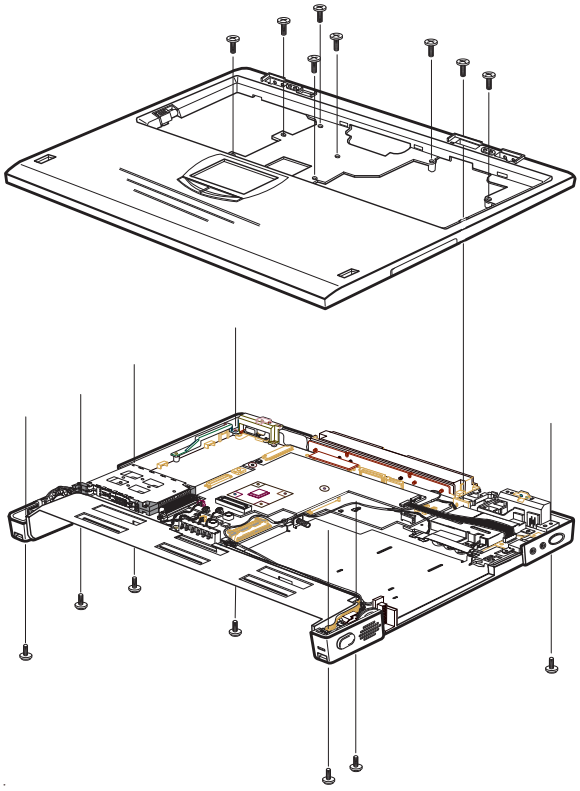

Figure 5-10. Removing Keyboard Deck Screws

12. Remove the four hinge screws at the back of the Keyboard Deck (Figure 5-11).
13. Grasp behind the Touchpad and pull up on the Keyboard Deck to release the UMI connector.

NOTE:

When reassembling the system, connect the UMI cable to Daughter card before replacing the Keyboard Deck.

Reconnect the two LCD cables.

Before replacing the Keyboard Deck screws, attach the AC adapter and verify that the system powers up.

Make a visual inspection of the connections before replacing the screws.

14. Flip the PC Card ejectors out and lift the LCD Display and Keyboard Deck up and away from the rest of the system unit.
15. To separate the Keyboard Deck and LCD Display, carefully maneuver each cable through its the opening in the Keyboard Deck.

CAUTION

Be careful not to crease the cable when you fold it over.

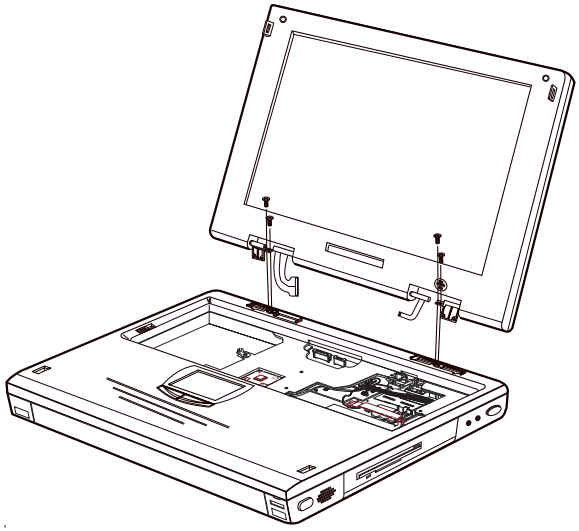

Figure 5-11. Removing LCD Assembly Hinge Screws

Shell Installation Instructions

IMPORTANT: This notice contains information that is important for configuring a replacement HiNote Ultra 2000 series “Shell” at a customer site.

The HiNote Ultra 2000 series notebook computer “shell,” also known as a replacement foundation, is supplied for field use. It minimizes field disassembly of a customer system, allowing efficient onsite repair. Refer to the previous FRU replacement procedures for complete information.

Prior to Disassembly

1. A paper label is supplied on the bottom of your replacement “Shell.” Edit the label by adding the appropriate information from the customer’s system. This information is necessary for warranty, service and tracking purposes.

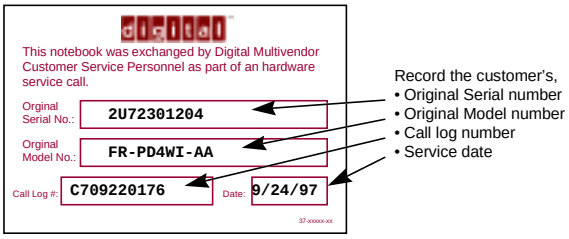

Figure 5-12. Enter Customer Data on the Shell Label

2. Attach a field failure tag to the failed “Shell” identifying the failure mode and return it complete, for repair using normal procedures.

Disassembly Instructions

The following parts will be removed from the customer's system and retained for installation in the replacement "Shell" (see Figure 5-13).

1. Remove the primary battery.
2. Remove the combo FDD and CD drive assembly.
3. Slide the keyboard latches, raise the keyboard toward the LCD.
4. Remove the keyboard cables from the locking connectors.
5. Remove the keyboard.
6. Slide the HDD locking latch to the unlocked position, pull the ribbon loop to remove the HDD assembly.
7. Remove any additional PCMCIA and memory daughter cards

Customer System Re-configuration

On the replacement "Shell," in reverse order, add all the parts that were removed from the defective HiNote Ultra 2000.

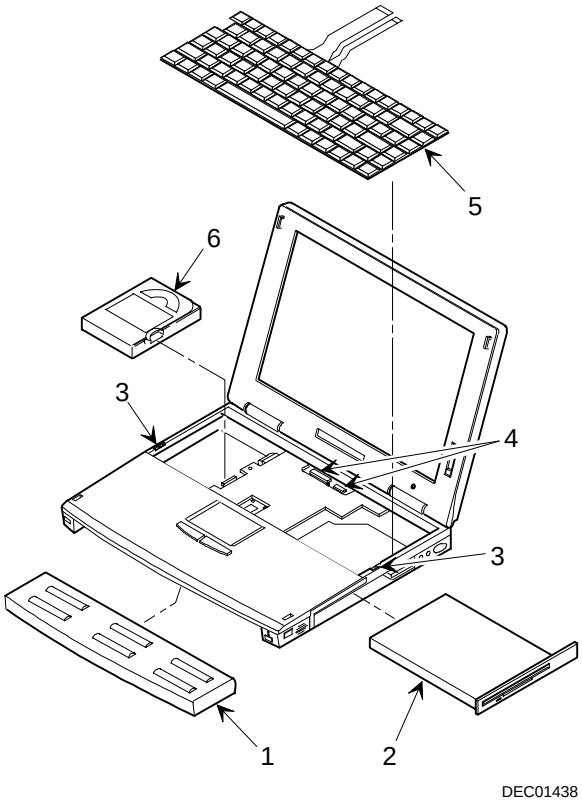

Figure 5-13. DIGITAL HiNote Ultra 2000

Specifications A

System Specifications

	Model	
System Feature	**VTX5166M - 2.1GB - 12.1”**	**GTX5166M - 2.1GB - 14.1”**
CPU Intel Pentium	166 MHz MMX	166 MHz MMX
LCD	12.1" XGA TFT	14.1" XGA TFT
HDD	2.1 GB	2.1 GB
Upgradeable HDD	Yes	Yes
L2 Cache	512KB	512KB
Base RAM	32MB – EDO 3.3v	32MB – EDO 3.3v
Maximum RAM	96MB	144MB
RAM Expansion	Single 144 pin SO–DIMM 3.3v self-refresh	Dual 144 pin SO–DIMM 3.3v self-refresh
Operating System	Windows 95 or Windows NT 4.0	Windows 95 or Windows NT 4.0
Warranty	3 years	3 years

Hardware Specifications

	Model	
System Feature	**VTX5166M - 2.1GB - 12.1”**	**GTX5166M - 2.1GB - 14.1”**
Battery	LiIon – 8 cell 36Whrs	LiIon – 12 cell 54Whrs
Audio	Yes	Yes
CardBus/Zoomed Video	Supported	Supported
Fast IR (4 Mbps)	Yes	Yes
Integrated CD-ROM	20X	20X
Integrated Modem	Optional*	USR 56kps
Pointing Device	Touch pad	Touch pad
DIGITAL HiNote Ultra Enhanced Port Replicator	Optional	Optional
DIGITAL HiNote Ultra Multimedia Dock	Optional	Optional

* Available separately as a customer installable option.

Physical Specifications

	Model	
Feature	**VTX5166M - 2.1GB - 12.1”**	**GTX5166M - 2.1GB - 14.1”**
Size	9.7" x 12" x 1.25"	9.7" x 12" x 1.4"
Weight (no FDD or CD-ROM)	5.2 lbs. (approximate)	6.2 lbs. (approximate)
Weight (with FDD)	5.6 lbs. (approximate)	6.6 lbs. (approximate)
Weight (with CD-ROM)	5.85 lbs. (approximate)	6.85 lbs. (approximate)

Environmental Specifications

Parameter		Value
Temperature		
	Operating	0° C to 35° C (32° F to 95° F)
	Nonoperating	-20° C to 60° C (-4° F to 140° F)
Humdity (noncondensing)		
	Operating	0% to 80%, Max wet bulb 35° C
	Nonoperating	5% to 95%, Maxe wt bulb 35° C
Altitude		
	Operating	Sea level to 3,040m (8,000 ft)
	Nonoperating	Sea level to 12,160m (40,000 ft)
Vibration		
	Operating	Minimum of 35mm or 1.0 G (0 to peak), 5 - 500 Hz, per IEC-68-2-6
	Nonoperating	Minimum of 50mm or 1.5 G (0 to peak), 5 - 500 Hz, per IEC-68-2-6
Shock		
Operating		10G for 11ms half sine
Nonoperating		100G for 11ms half sine
Acoustic noise (A weighted sound power level, Lwa, per ISO 7779)		High Frequency Tones < (25 + 5(f - 14)) (f = frequency in khz)
	Idle mode:	3.8 Bels
	HHD operating:	3.9 Bels
	Keyboard operating:	5.0 Bels

Device Mapping B

Memory Map

Range	Name	Function
0h to 9FFFFh	640KB System Memory	System Memory Space
A0000h to BFFFFh	128K Video Memory	Graphics Display Memory Buffer
C0000h to CAFFFh	44KB Video BIOS ROM	Shadow BIOS of VGA
CC000h to CD7FFh	6K CD Boot ROM	CD Boot
CD800h to CDFFFh	2K EPP Bios	Enhance Parallel Port
E8000h to FFFFFh	96KB PCI, PnP, and System ROM	BIOS of System
100000h to 8FFFFFFh	Additional Memory Space	Extended Memory Space, Size from 8MB up to 144MB

DMA Channel Assignments

Channel	Controller	Function
0	1	Parallel Port ECP (if enabled)
1	1	Sound
2	1	Diskette controller
3	1	Serial IR (if enabled)
4	2	Cascade DMA
5	2	Not used
6	2	Not used
7	2	Not used

Notebook Computer Interrupt Levels

IRQ	Normal Assignments (FIS)
0	System Timer
1	Keyboard
2	Programmable Interrupt Controller
3	Serial Port Com2
4	Serial Port Com1
5	Audio
6	Floppy Disk Controller
7	Parallel Port LPT1
8	Real time clock
9	PCI Cardbus Controller
10	PCI Cardbus Controller
11	USB and Cardbus Controller (Multimedia dock)
12	Track Pad, PS/2 Mouse
13	Numeric data processor
14	Hard disk controller
15	Secondary Hard Disk Controller and Cardbus (Multimedia dock)

I/O Address Map

Range (hexidecimal)	Function
000 - 00F	DMA controller A
020 - 021	Master interrupt controller
024	Index register - system board
026	Data register - system board
040 - 043	Interval timer
060 - 06F	Keyboard controller
070 - 07F	Real-time clock (RTC), NMI
080 - 08F	DMA page register
0A0 - 0A1	Slave interrupt controller
0C0 - 0CF	DMA controller B
0F0	Clear math coprocessor
0F1	Reset math coprocessor
0F8 - 0FF	Math coprocessor
150 - 157	ESS 1878 control interface
170 - 177	Secondary IDE controller
1F0 - 1F7	IDE controller
201	MIDI/Joystick
220-22F	On-board Audio (ESS 1878)
278 - 27F*	LPT2

continued

Range (hexidecimal)	Function
2E8 - 2EF*	COM4
2F8 - 2FF*	COM2
330-331	MPU 401 Audio
378 - 37F*	LPT1
388 -38B	FM synthesizer Audio
3B0 - 3BB	Mono VGA registers
3BC - 3BE*	LPT3
3C0 - 3CF	VGA registers
3D0 - 3DF	Color VGA registers
3E0 - 3E1	PCMCIA controller
3E8 - 3EF*	COM 3
3F0 - 3F7*	Diskette controller
3F6 - 3F7*	IDE controller (alt status, device address)
3F8 - 3FF*	COM1
CF8 - CFF	Cardbus PCI port interface

*Enabled and disabled using the Setup Utility or Windows 95