DIGITAL HiNote VP 700 Series

Service Guide

Part Number: ER-PJ1WW-SM. A01

Digital Equipment Corporation
Maynard, Massachusetts

October 1997

The FCC wants you to know...

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 must be shielded. For cables connecting to PCMCIA cards, see the option manual or installation instructions.

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Preface

This guide describes how to test, troubleshoot, and remove and replace the Digital HiNote VP 700 series notebook computer Field Replaceable Units (FRUs).

Audience

This service guide is written specifically for service engineers.

Organization

This guide contains the following:

- Chapter 1: *Overview* – This chapter introduces the Digital HiNote VP 700 series notebook computers. It provides a system overview and describes the controls, indicators, and hot keys.
- Chapter 2: *System BIOS* – This chapter provides information related to the system BIOS and its Setup program.
- Chapter 3: *Troubleshooting* – This chapter provides a systematic method of isolating problems with the Digital HiNote VP 700 series of notebook computers.
- Chapter 4: *FRU Replacement* – This chapter provides detailed procedures for replacing the Digital HiNote VP 700 series notebook computer Field Replaceable Units (FRUs).
- Chapter 5: *FRU List and Illustrated Parts Breakdown* – This chapter provides a list of the Field Replaceable Units (FRUs), parts breakdown and parts list for the Digital HiNote VP 700 series notebook computer.
- Appendix A: *Specifications* – This appendix lists the notebook computer's specifications.
- Appendix B: *Device Mapping* – This appendix contains tables listing the default settings for of the notebook computer's memory map, I/O address map, interrupt map, and DMA map.
- Appendix C: *System Connector Pin Assignments* – This appendix shows the location of the connectors on the system motherboard and provides a listing of the pinouts for these connectors.

1
Overview

This chapter introduces the DIGITAL HiNote VP 700 series notebook computer. It provides a system overview and describes the controls, indicators, and hot keys.

System Overview

The DIGITAL HiNote VP 700 series notebook computer is a high-performance portable computer designed for the mobile professional.

CPU

The DIGITAL HiNote VP 700 series notebook computer supports the notebook version of the P55C 166MHz and beyond Intel Pentium processors mounted on an MMO daughter card.

The following is a list of the general features of these processors:

- Low power consumption operating at 1.8V.
- Full System Management Interrupt (SMI) support.
- Fully static - support Stop Grant and Stop Clock states.
- 32-bit address bus.
- 64-bit data bus.
- 32KB internal write-back cache (L1).
- Capable of executing two instructions per clock cycle using two pipelined integer units.
- Multimedia extension (MMX) register set.

Chip Set

The Intel 430TX PCI chip set is used to implement the core functions of the system.

- The 430TX System Controller, 82439TX, provides core system functions.
  - Support for all Intel Pentium processors since P54C.
  - Integrated L2 Cache Controller featuring support for Write-Back cache policy for cache sizes 256KB and 512KB, DIRECT Mapped Organization (Write-Back only), Cache Hit Read/Write cycle timings @ 3-1-1-1, and back-to-back Read/Write cycles @ 3-1-1-1-1-1-1-1.
  - Fully synchronous, Minimum Latency 30/33MHz PCI bus interface supporting five PCI bus Masters, a 10 Dword PCI-to-DRAM Read Prefetch buffer, an 18 Dword PCI-to-DRAM Post Buffer, and a Multiple Transaction timer to support multiple short PCI transactions.
  - 64-bit host and DRAM bus interface with an integrated DRAM controller with 64Mbit DRAM/SDRAM Technology and programmable-strength for DRAM interface.
  - Integrated PCI bus arbiter.
  - Advanced Power Management features.
  - Support for USB.
- The PCI ISA IDE Xcelerator, PIIX4, provides the PCI to ISA bridge interface.
  - Integrated IDE Controller supporting up to 4 drives, PIO Mode 4 transfers up to 14Mbytes per second, and integrated 8x32 buffers for IDE PCI Burst transfers.
  - Enhanced DMA Controller supporting two 8237 DMA controllers supporting PCI DMA with 3PC/PCI channels and Distributed DMA protocols.
  - Interrupt Controller with support for 15 interrupts and independently programmable for Edge/Level sensitivity.
  - Support for full Positive Decode or Subtractive Decode.
  - Advanced Power Management features.
  - Support for two USB ports for serial transfers at 12Mbit/s or 1.5Mbit/s.

Memory

The system comes with 16MB of on-board SDRAM for system memory and 256KB or 512KB of L2 cache memory depending on the model purchased.

System memory can be upgraded to a total of 144MB. The upgrade is performed by installing any combination of 16MB, 32MB and 64MB SDRAM SO-DIMMs. There are two slots for additional memory. Memory can be upgraded one module at a time. Either slot can be populated first.

BIOS

The system has a 256KB Flash ROM for system BIOS (Phoenix BIOS 4.0 Release 6). BIOS provides support for the following:

- Suspend to RAM.
- Save to Disk
- Full APM 1.2 supported.
- Password protection (Boot and System options).

- Auto-configured with module and docking options.
- Windows 95 ready with PnP.
- 32KB ROM for 51SL keyboard controller.
- Gas-gauge for battery status information
- 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.

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.
- Uses 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 theNeo Magic 2160 Controller Chip. This chip provides the following functions:

- 128-bit memory interface.
- 2MB 3.3V High Speed Video DRAM.
- Support for Zoomed Video.
- Simultaneous display supported.
- VESA DDC1 support for external monitors.
- Advanced power management features minimize power consumption during:
  - Normal operation
  - Standby mode
  - Panel-off
- High resolution panel:
  - TFT displays support XGA (1024x768) at a maximum of 64K colors.
  - DSTN displays support XGA (1024x768) at a maximum of 64K colors.

ISA Bus Devices

The ISA bus interface is provided by the Intel 430TX PCIset System Controller.

Audio

Audio support is provided by the Crystal CS4237B chip. This chip provides the following functions:

- Integrated SRS® 3D sound technology
- Enhanced full-duplex operation.
- Dual Type-F DMA support.
- Advanced MPC3-Compliant input/output mixer.
- Hardware master volume control
- Advanced Power Management..
- Support for 16-bit Stereo, FM Synthesizer, and MPU-401 MIDI.
- Enhanced digital gameport.

Wavetable (Optional)

Wavetable support is provided by the Crystal CS9236 chip. This chip provides the following functions:

- High quality MIDI sample set including 128 melodic instruments and 47 percussion sounds.
- Receives standard serial MIDI data stream and outputs stereo 16-bit digital audio stream at 44.1kHz.
- Independent reverb and chorus levels for each MIDI channel.
- General MIDI (GM) compliant.
- Fully static power down capability.

BIOS

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

Super I/O

I/O support is provided by theSMC EDC37C669FR chip. This chip supports the following functions:

- 2.38MB Super I/O Floppy Disk controller supporting two floppy drives and offering Japanese floppy support.
- Floppy Disk available on Parallel port pins.
- Two high speed NS 160550 compatible UARTs Serial Ports.
- Integrated Infrared Communications controller supporting SIR (115Kbps) and FIR (4Mbps) data transfers.
- Multi-Mode Parallel Port – IEEE 1284 compliant.
- Full Plug-and-Play support.
- Game Port Select Logic

DIGITAL HiNote VP 700 Series Minidock

The DIGITAL HiNote VP 700 Series Minidock has the following features:

- System Reset Button
- Parallel port
- Serial port
- Infrared Module
- External display port
- MIDI/joystick port
- Two PS/2 connections for keyboard and mouse
- Two USB ports (pass-through from DIGITAL HiNote VP 700 Series notebook)
- One Type II PC Card slot (on selected models only)
- Audio Line-In jack
- Audio Line-out jack
- External Mic jack

Components, Controls and Indicators

This section shows the locations and provides detailed description of the different components, controls, and indicators on your DIGITAL HiNote VP 700 Series notebook computer.

Front and Side Components (Panel Closed)

	Component	Description
❶	Lid Release	Slide this latch to the right to open the LCD panel.
❷	Main Battery Module	Removable battery module that can be replaced with a charged battery.
❸	Expansion bay	Supports the 20X CD-ROM/FDD Combination module and optional lithium-ion secondary battery module.
❹	Minidock Locking Tab	Used to secure the notebook to the Minidock.
❺	Power/Charge LED	Indicates the power and charge status of notebook. **System plugged into AC Power** • LED is solid, then battery is charging. • LED is blinking (fast speed), then battery is not charging. **System running on Battery Power** • LED is blinking (slow speed), then the notebook is in suspend.

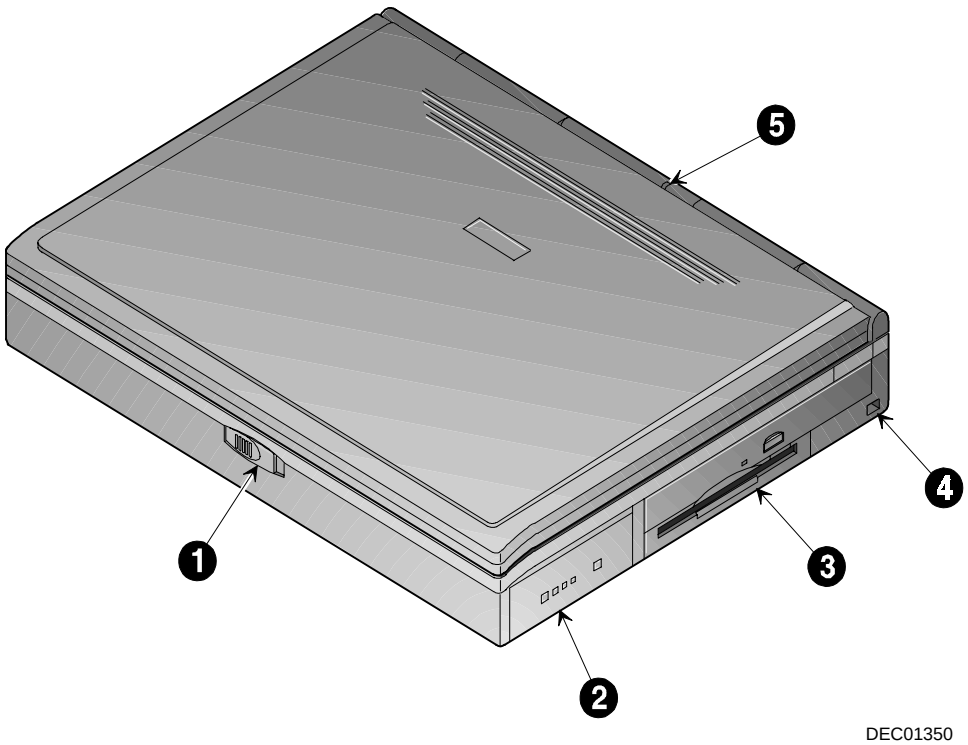

Figure 1-1: Right Front View (Panel Closed)

Rear View

	Component	Description
❶	Fast Infrared Interface	Allows wireless high speed data transfer between the notebook and other IR devices.
❷	Universal Serial Bus (USB) Port	A USB device, such as a mouse, digital camera, keyboard, or scanner, connects to this port.
❸	Serial (COM) Port	A serial device connects to this port.
❹	Parallel LPT Port	A parallel device, such as a printer, connects to this port.
❺	Reset Button	Using a pen or paper clip, press this button to reboot the system. All unsaved data will be lost.
❻	External Display Port	An external monitor connects to this port.
❼	Minidock Port	This 240-pin port allows you to connect the notebook to the Minidock.
❽	Rear Panel Port Cover	Open this cover to expose the Serial, Parallel, and VGA Ports.
❾	External Keyboard or PS/2 Mouse Port	An external PS/2 keyboard or PS/2 mouse connects to this port. To connect both a PS/2 keyboard and PS/2 mouse, use the PS/2 Y-connector cable packaged with notebook.

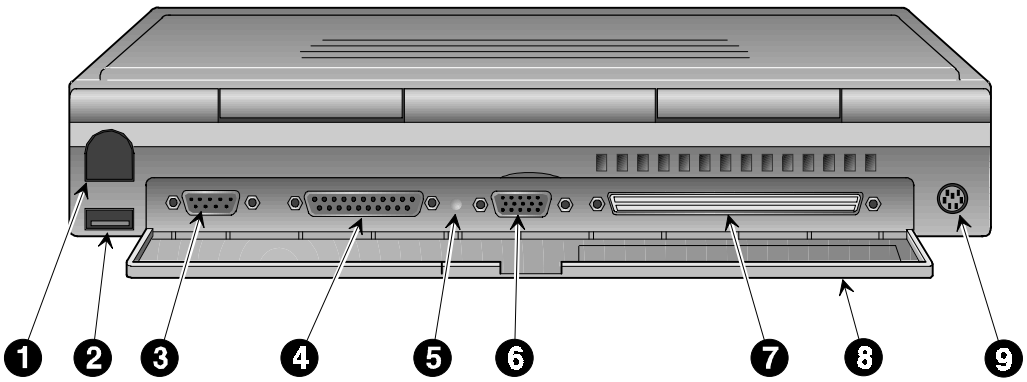

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Figure 1-2: Rear View

Left Side Components

	Component	Description
❶	Minidock Locking Tab	Used to secure the notebook to the Minidock.
❷	PC Card Sockets	Insert either two Type II or one Type III PC Card into this socket.
❸	PC Card Eject Buttons	Upper button ejects a PC Card Type II from the upper socket and the lower button ejects a PC Card Type II or III from the lower socket.
❹	Line-in Port	Connect an external audio source to this port.
❺	External Mic Port	Connect an external microphone to this port.
❻	Line-out Port	Connect external speakers or headphones to this port.
❼	AC Power Port	The AC Adapter connects to this port.
❽	Security Lock Port	Connect a Security Lock cable to this port. This assists in safeguarding the notebook, HDD and RAM against theft.

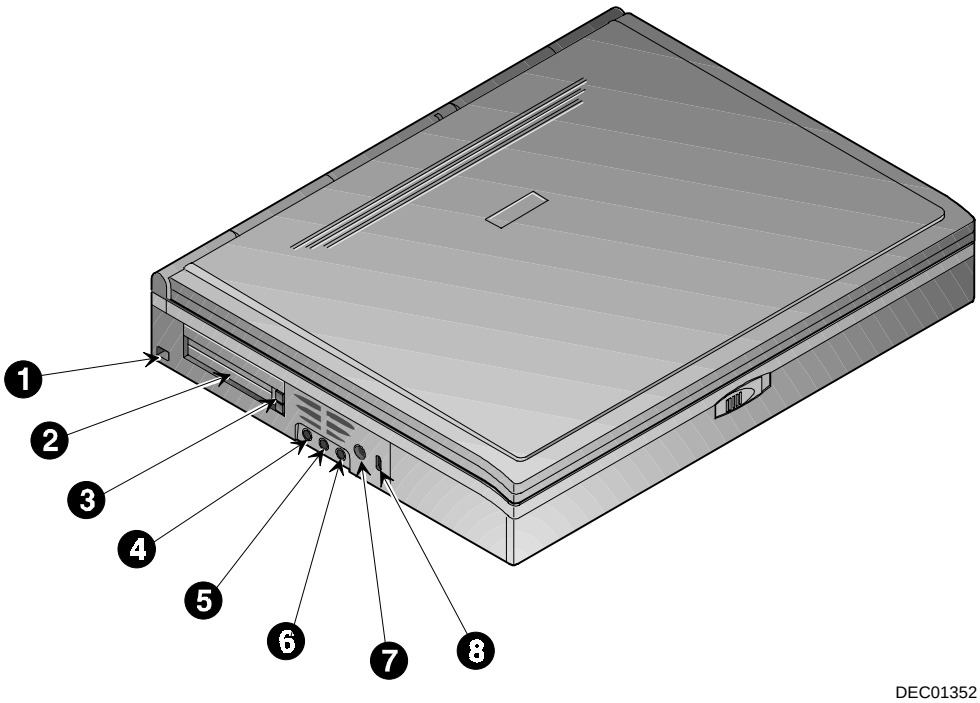


Figure 1-3: Left Front View (Panel Closed)

Right Front View (Panel Open)

	Component	Description
❶	Lid Switch	Close the notebook's LCD lid to suspend the system. Open the lid and press the Suspend/ Resume button again to resume the normal operation. The Lid Switch can be configured to CRT display mode from the Power menu of the Setup Program. Please refer to Chapter 2.
❷	LCD Display	DSTN or TFT XGA back-lit display.
❸	Internal Microphone	Used to record music, voice and sound files.
❹	LCD Status Display	Provides system operating status.
❺	Suspend/Resume Button	Turns the notebook on and toggles between the suspend/resume mode. Press the [fn + Suspend/Resume] to turn off the notebook.
❻	Internal Stereo Speakers	Used to hear sound files and system sounds through stereo speakers.
❼	Touch pad (internal PS/2 mouse)	A touch sensitive pointing device providing all the functions of a two-button mouse.

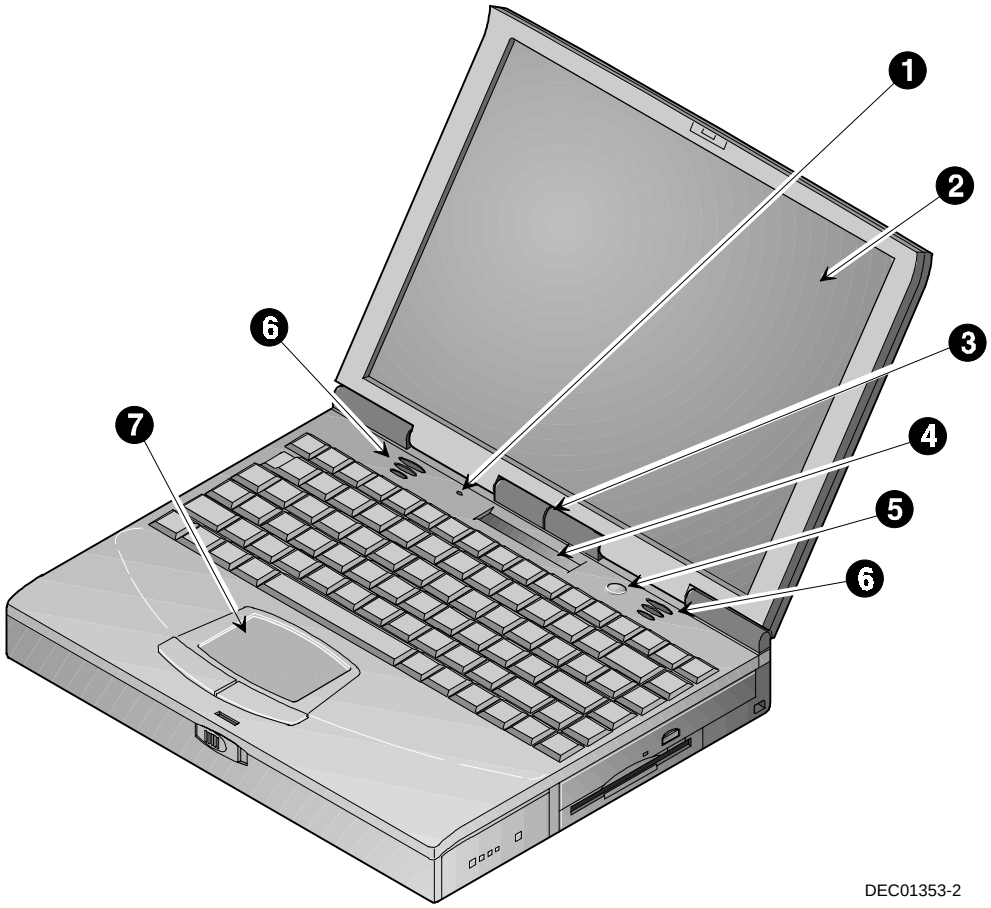
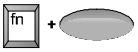


Figure 1-4: Right Front View (Panel open)

Controlling Power

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

Goal	Action
On 	Press the Suspend/Resume (power) button to turn the system on.
Suspend 	When the system is on, press this button to place your system in Suspend.
Resume 	Press the Suspend/Resume button to resume normal operation from the Suspend.
Off 	To completely shut off your notebook, press and hold [fn + suspend/resume] button until the system emits a beep, indicating that the system has been successfully turned off.
Lid Switch	In its factory default configuration, closing the LCD lid will enter the notebook into Suspend. Refer to Chapter 2, in the section labeled *The Power Menu* for instructions on how to configure the Lid Switch function.

LCD Status Display

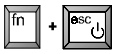
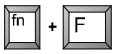
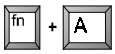
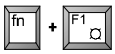
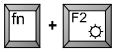
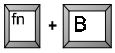
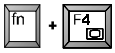
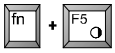
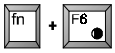
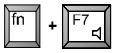
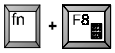
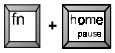
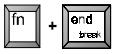
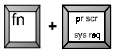
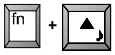
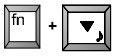
Icon	When Displayed Indicates...
	Caps Lock is enabled.
	Num Lock is enabled. If you are using the notebook's keyboard, the embedded keypad must also be enabled to use the embedded keypad as a numeric keypad.
	Embedded Numeric Keypad is enabled. On external keyboards, the embedded keypad functions as a cursor control keypad. When displayed in conjunction with the Num Lock icon, the embedded keypad on both internal and external keyboards functions as a numeric keypad.
	Scroll Lock is enabled.
	Hard Disk Drive/CD-ROM is being accessed by the system.
	Floppy Disk Drive is being accessed by the system.
	PC Card socket is being used by the system.
	AC adapter is being used to power the system.
	Battery(ies) is installed. See the following section, Battery Charge Gauge, for status details.

Battery Charge Gauge (in LCD Status Display)

Icon	When Displayed, Indicates…
	Battery status - shows available battery power. Each line represents approximately 10% battery charge. The upper triangle corresponds to the main battery and the lower triangle corresponds to secondary battery. If the triangle is flashing, its corresponding battery is in use or charging. If both batteries are installed, the battery life will be calculated based on the charge sum of both batteries. When the lines within the battery icon are rotating, it indicates that the battery is being charged. When the rotating stops, the battery is fully charged.
	51% to 60% battery operating time remaining.
	Low battery. 1% to 10% battery operating time remaining. The system's warning beep will sound. Save your work, replace the low battery with a fully charged one or use an AC power source to run the notebook. The [fn + F7] keys shut off the warning beep. It also mutes all audio.
	Critical low battery. The system will automatically save all data and application information to the hard disk (Save-to-Disk), then power down the notebook. If system is in Suspend mode when power low is reached, the system will resume, then complete down.
	System has ceased charging the battery. The core of the battery has reached its maximum temperature, indicating that charging has stopped.

Keyboard Hot Keys (US Keyboard)

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.

[fn] + function	Activity
	Places the computer in Standby Mode.
	All open data and system settings are Saved to Disk.
	Place the computer in Suspend Mode.
	Decreases brightness level.
	Increases brightness level.
	Displays the second battery gauge if the optional LiIon battery is installed in the expansion bay.
	Switches between the three display modes: 1. LCD Display 2. LCD Display and External Monitor 3. External Monitor only Each time you press this hot key combination the computer changes to the next display mode.
	Decreases the display contrast (DSTN screens only).
	Increases the display contrast (DSTN screens only).
	Enables or disables audio/speaker output including the system beep which indicates low battery. The system will emit a beep when the audio output is enabled.
	Toggles the keyboard's embedded key pad on and off. When used by itself, it functions as a cursor control keypad. Press [fn+F9] and then the [fn+F8] hot key combination to use the notebook's numeric embedded keypad.
	Toggles Num Lock on and off. Used by itself, fn+F9 enables an external keyboard numeric keypad.
	Toggles Scroll Lock on and off. The Scroll Lock functions in certain applications, leaving the cursor in its current position while moving the screen in the direction of the arrow pressed.
	Pauses the display output. Press a key to resume.
	If Break is enabled, pressing this hot key sends a system break.
	Determined by application software.
	Increases the audio volume.
	Decreases the audio volume.

General Battery Information

All batteries have limited life span. A battery's *life span* is measured by the number of charging and draining cycles it can undergo before it can no longer be charged. The amount of time that your system can be operated by battery power before the battery is drained is referred to as battery *run time*.

Nickel Metal Hydride Battery Care

Nickel-Metal Hydride (NiMH) batteries are extremely common in many types of portable systems, such as cellular phones, camcorders and portable computing devices.

Memory Effect

A NiMH battery in poor condition may begin to exhibit characteristics of *memory effect*. Memory effect will occur when a user does not allow the battery to fully drain before charging it again. For example, if you use the battery for 20 minutes at a time and then recharge it, the battery will tend to "remember" that it only needs to operate 20 minutes per charge. As a result, during the charging process, the battery will only receive a portion of its charge capacity.

NiMH Battery Life

Memory effect has a direct impact on the battery's life span. NiMH batteries have a typical life of up to 800 (charge/drain) cycles. If the battery is used an average of 30 minutes per cycle, you can expect a total life of 400 hours. If you use the battery 3 hours per cycle, you can expect a total life of 2,400 hours. Therefore, it is advantageous to use the battery as much as possible during each cycle.

However, in attempts to prevent the memory effect, it may not always be practical to continuously use your notebook until the battery drains to its minimum level. As a solution, Digital recommends that you periodically *form* or condition the battery. When a battery is formed, it is put through a series of charging and draining cycles. A battery which is formed will perform better and last longer than a battery which has not been formed.

If your system will not be in use for more than 30 days, Digital recommends that you remove the NiMH Battery from the system. When a NiMH battery is removed from the system, it has a shelf life of approximately 90 days before a charge cycle is required.

Forming a Battery

Action	Instructions and Information
Forming a battery	1. Charge it to its full capacity. The notebook's battery charge LED will turn off. 2. Use the notebook until the battery is completely drained. 3. Charge the battery to full capacity a second time and drain it again. 4. Charge the battery to full capacity. The battery is now formed.
Draining the battery	• Software is available to assist in the draining process. Please consult your Digital notebook dealer for information about the kinds of software. • Lacking software: To expedite the draining process, enter the Setup Program and disable all power management functions. Increase the screen brightness to its highest setting.

When to form a battery	• Form all new batteries, including the one which came with you system. • Form batteries which do not provide as much run time as they used to. • Form a battery to achieve maximum battery life. • Form the battery if you are receiving questionable readings from the battery icon gauge in the LCD Status Display.
Required time	• Assuming it takes 2 hours to fully drain the battery, forming a battery requires approximately 10 hours. • To charge a battery with the system off requires approximately 2 hours. To fully charge a battery with the system on requires approximately 4 hours. • Depending upon your power management settings, to fully drain a battery requires approximately 2 hours.

LiIon Battery

Lithium-ion batteries have an average life span than of approximately 1,000 complete charge/discharge cycles. In actual use, the number is larger due to the fact that most users will not fully discharge the battery during daily usage. Unlike the nickel-metal hydride battery, there is no need to be concerned with fully discharging the battery before charging it again since lithium-ion technology is not susceptible to memory effect.

If your system will not be in use for more than 30 days, DIGITAL recommends that the LiIon Battery Pack be removed from the system. When a lithium-ion battery is removed from the system, it has a shelf life of approximately 90 days before a charge cycle is required.

CAUTION

There is a danger of explosion if a lithium battery is incorrectly replaced. Lithium batteries must be replaced with the same or equivalent type recommended. Replace the main system battery only with DIGITAL HiNote VP 700 series series of rechargeable Lithium Ion battery packs.

Battery Recycling and Disposal

Recycle or dispose of batteries contained in this product properly, in accordance with local regulations for battery type as marked on the battery. Prior to disposal or recycling, protect batteries against accidental short circuiting by affixing non-conductive tape across battery terminals and conductive surfaces.

WARNING

When transporting the battery pack, make sure that the metal terminals on the battery pack do not come in contact with other metal surfaces (such as loose coins, paper clips, etc.). An electrical discharge can occur which may cause injury or damage.

Smart Battery Operation

Your DIGITAL HiNote VP 700 Series notebook uses a Smart Battery. The battery has circuitry that reports the amount of charge in the battery to the system.

Initial Use – To properly initialize the circuitry that reports the state of the battery charge, you should:

1. Fully charge the battery.
2. Fully discharge the battery. To fully discharge the battery, use the notebook computer on battery power until the computer enters suspend mode because of a *critically low battery state*.
3. Fully charge the battery.

Regular Use – To help maintain the accuracy of the circuitry that reports the state of the battery charge, it is recommended that you allow the battery to go through a full charge and discharge cycle at periodic intervals.

Power Management Modes

Your notebook computer is factory-configured with preset power management values. If you are not an advanced user, start by using the factory-configured power management settings. If you find that the factory settings do not fit your specific needs, enter the Setup Program and make the needed changes. Please refer to chapter 3 for details.

If you choose to set your own power saving features, you should understand how it affects battery run time and system performance before changing a setting.

Three power management modes are supported: Standby, Suspend, and Save to Disk.

Standby Mode

In this mode, components such as the HDD, FDD and CD-ROM drive and the LCD back-lit display are powered down and the CPU speed is reduced. Other components, transparent to the user, are put in their lowest active states.

Standby Mode is entered:

- Automatically when the system remains idle for the period of time specified in the Standby Time-out field of the Setup Program.
- Manually by pressing the [fn + esc] key combination.

Standby Mode is exited by any of the following actions:

- Modem ring (if Resume on Modem ring is enabled in the Setup Program.)
- Pressing any key on the keyboard
- Touch pad or externally connected PS/2 mouse activity
- PC Card activity

Suspend Mode

Suspend Mode saves power by cutting power to the DMA clocks, suspending the math co-processor, turning the video off, and turning off all controllable peripheral devices.

When the system suspends, the following events take place:

- A system beep notifies you that suspend mode has been entered.
- The caps lock, number lock, embedded keypad lock, and scroll lock icons in the LCD Status Display begin to rotate.
- If AC power is not connected, the Power/Charge LED will blink approximately once every four seconds.

Suspend Mode is entered by:

- Pressing the Suspend/Resume button.
- Pressing the [fn+A] or [fn+Q] hot key combination.
- Closing the LCD display lid (Lid Switch field in the Setup Program must be set to Suspend)
- When the system has been in Standby for the period of time specified in the Suspend Time-out field of the Setup Program.
- Software aided within Windows 95 by clicking on the Start button and then Suspend.

Suspend Mode is exited by:

- Pressing the Suspend/Resume button.
- When the clock time specified in the Resume Date and Resume Time fields have arrived.
- Modem Ring (Resume on Modem Ring must be set to enabled in the Setup Program)

Save to Disk Mode

Save to Disk is a dual purpose feature. When controlled by the Setup Program, it transparently functions as a safeguard against accidental loss of data due to low battery power. When initiated by the user, it provides the greatest power saving capabilities. Upon entering/initiating Save to Disk, the notebook will save all data and system settings to a pre-created DOS file, then turn off the system. If, in the future, you purchase a second hard drive for expansion or backup purposes, you will need to create a DOS file on the drive in order to take advantage of the Save to Disk feature. Please refer to User's Guide Addendum for details on creating a Save to Disk DOS file.

In the Save to Disk mode, all system logic (except for the battery charger) is turned off. During the Save to Disk mode, the DRAM and video memory are saved to the hard disk and are restored when the system is resumed.

Save to Disk Mode is initiated by:

- Pressing the [fn+F] hot key combination
- Automatically when the battery reaches a critical low power level. If the notebook is in Suspend when a critical low power level is reached, the system will turn back on for a moment and enter Save to Disk.

Save to Disk Mode is exited as follows:

- If entered by pressing [fn+F], press the Suspend/Resume button.
- If entered by critical low battery, first connect the AC adapter, then press the Suspend/Resume button.

Related Information

Documentation

DIGITAL HiNote VP 700 Series User's Guide	ER-PJ1WW-UA
Quick Setup Guide	ER-PJ1WW-IM

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.PC.DIGITAL.COM/

2
System BIOS

This chapter provides information related to the System BIOS and its Setup Program.

BIOS Setup Program

The Setup Program is a menu driven utility that enables you to make changes to the system configuration and tailor the operation of your notebook to suit your individual work needs. It is a ROM-based (Read only Memory) configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery backed-up CMOS RAM, which saves this information even when the power is turned off. CMOS chips are extremely low power consuming. When the system is turned back on, the notebook is configured with the values found in CMOS.

Note

The CMOS battery receives a charge when the system is being 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. If the CMOS battery is completely drained, you will be prompted with a CMOS Checksum Error message during bootup and given the choice of selecting F1 to resume or F2 to enter the Setup Program. Select F2, then reset the System Time and System Date fields, and load the default settings from the Exit menu. Then select Save Changes and Exit to save the new configuration and exit the Setup Program. Connect the AC adapter to the notebook for 24 hours to recharge the CMOS battery.

By activating user friendly Setup Program menus, you can configure such items as:

- Hard drives, diskette drives and peripherals
- Password protection from unauthorized use
- Power Management Features

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

Navigating through the Setup Program

When turning on the notebook for the first time you may get a message prompting you to run the Setup Program. A warning message may appear on the screen if the hardware configuration is changed or the Power On Self Test (POST) fails. This message will inform you of any errors or invalid settings and prompt you to run Setup to correct the problem.

Even if you are not prompted by a message instructing you to use Setup, at some time in the future you may want to change the configuration of your computer. For example, you may want to make changes to the power management settings, or for security purposes, enable the notebook's password function. It will then be necessary to reconfigure your system using the Setup Program so that the computer can recognize these changes.

A few examples of why you may want to enter the Setup Program follow.

- You want to redefine the communication ports to prevent any conflicts.
- You want to make changes to the Power Management configuration.
- You want to change the password or make other changes to the security setup.

Accessing the Setup Program

To access the Setup Program, press the F2 key when prompted during bootup. There are three essential elements to the Setup Program screens: Menu Bar, Item Specific Help Window and Legend Bar.

Menu Bar

The top of the screen has a menu bar with the following selections :

Main	Changes to the basic system configuration are made from within this menu.
System Devices	Use this menu to enable and make changes to the system port addresses and modes.
Security	Sets System and Boot/Resume password.
Power	From within this menu, you will be able to configure and enable Power Management features.
Boot	Allows you to specify the device the system will boot from and the boot device sequence.
Exit	Use this menu to save changes, set factory defaults and exit the Setup Program.

Item Specific Help

Note that on the right side of each Setup screen, there is a section labeled *Item Specific Help*. While moving through the Setup Program, note that explanations for the currently highlighted field appear in the *Item Specific Help* window.

Legend Bar

At the bottom of the Setup screen you will notice a legend bar. The keys in the legend bar allow you to navigate through individual setup menus. The following table lists the keys found in the legend bar with their corresponding alternates and functions.

Legend Key	Alternate Key	Function
F1	Alt + H	Displays the General Help window.
ESC	Alt + X	Exits the current menu and returns you to the previous screen.
← or →		Selects a different menu bar item.
↑ or ↓		Moves the cursor up and down between fields.
F5	- (minus key)	Scrolls backwards through the values of the highlighted field.
F6	+ (plus key) <space bar>	Scrolls forward through the values of the highlighted field.
F9		Sets the fields for the active menu to their default values.
F10		Saves the new configuration and exits the Setup Utility.
Press Enter		Executes commands, selects submenus, selects fields, or displays available options.

Launching Submenus

Notice that a pointer symbol appears next to selected fields in the menu screens. For example, see the Hard Disk option in the Main menu. The symbol indicates the existence of a submenu that can be launched for more advanced configuration options. To launch a submenu:

1. Move the highlighted cell to the desired Menu Bar item and press <Enter>.
2. Use the legend keys to navigate around the screen and make the needed configuration changes.
3. When you finish, press the [esc] key to exit the submenu and return to the main screen.

General Help

In addition to the Item Specific Help window, the Setup Program also provides a General Help screen. This screen can be called up from any menu by simply pressing the function key, F1 or the [alt + H] combination. The General Help screen provides a description of all the keys with their corresponding alternates and functions which are used to navigate the Setup Program.

The scroll bar to the right of the help window indicates that there is more information to be displayed. Use the PgUp and PgDn keys or the up and down arrow keys (↑ ↓) to scroll through the entire help document. Press <home> to display the first page, press <end> to go to the last page. To exit the help window press <enter> or the <esc> key.

The Main Menu

The following settings are available in the Main Menu screen of the Setup Program.

Field	Settings	Description
System Time	Enter current time: hour, minute, second format	Sets the system to specified time.
System Date	Enter current date: month, day, year format	Sets the system to specified date.
Floppy Drive	• 1.44 MB, 3 ½"* • Disabled	Enables/Disables support for the Floppy Disk Drive Module.
Hard Disk	Submenu	Displays the Hard Drive size. Press Enter to access the Hard Disk submenu.
Video Display Device		Sets the Video mode.
	• CRT Mode	Allows viewing of externally connected monitor only.
	• LCD Mode*	Allows viewing of the notebook's LCD only.
	• Simul Mode	Allows simultaneous viewing of externally connected monitor (CRT) and the notebook's LCD display.
System Memory	Display only field	Indicates the amount of conventional memory used by the system.
Extended Memory	Display only field	Indicates the amount of RAM, minus conventional memory (640 KB) and high memory (360 KB), installed in the system.

* Default value.

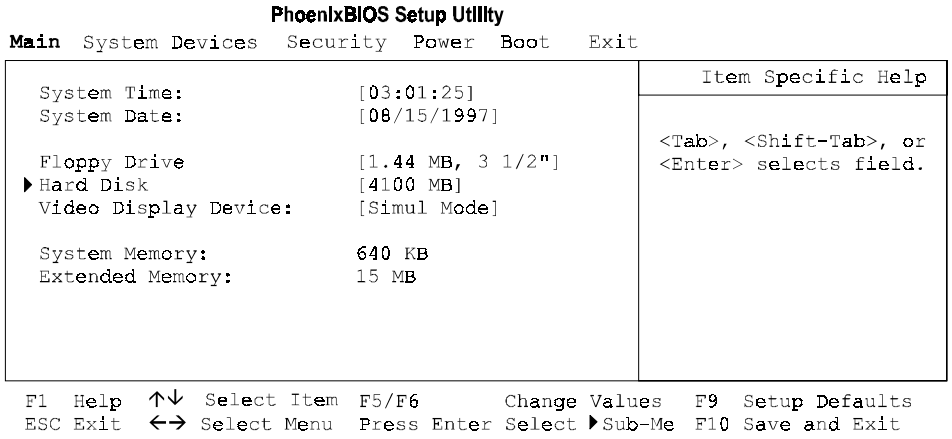


Figure 2-1: The Setup Main Menu

The Hard Disk Submenu

Move the highlighted cell to this field and press <Enter> to launch the submenu. The following settings are available in the Hard Disk Menu.

Field	Settings	Description
Type		Select the type of hard drive installed in the system.
	• Auto*	Automatically detects and configures all parameters, except 32 Bit I/O, for the type of hard drive installed.
	• 1-39	Choose from 39 predefined hard drive types.
	• None	No hard drive is installed in the system or hard drive is of an unknown type.
	• User	Manually configure the hard drive parameters. Consult the hard drive documentation for more information on making the correct settings.

Note

Auto is the recommended setting for most hard drive types. If your hard drive is not recognized by the system, consult the hard drive documentation for information on the appropriate settings.

The System Devices Menu

Select System Devices from the menu bar the display the following menu.

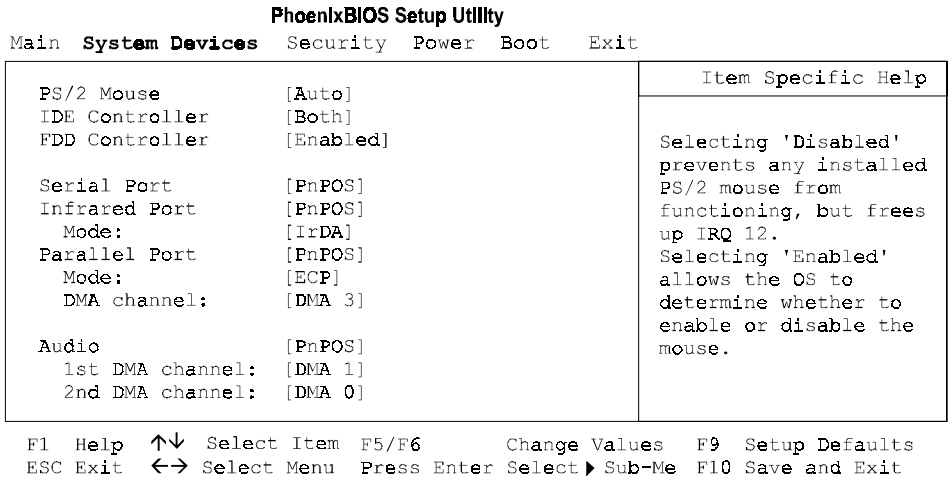


Figure 2-2: The System Devices Menu

The following settings are available in the System Devices Menu screen of the Setup Program.

Field	Settings	Description
PS/2 Mouse	• Auto	Configured automatically by the BIOS.
	• Disabled	Disables the touch pad and PS/2 mouse and frees IRQ 12.
	• Enabled*	Allows the OS to determine whether or not to enable the mouse.
IDE Controller	• Primary	Enables the primary IDE channel.
	• Both*	Enables both the primary and secondary IDE channels. This field must be set to Both to use both an IDE hard drive and an IDE CD-ROM.
	• Disabled	Disables the all IDE devices.
FDD Controller	• Enabled* • Disabled	Enables the floppy disk controller.
Serial Port		Enables/Disables, configures or disables the serial port.
	• Auto*	Configured automatically by the BIOS.
	• PnPOS	Configured automatically by the Plug and Play OS.
	• Disabled	Disables the serial port.
	• Enabled	Manually configures the serial port Base I/O Address. Available configurations are: 3F8-IRQ4*, 2F8-IRQ3, 3E8-IRQ4, 2E8- IRQ3.

*Default value.

Field	Settings	Description
Fast Infrared		Enables, configures or disables the Fast Infrared port.
	• Auto*	Configured automatically by the BIOS.
	• PnPOS	Configured automatically by the Plug and Play OS.
	• Disabled	Disables the infrared module.
	• Enabled	Manually configure the infrared port Base I/O Address. Available configurations are: 3F8-IRQ4, 2F8-IRQ3*, 3E8-IRQ4, 2E8-IRQ3.
Mode	• IrDA* • ASK-IR • FIR	Choose the default setting for this field or refer to the IR device User's manual.
DMA channel	• DMA 0 • DMA 2 • DMA 3*	Appears only when mode is set to FIR. Define the DMA channel to be used by the FIR serial port
Parallel Port		Enables, configures or disables the parallel port.
	• Auto*	Configured automatically by the BIOS.
	• PnPOS	Configured automatically by the Plug and Play OS.
	• Disabled	Set the parallel port to disable in order to increase the battery run time.
	• Enabled	Manually configure the parallel port Base I/O Address (278, 3BC, or 378) and Interrupt (IRQ5 or IRQ7*).

*****Default value.

Field	Settings	Description
Parallel Port Mode		Choose the default setting for this field or refer to the parallel device User's manual.
	• Normal mode • Bi-directional mode • ECP* • EPP	To take advantage of ECP (Extended Capabilities Port) and EPP (Enhanced Parallel Port) mode, the parallel device must be ECP/EPP aware. See your parallel device user's guide.
DMA channel	• DMA 0 • DMA 2 • DMA 3*	Appears only when the Parallel Port Mode is set to ECP. Define the DMA channel to be used by the parallel port.
Audio		Enables, configures or disables the sound device.
	• Auto*	Configured automatically by the BIOS.
	• PnPOS	Configured automatically by the Plug and Play OS.
	• Disabled	Disables the sound device.
	• Enabled	Manually configure the sound device SB,WSS and AdLib I/O addresses. The defaults are 220h, 530-534h, and 388h respectively.
1st/2nd DMA channel	• DMA 0* • DMA 1* • DMA 3	Define the DMA channels to be used by the sound device. DMA 1 is the default for the 1st channel and DMA 0 is the default for 2nd channel.
Interrupt	• IRQ 5* • IRQ 7 • IRQ 9 • IRQ 11	In use when Audio is set to Enabled.

* Default value.

The Security Menu

Select Security from the menu bar to display the following menu.

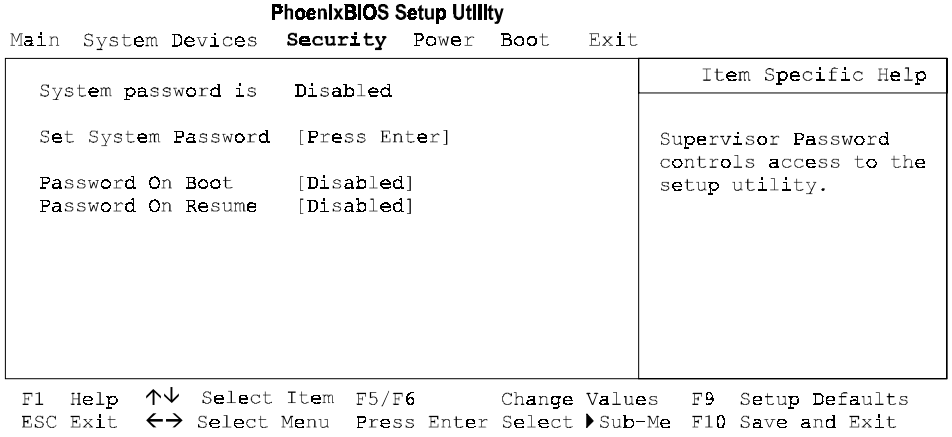


Figure 2-3: The Setup Security Menu

Field	Settings	Description
System Password is Disabled	Display only field	Indicates whether or not a password is enabled.
Set System Password	[Press Enter]	Upon pressing Enter, the system will prompt you to enter a new password and to verify it. Once set, this password must be entered to access the Setup Program.
Password on Boot	• Enabled • Disabled *	When enabled, the system will require the Password during system boot. In order to enable Password on Boot, you must have a System Password set.
Password on Resume	• Enabled • Disabled *	When enabled, the system will require the Password when resuming from suspend. In order to enable Password on Resume, you must have a System Password set.

* Default value.

Note

Passwords take effect immediately upon confirmation. The password will remain in effect if you exit the Setup Program without saving the new configuration settings.

Setting System Password

To set the System Password, move the highlighted cell to the Set System Password field and press <Enter>. The following dialogue box will appear:

Set System Password		
Enter New Password:	[	]
Re-enter New Password:	[	]

1. Type in your password and press <Enter>. The password can be up to eight alphanumeric characters. Symbols and other keys are ignored.
2. Type the password in a second time to confirm. Press <Enter>. The System Password is now set.

Changing System Password

To change the System Password, move the highlighted cell to the System Password field and press <Enter>. When the Set System Password dialogue box appears, enter the current password. Then enter the new password. Enter it a second time to confirm. The new password is now set.

Deleting System Password

To delete a previously set System Password and disable the password feature:

1. Open the System Password dialogue box.
2. Enter the current password.
3. The cursor will move to the Enter New Password field, press <Enter>.
4. The cursor will move to the Re-enter New Password field. Press <Enter> again.
5. When the Notice dialogue box appears notifying you that changes have been saved, press <Enter> a third time. The password has been deleted.

The Power Menu

The Power Menu allows you to enable and adjust the notebook's power saving features. Enabling these features will extend the battery run time.

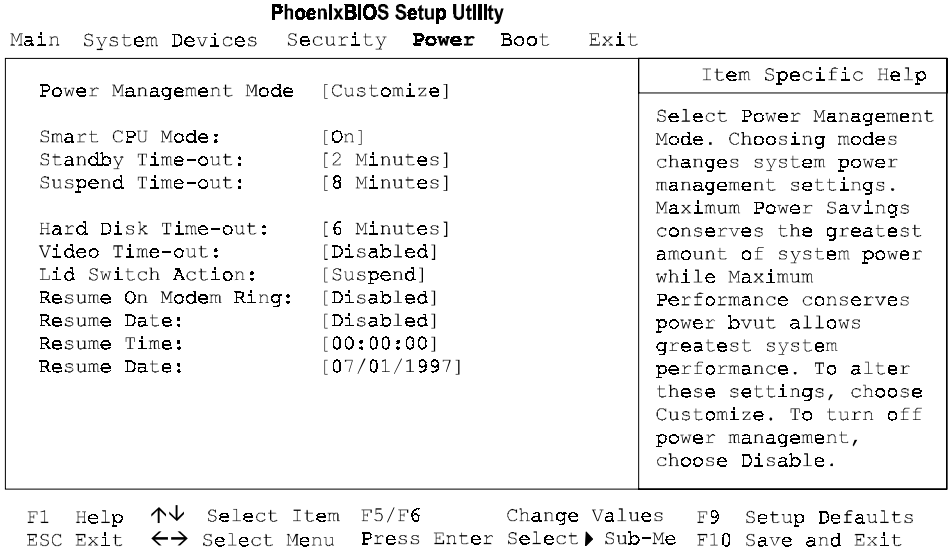


Figure 2-4: The Setup Power Menu

Field	Settings	Description
Power Management Mode		Sets the Power Management Mode.
	• Disabled	Disables all Power Management
	• Customized *	Allows you to customize the Power Management fields (Smart CPU Mode, Standby, Suspend Disk Time-out, Video Time-out) to suit your individual work needs.
	• Max. Power Savings	Power Management fields will be set with pre-defined values to ensure maximum battery run time.
	• Max. Performance	Power Management fields will be set with pre-defined values to provide best system performance with some power conservation.
Smart CPU Mode	• Off • On	If enabled, the CPU slows down during periods when the system is not busy thus conserving battery power.
Standby Time-out	• Disabled • 1, 2* Min. • 4 Min.	Indicates the amount of time the system needs to be idle before entering Standby mode. In order to make changes to this field, Power Management Mode must be set to Customize.
Suspend Time-out	• Disabled • 4, 8* Min. • 16 Min.	Indicates the amount of time the system needs to be idle before entering Suspend mode. Power Savings must be set to Customize in order to change these values.
Hard Disk Time-Out	• Disabled • 30 Seconds • 1 Min. • 2, 4, 6*, 8, 10, 15 Min.	Indicates the amount of time the hard disk needs to be inactive before it is turned off. In order to make customized changes to this field, Power Management Mode must be set to Customize.

*Default value.

Field	Settings	Description
Video Time-out	• Disabled* • 1 Min. • 2, 4, 6, 8, 10, 15 Min.	Indicates the amount of time input devices, such as the keyboard, need to be idle before the LCD is turned off.
Lid Switch Action	• Suspend* • CRT	Allows you to determine whether or not the system will suspend or switch to CRT display when the LCD is closed.
Resume on Modem Ring	• Disabled* • Enabled	If enabled, a modem ring will resume the system from suspend mode.
Resume Date	• Disabled* • Enabled	If enabled, the system will automatically resume from the Suspend Mode as defined by the Resume Time and Resume Date fields described below.
Resume Time	Enter resume time: hour, minute, second format.	Allows you to specify the time the system will resume. The Resume Date field above must be set to Enabled for the system to resume.
Resume Date	Enter resume date: month, day, year format.	Allows you to specify the date the system will resume. The Resume Date field above must be set to Enabled for the system to resume.

* Default value.

The Boot Menu

From this menu you can choose where the system looks to boot from. You can also prioritize the different boot devices.

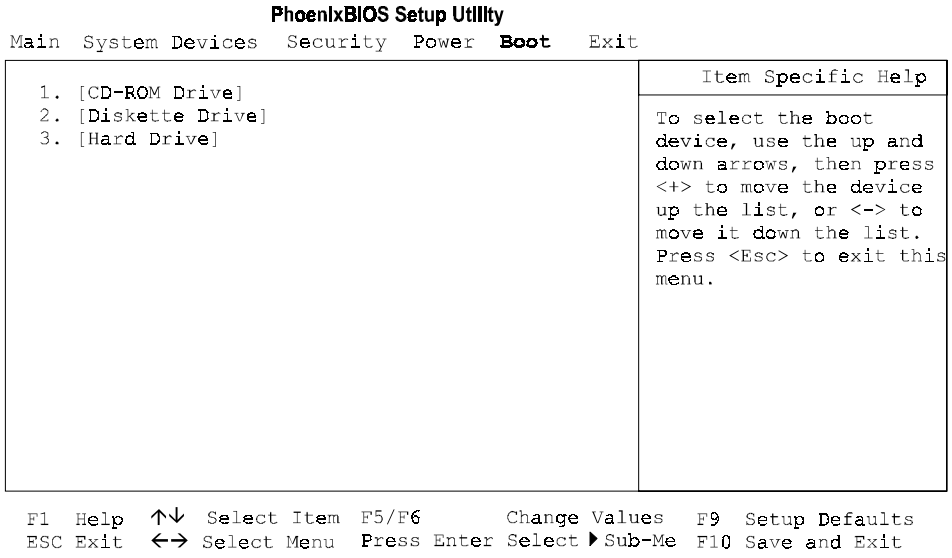


Figure 2-5: The Setup Boot Menu

Field	Description
1. [CD-ROM Drive] 2. [Diskette Drive] 3. [Hard Drive]	These fields allow you to define the order of devices in which the system looks for an OS. To change the order, move the highlighted cell to the field to be moved. Press F5 to move the field to a lower priority. Press F6 to move the field to a higher priority.

The Exit Menu

Enter the Exit Menu to save changes, set factory defaults or exit the Setup Program.

Field	Action	Description
Save Changes & Exit	<Enter>	Saves the current changes and exits the Setup Program.
Discard Changes & Exit	<Enter>	Discards the current changes and exits the Setup Program.
Get Default Values	<Enter>	Loads the factory default values for each of the fields in the Setup Program. To keep default values and exit the Setup Program, you must move the highlighted cell to the Save Changes & Exit field and press the <Enter> key.
Load Previous Values	<Enter>	Discards any changes made during the current BIOS configuration session, and loads the prior session's values. You cannot exit the BIOS through this field.
Saves Changes	<Enter>	Saves the changes made during the current BIOS configuration session. You cannot exit the Setup Program through this field.

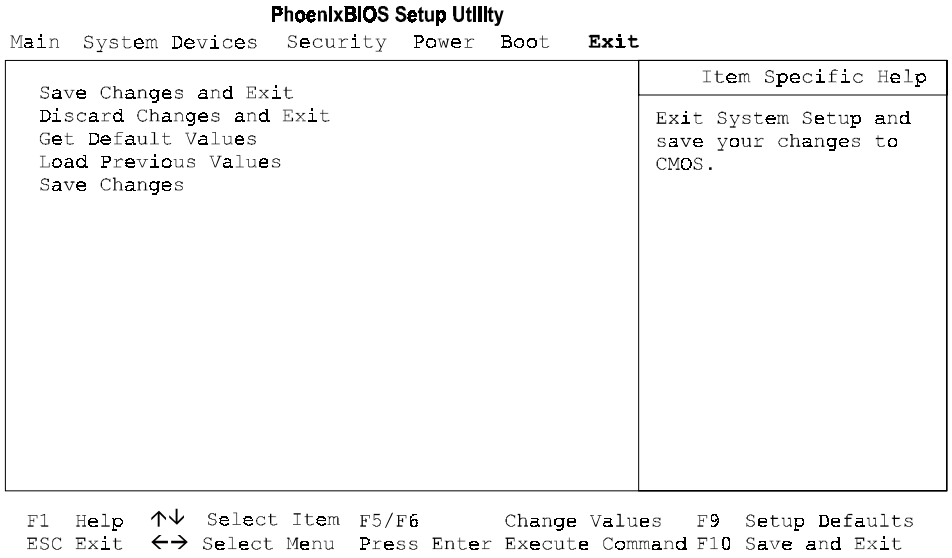


Figure 2-6: The Setup Exit Menu

3
Troubleshooting

This chapter provides a systematic method of isolating problems with the DIGITAL HiNote VP 700 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 to shut down the system (Figure 1-2) then power back on the system. 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. • 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 system operating on battery power. • The system starts POST then automatically shuts down.	• Check to ensure that there is ample charge remaining in the battery. If the battery is critically low, the system will automatically shut down.

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 could be experiencing a hang. Press the Reset button located on the back on the unit (Figure 1-2). 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.

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. • An external monitor is connected and working properly. • 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 signal cable is securely connected to the Motherboard. • Make sure that the LCD power cable is 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 and 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: • Pressing on the key doesn't have any effect. • Incorrect characters are displayed on the screen. • One stroke of a key produces too many characters on the screen.	• 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. • Make sure that the keyboard cable has not been damaged due to excessive bending and is securely connected into the keyboard connector. • Check the keyboard circuit. • Replace the keyboard and check again. • Replace the keyboard controller BIOS chip.

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 occur: • 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 occur: • 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 700 series notebook 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.	• Check to ensure that the FDD Controller option in the BIOS is enabled. • 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. • Check to make sure that the AC power supply (the AC adapter and AC adapter cord) are OK. If they are not supplying the correct voltage, it could damage the system.

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.

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	POST Routine Description
02h	Verify Real Mode.
03h	Disable Non-Maskable Interrupts.
04h	Get CPU type. Save CPU type in NVRAM.
06h	Initialize system hardware.
08h	Initialize chip set registers to the Initial POST Values.
09h	Set in-POST flag in CMOS.
0Ah	Initialize CPU registers
0Bh	Enable CPU cache.
0Ch	Set the initial POST values of the cache registers.
0Fh	Enable the local bus IDE.
10h	Initialize Power Management.
11h	Set initial POST values for other hardware devices defined in the register tables.
12h	Restore the contents of the CPU control word whenever the CPU is reset.
13h	Early reset of PCI devices required to disable bus master.
14h	Test 8742 keyboard controller.
16h	Verify that the ROM BIOS checksums to zero
17h	Initialize external cache before autosizing memory.
18h	8254 timers initialization.
1Ah	Initialize DMA command register.
1Ch	Initialize the 8259 interrupt controller.
20h	Verify that DRAM refresh is operating by polling the refresh bit in PORTB.
22h	Test 8742 Keyboard Controller.
24h	Set segment-register addressibility to 4 GB
28h	Autosize DRAM.
29h	Initialize the POST Memory Manager
2Ah	Zero the first 512K of RAM
2Ch	Test 512K base address lines
2Eh	Test first 512K of RAM.
2Fh	Initialize external cache before shadowing.
32h	Compute CPU speed.
34h	Test CMOS
35h	Load alternate registers with initial table values.
37h	Re-initialize chipset registers.
38h`	Shadow the system BIOS.
39h	Reinitialize the external cache.
3Ah	Autosize external cache.
3Ch	Load chipset registers with values from CMOS.
3Dh	Load alternate registers with CMOS values.
42h	Initialize interrupt vectors.
44h	Initialize BIOS interrupts.
46h	Verify the ROM copyright notice
47h	Initialize PCI Option ROM manager.

Code	POST Routine Description
48h	Check video configuration against CMOS.
49h	Initialize PCI bus and devices.
4Ah	Initialize all video adapters in system
4Ch	Shadow video BIOS ROM.
4Eh	Display copyright notice.
50h	Display CPU type and speed
51h	Initialize EISA slots.
52h	Test keyboard.
54h	Initialize keystroke clicker.
56h	Enable keyboard.
58h	Test for unexpected interrupts.
5Ah	Display prompt "Press F2 to enter SETUP"
5Bh	Disable CPU cache.
5Ch	Test RAM between 512K and 640K.
60h	Test extended memory.
62h	Test extended memory address lines.
64h	Jump to UserPatch1. See "The POST Component.".
66h	Set cache registers to their CMOS values if CMOS is valid, unless auto configuration is enabled, in which case load cache registers from the Setup default table.
68h	Enable external cache and CPU cache if present. Configure non-cacheable regions if necessary. NOTE: Hook routine must preserve DX, which carries the cache size to the DisplayCacheSizeJ routine.
6Ah	Display external cache size on the screen if it is non-zero. NOTE: Hook routine must preserve DX, which carries the cache size from the cacheConfigureJ routine.
6Ch	Display shadow message
6Eh	Display the starting offset of the non-disposable segment of the BIOS
70h	Check flags in CMOS and in the BIOS data area for errors detected during POST. Display error messages on the screen.
72h	Check status bits to see if configuration problems were detected. If so, display error messages on the screen.
74h	Verify the Real Time Clock is running if the battery has not lost power. If the RTC is not running or the battery has lost power then set the incorrect time bit in Register E of the CMOS. (**Obsolete in Rel. 6. Now perfomed by postSetInPostFlagJ**).
76h	Check status bits for keyboard-related failures. Display error messages on the screen.
7Ch	Initialize the hardware interrupt vectors from 08 to 0F and from 70h to 77H. Also set the interrupt vectors from 60h to 66H to zero.
7Eh	The Coprocessor initialization test. Use the floating point instructions to determine if a coprocessor exists instead of the ET bit in CR0.
80h	Disable onboard COM and LPT ports before testing for presence of external I/O devices..
81h	Run late device initialization routines.
82h	Test and identify RS232 ports
83h	Configure Fisk Disk Controller
85h	Display any ESCD read errors and configure all PnP ISA devices.
86	Initialize onboard I/O and BDA according to CMOS and presence of external devices.
87h	Initialize motherboard configurable devices.
89h	Enable non-maskable interrupts.
8Ah	Initialize Extended BIOS Data Area and initialize the mouse.
8Bh	Setup interrupt vector and present bit in Equipment byte.
8Ch	Initialize both of the floppy disks and display an error message if failure was detected. Check both drives to establish the appropriate diskette types in the BIOS data area.
8Fh	Count the number of ATA drives in the system and update the number in bdaFdiskcount.
90h	Initialize hard-disk controller. If the CMOS ram is valid and intact, and fixed disks are defined, call the fixed disk init routine to intialize the fixed disk system and take over the appropriate interrupt vectors.
91h	Configure the local bus IDE timing register based on the drives attached to it.
92h	Jump to UserPatch2. See "The POST Component".
93h	Build the MPTABLE for multi-processor boards
94h	Disable A20 address line.
95h	Check CMOS for CD-ROM drive. Activate CD-ROM drive

Code	POST Routine Description
96h	Reset segment-register addressibility from 4GB to normal 64K by generating a Shutdown 8.
97h	Create pointer to MP table in Extended BDA.
98h	Search for option ROMs. Rom scan the area from C800h for a length of BCP_ROM_Scan_Size (or to E000h by default) on every 2K boundry, looking for add on cards that need initialization.
9Ah	Shadow miscellaneous ROMs if specified by Setup and CMOS is valid and the previous boot was OK.
9Ch	Set up Power Management. Initiate power -management state machine.
9Dh	Initialize Security Engine.
9Eh	Enable hardware interrupts
9Fh	Check the total number of Fast Disks (ATA and SCSI) and update the bdaFdiskCount.
9Ah	Shadow miscellaneous ROMs.
A0h	Verify that the system clock is interrupting.
A2h	Setup Numlock indicator. Display a message if key switch is locked.
A4h	Initialize typematic rate
A8h	Overwrite the "Press F2 for Setup" prompt with spaces, erasing it from the screen.
AAh	Scan the key buffer to see if the F2 key was struck after keyboard interrupts were enabled. If an F2 keystroke is found, set a flag.

ACh	Enter SETUP.
	If (F2 was pressed)
	go to SETUP
	Else if (errors were found)
	display "Press F1 or F2" prompt
	if (F2 is pressed)
	go to setup
	else if (F1 is pressed)
	boot
	Else boot

AEh	Clear ConfigFailedBit and InPostBit in CMOS.

B0h	Check for errors.
	If (errors were found)
	beep twice
	display "F1 or F2" message
	if (F2 keystroke) go to SETUP
	if (F1 keystroke) go to BOOT

B2h	Change status bits in CMOS and/or the BIOS data area to reflect the fact that POST is complete.
B4h	One quick beep

B5h	Turn off <Esc> and <F2> key checking.
	IF (VGA adapter is present)
	IF (OEM screen is still up)
	Note OEM screen is gone.
	Fade out OEM screen.
	Reset video: clear screen, reset cursor, reload DAC.
	ENDIF
	ENDIF

B6h	If password on boot is enabled, a call is made to Setup to check password. If the user does not enter a valid password, Setup does not return.
B8h	Clear global descriptor table
B9h	Clear all screen graphics before booting.
BAh	Initialize the DMI header and sub-structures.
BCh	Clear parity-error latch
BDh	Display Boot First menu if MultiBoot is installed.
BEh	If BCP option is enabled, clear the screen before booting.
BFh	Check virus and backup reminders. Display System Summary.
C0h	Try to boot with INT 19
C1h	Initialize the Post Error Manager.
C2h	Write PEM errors.
C3h	Display PEM errors.

4
Parts Replacement

This chapter provides detailed procedures for replacing the DIGITAL HiNote VP 700 Series notebook computer Field Replaceable Units (FRUs). Unless otherwise noted the replacement procedures for the FRUs are the reverse of the removal procedures.

Required Tools

You will need the following tools to remove and replace the DIGITAL HiNote VP 700 series FRUs:

- #0 and #1 Phillips-head Screwdrivers
- 3/16 inch Nut Driver
- 7/32 or 6mm Nut Driver
- Tweezers

Removing the Main Battery Pack

Save your data, close all applications and turn off the notebook before disconnecting AC power and removing the main battery pack. To remove the main battery pack, refer to the following instructions.

1. Slide the locking button in the direction of the arrow shown. (Figure 4-1, step 1) This will unlock the Module Release latch.
2. Slide the Module Release latch in the direction of the arrow shown. (Figure 4-1, step 2) The battery will eject approximately a quarter of an inch from its bay.
3. Slide the battery module out of its bay. (Figure 4-1, step 3)

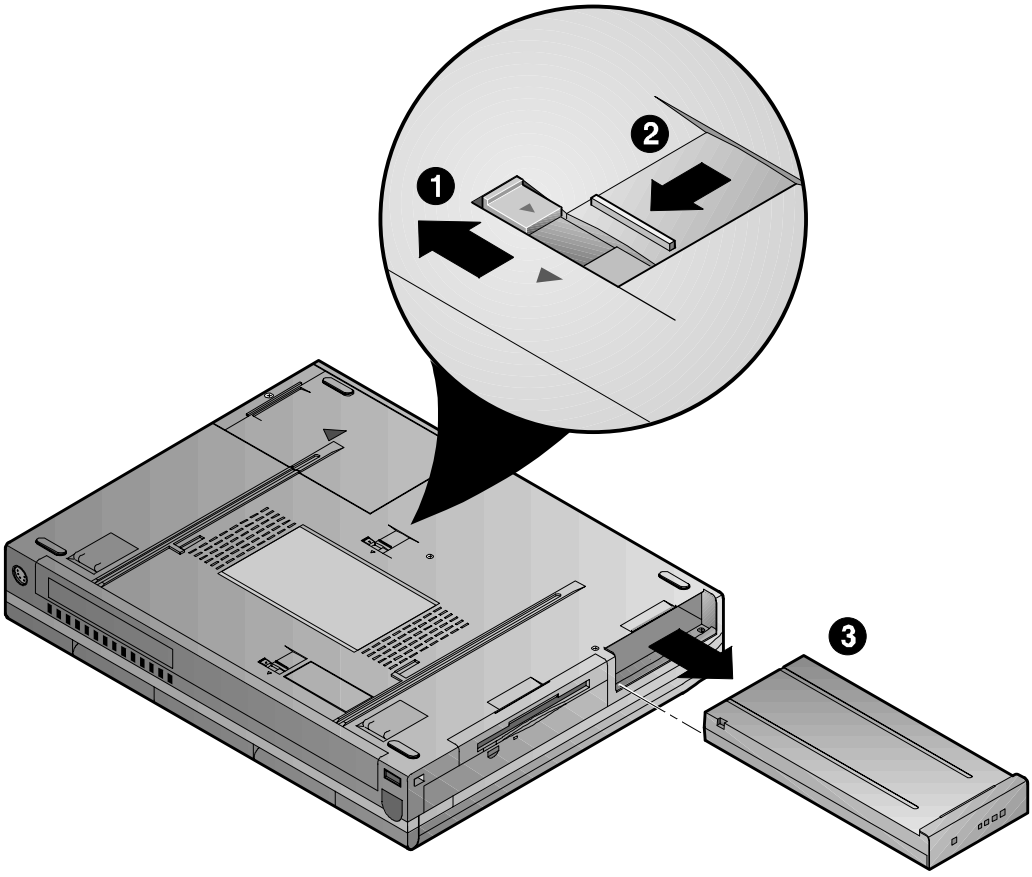


Figure 4-1: Removing the Main Battery

Removing 20X CD-ROM/FDD Combination Module

For step by step information on removing any one of the modules from the expansion bay, please refer to the following:

1. Slide the locking button in the direction of the arrow shown. (Figure 4-2, step 1) This will unlock the Module Release latch.
2. Slide and hold the Module Release latch in the direction of the arrow shown. (Figure 4-2, step 2)

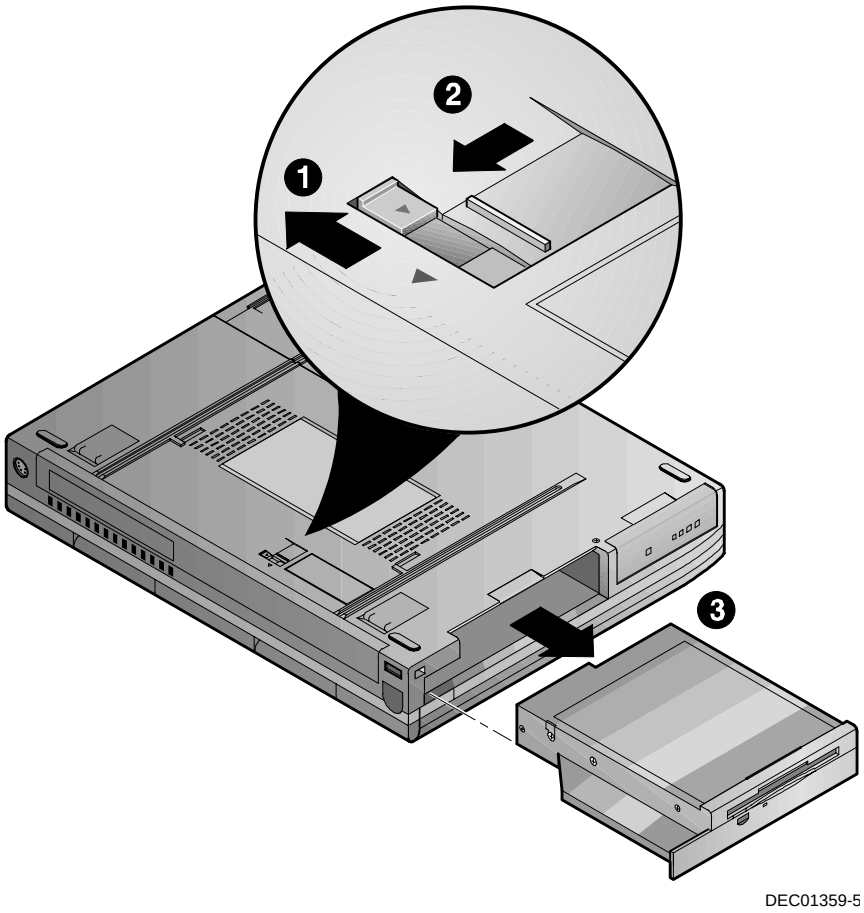


Figure 4-2: Removing a Module from the Expansion bay

3. Holding the Module Release latch in this position, slide the module out of the expansion bay. (Figure 4-2, step 3)
4. Install the desired module. Move the locking button back to its original position.

Removing the HDD

Eventually you may find that your notebook's HDD space is limiting and you wish to upgrade to a larger capacity. Please contact your Digital authorized notebook dealer for purchasing information. The installation of an additional HDD is relatively simple. Please refer to figure 4-3.

1. Turn off the notebook, disconnect the AC cord and any connected peripherals and remove the battery.
2. There is a single Phillips head screws located on the bottom of the notebook. It secures the HDD into the unit and prevents it from being damaged from vibrations. Remove this screw. (Figure 4-3, step 1)

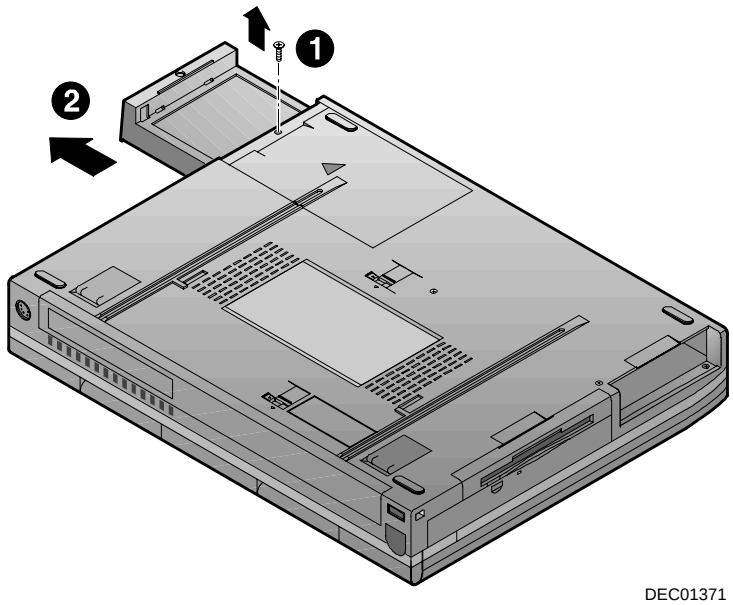


Figure 4-3: Removing the HDD

3. Gently remove the HDD from its housing. (Figure 4-3, step 2)
4. Store your HDD in a safe, dry place away from direct sunlight or heat.

Removing the Speaker Cover

To remove the speaker cover:

1. Turn off the notebook, disconnect the AC cord and any connected peripherals and remove the battery.
2. Remove the 20X CD-ROM Combination Module or Secondary Battery.
3. Remove the two hinge end caps by sliding them ¼ inch toward the outside the system unit and then up. (Figure 4-4)
4. Open the LCD Display and remove the speaker cover by lifting both ends of the cover until free. (Figure 4-5) Then run your thumbs along the inside edge towards the center of the cover to release the two inner tabs.

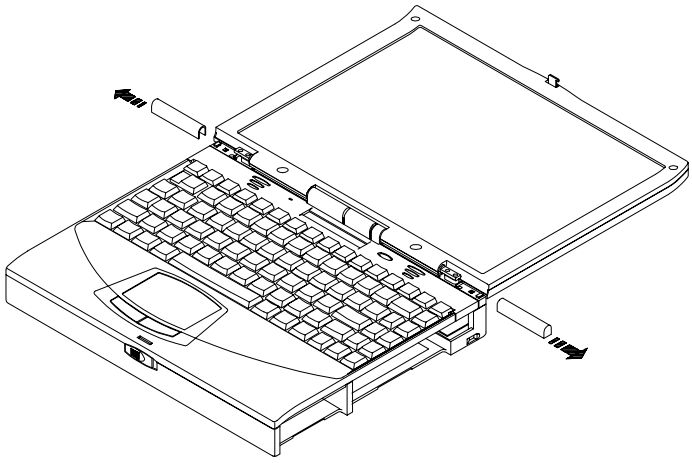


Figure 4-4: Removing the Hinge Covers

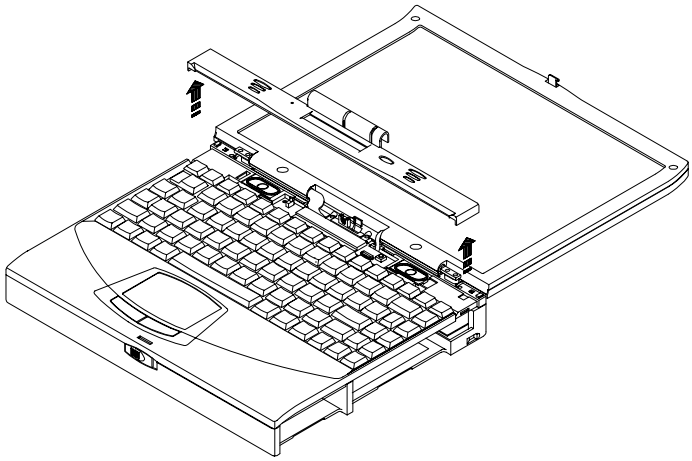


Figure 4-5: Removing the Speaker Cover

Removing the Keyboard

To remove the keyboard:

1. Turn off the notebook, disconnect the AC cord and any connected peripherals and remove the battery.
2. Remove the speaker cover. (Figure 4-5)
2. Remove the two screws securing the keyboard to the deck. (Figure 4-6)
3. Carefully lift the top of the keyboard up and rotate it toward the touch pad.

Caution

Be careful not to damage the flat cables that connect the keyboard to the notebook computer.

4. Using a bent paper clip or similar device, release the keyboard cable from the connector by lifting the connector head. Then slide the cable out of the connector. (Figure 4-6)

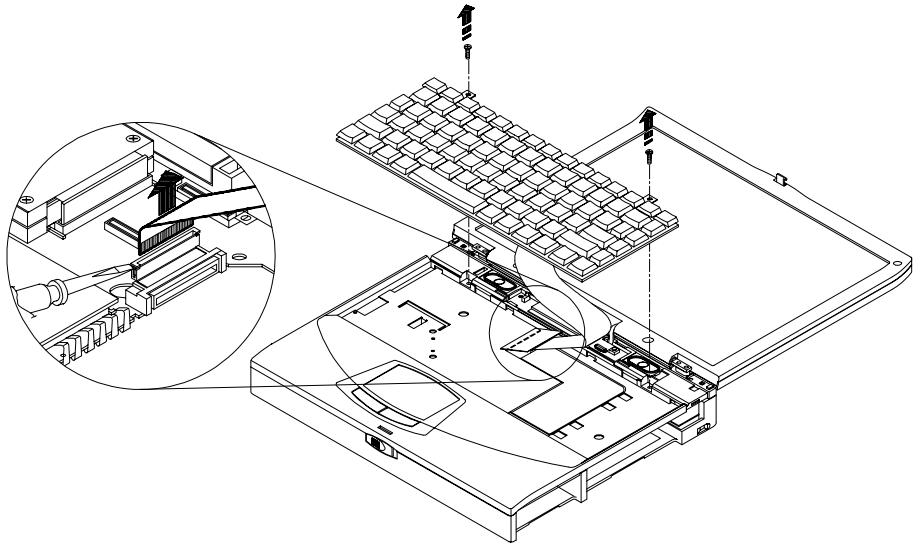


Figure 4-6: Removing the Keyboard

Removing the CPU Heatsink

To remove the CPU heatsink:

1. Turn off the notebook, disconnect the AC cord and any connected peripherals and remove the battery.
2. Remove the speaker cover. (Figure 4-5)
3. Remove the keyboard. (Figure 4-6)
4. Remove the two outer screws from the heatsink. (Figure 4-7)
5. Lift the bottom edge of the heatsink and pull toward the front of the unit and up to remove.

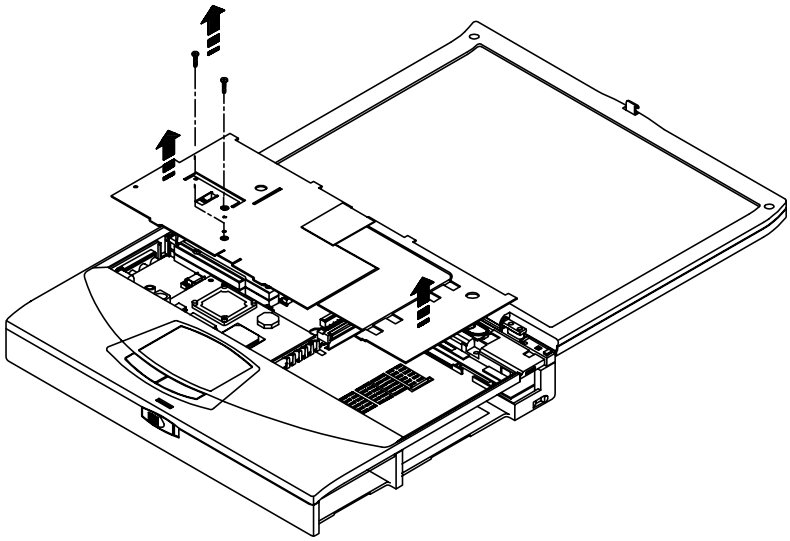


Figure 4-7: Removing the CPU Heatsink

Removing the LCD Assembly

To remove the LCD assembly:

1. Turn off the notebook, disconnect the AC cord and any connected peripherals and remove the battery.
2. Remove the 20X CD-ROM Combination Module or Secondary Battery. (Figure 4-2)
3. Open the LCD panel and remove the speaker cover. (Figure 4-5)

4. Remove the screw that secures the LCD status module to the keyboard deck and disconnect the system window and IR cables. (Figure 4-8)

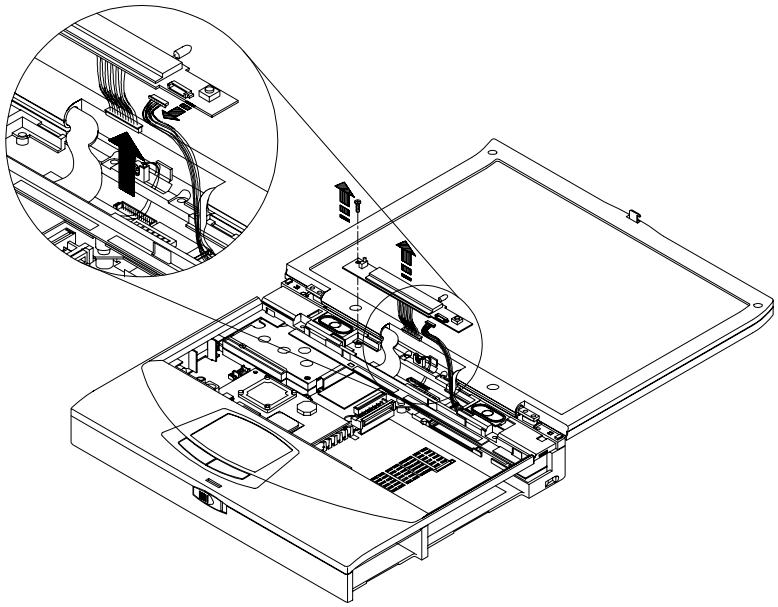


Figure 4-8: Removing the LCD Status Display Board

5. On 13.0" LCD models, disconnect the LCD signal cable from the Inverter/LVDS board by removing the two screws and lifting the connector board.
   On 13.3" LCD models, remove the screw that secures the LCD signal cable ground then disconnect the LCD signal cable from its connector on the Inverter/LVDS board. (Figure 4-9)
6. Disconnect the LCD power cable from the Inverter/LVDS board. (Figure 4-9)
7. Remove the four hinge screws. (Figure 4-9)

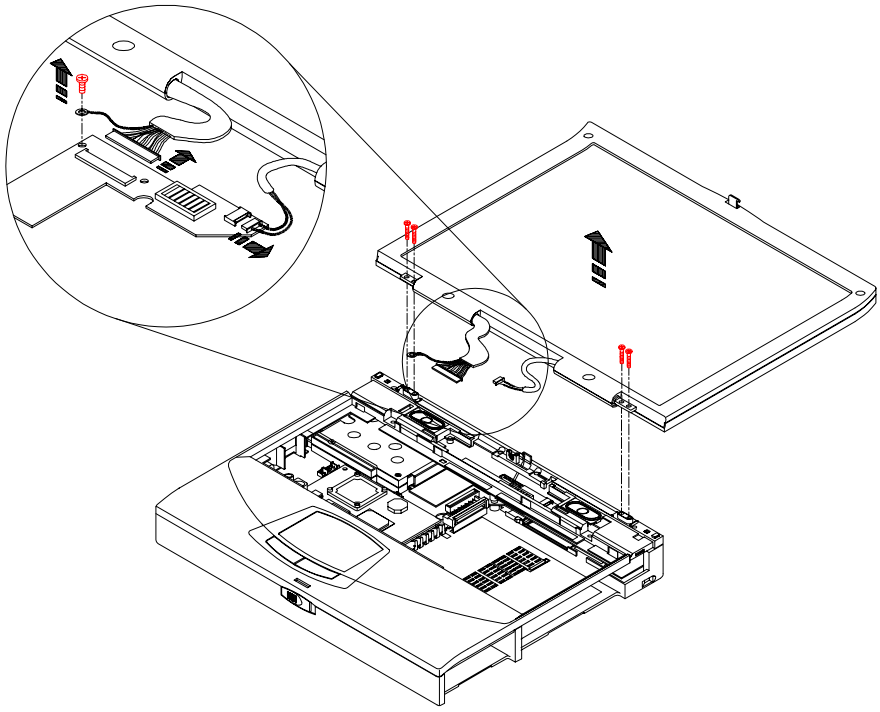


Figure 4-9: Removing the LCD Assembly

Removing the Keyboard Deck

To remove the Keyboard Deck:

1. Turn off the notebook, disconnect the AC cord and any connected peripherals and remove the battery.
2. Remove the 20X CD-ROM Combination Module or Secondary Battery. (Figure 4-2)
3. Remove the speaker cover. (Figure 4-5)
4. Remove the keyboard. (Figure 4-6)
5. Remove the CPU heatsink. (Figure 4-7)
6. Remove the LCD assembly. (Figure 4-8, Figure 4-9)

7. Remove the five screws in the bottom of the unit. Two of the screws are located in the HDD and Main Battery guide frame. (Figure 4-10)

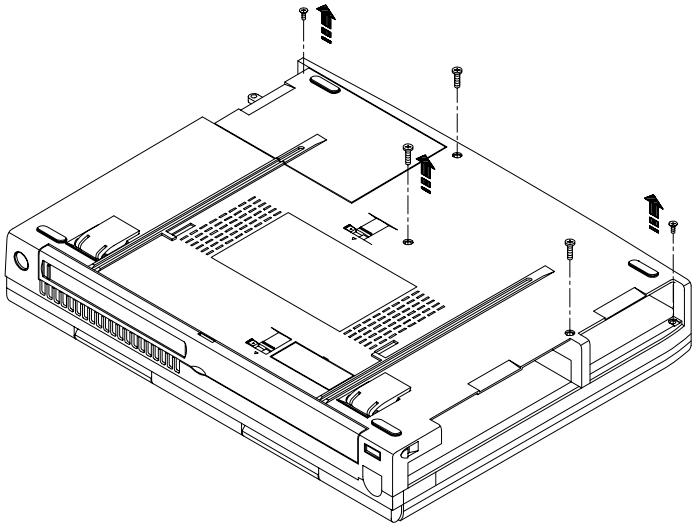


Figure 4-10: Removing the Keyboard Deck Bottom Screws

8. Turn the unit over and remove the four screws across the back edge of the keyboard deck. Then remove the two screws that secure the keyboard deck to the system board. One is located directly in front of the internal mic and the other is located in the lower left hand corner of the keyboard frame. (Figure 4-11)

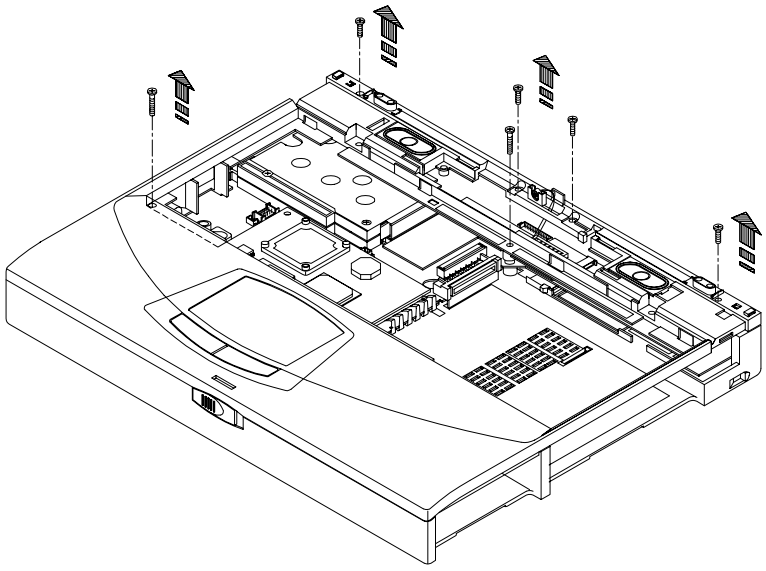


Figure 4-11: Removing Keyboard Deck Top Screws

9. Disconnect the speaker cable assembly from its system board connector located to the left of the MMO module. (Figure 4-12)

10. Remove the Keyboard Deck by releasing the catches as shown (Figure 4-12) and lift the Keyboard Deck off the system housing (Figure 4-13).

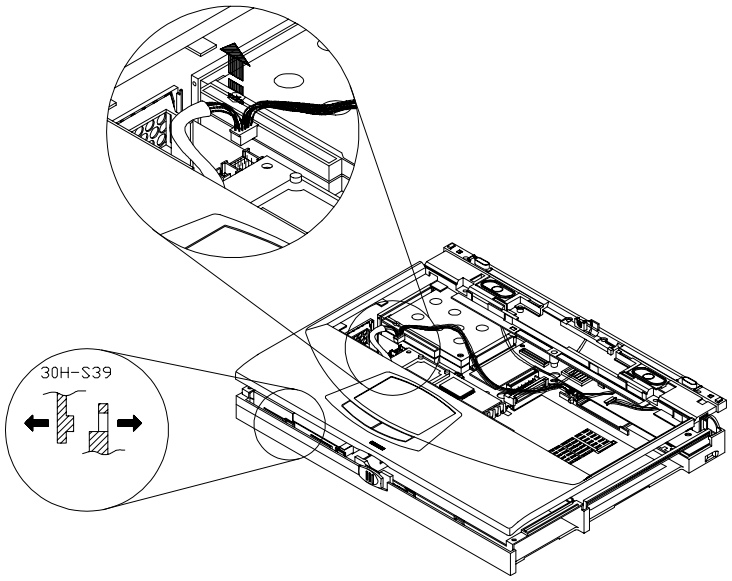


Figure 4-12: Separating Deck and Housing

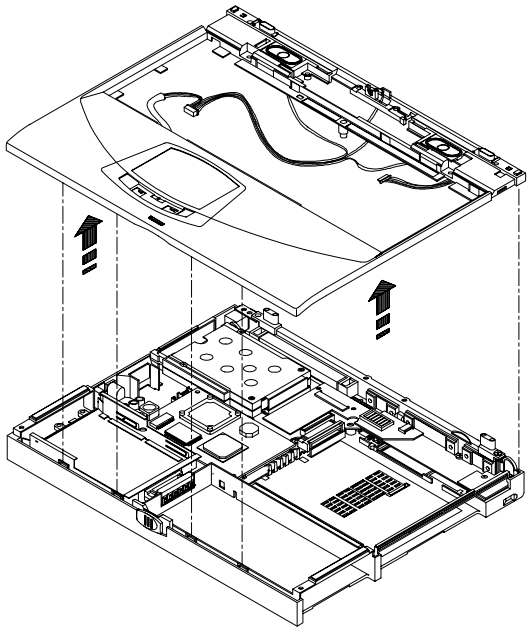


Figure 4-13: Lift the Keyboard Deck

Note

All of the following disassembly instructions assume that the Keyboard Deck has been removed.

Removing the MMO Module

To remove the MMO Module:

1. Remove the Keyboard Deck.
2. Remove the three screws that secure the MMO module to the system board. (Figure 4-14)
3. Pull the MMO module away from its connectors.

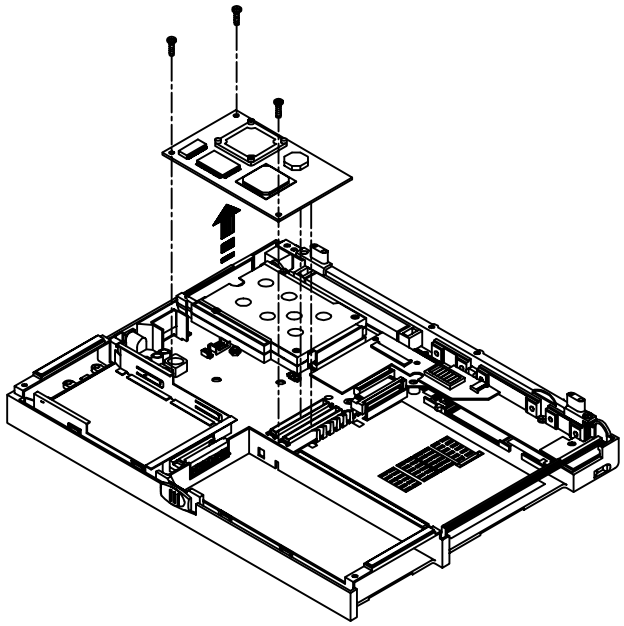


Figure 4-14: Removing the MMO Module

Removing the Inverter/LVDS Board

To remove the Inverter/LVDS Board:

1. Remove the Keyboard Deck.
2. On 13.3" LCD models, remove the screw that secures the Inverter/LVDS board to the system board. (Figure 4-15)
3. Lift the Inverter/LVDS board away from its system board connectors. (Figure 4-15)

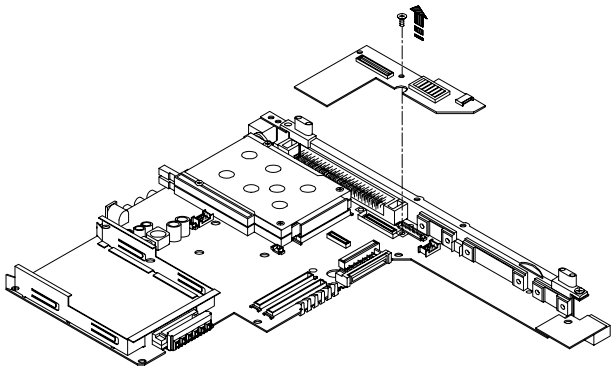


Figure 4-15: Removing LVDS/Inverter Board

Removing the USB Board

To remove the USB Board:

1. Remove the Keyboard Deck.
2. Remove the screw that secures the USB Board to the system board. (Figure 4-16)
3. Lift the card away from the system board. (Figure 4-16)

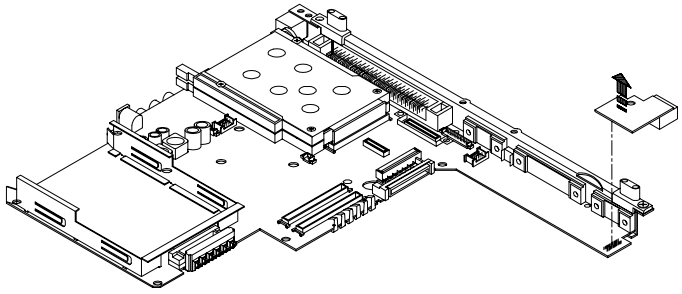


Figure 4-16: Removing the USB Board

Removing the System Board

To remove the System Board:

1. Remove the Keyboard Deck.
2. Remove the MMO module. (Figure 4-14)
3. Remove the Inverter/LVDS board. (Figure 4-15)
4. Remove the USB Board. (Figure 4-16)

5. Remove the screw located at the top middle of the system board. (Figure 4-17)
6. Remove the screw that secures the system board to the housing in the lower left hand corner. (Figure 4-17)
7. Remove the three hex screws that are located around the MMO module connector. (Figure 4-17)
8. Lift the front of the system board so that it clears the housing and pull it towards the front of the unit. Note that there is a fan socket that that fits over the audio jack. It may fall off.

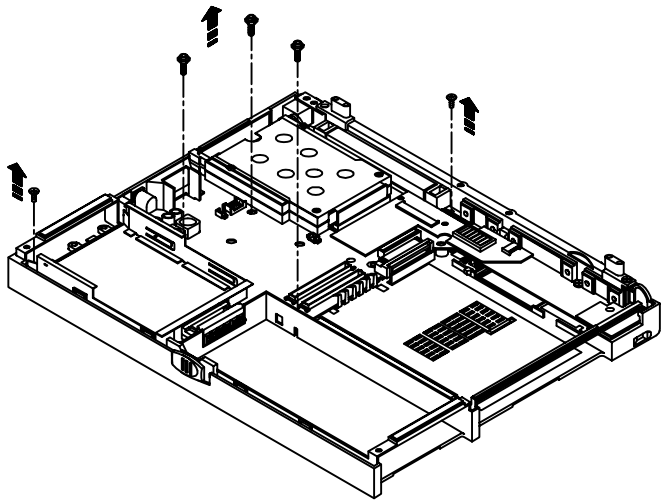


Figure 4-17: Removing the System Board

Removing the Audio Board

To remove the Audio Board:

1. Remove the Keyboard Deck.
2. Remove the MMO module. (Figure 4-14)
3. Remove the Inverter/LVDS board. (Figure 4-15)
4. Remove the USB Board. (Figure 4-16)
5. Remove the system board. (Figure 4-17)
6. The Audio Board is located under the System Board. Turn System Board over.
7. Lift the Audio Board away from the System Board. (Figure 4-18)

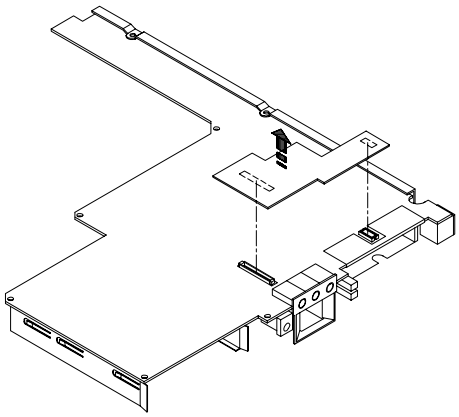


Figure 4-18: Removing the Audio Board

Removing the Cardbus Assembly

To remove the Cardbus Assembly:

1. Remove the Keyboard Deck.
2. Remove the MMO module. (Figure 4-14)
3. Remove the Inverter/LVDS board. (Figure 4-15)
4. Remove the USB Board. (Figure 4-16)
5. Remove the system board. (Figure 4-17)
6. Remove the four screws that hold the Cardbus Assembly to the system board. (Figure 4-19)
7. Remove the Cardbus Assembly from the system board.

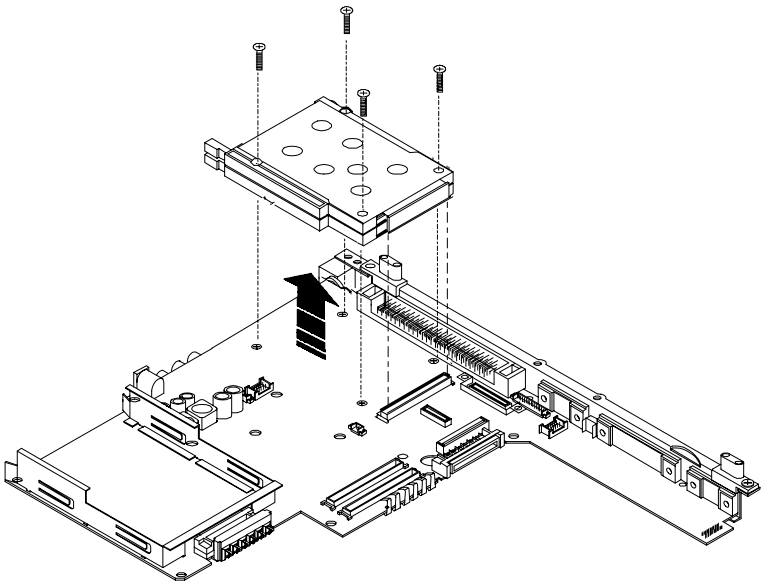


Figure 4-19: Disconnecting PC Card Assembly

Removing the Touch Pad Button Board

To remove the Touch Pad Button Board:

1. Remove the Keyboard Deck.
2. Remove the HDD heatsink by removing the four screws that secure it to the Keyboard Deck. (Figure 4-20)
3. Remove the screw that secure the Touch Pad Button Board and slide the board out of its slot.
4. Disconnect the Touch Pad Button Board from the speaker cable assembly. (Figure 4-21)
5. Disconnect the Touch Pad flat cable from the Touch Pad Button Board. (Figure 4-21).

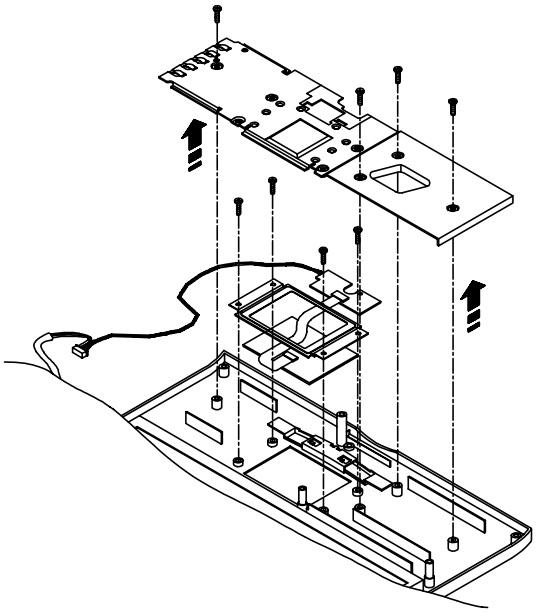


Figure 4-20: Removing the Touchpad Assembly

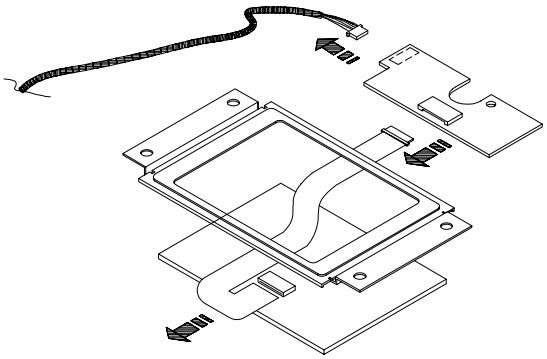


Figure 4-21: Disconnecting the Touchpad Button Board

Removing the Touch Pad Board

To remove the Touch Pad Board:

1. Remove the Keyboard Deck.
2. Remove the HDD heatsink by removing the four screws that secure it to the Keyboard Deck. (Figure 4-20)
3. Remove the four screws that secure the Touch Pad Board bracket. (Figure 4-20)
4. Disconnect the Touch Pad flat cable from the Touch Pad Button Board. (Figure 4-21)
5. Remove the bracket and remove the Touch Pad board.

Removing the IR Board

To remove the IR Board:

1. Remove the Keyboard Deck.
2. Remove the screw that secures the IR board to the Keyboard Deck and lift. (Figure 4-22)

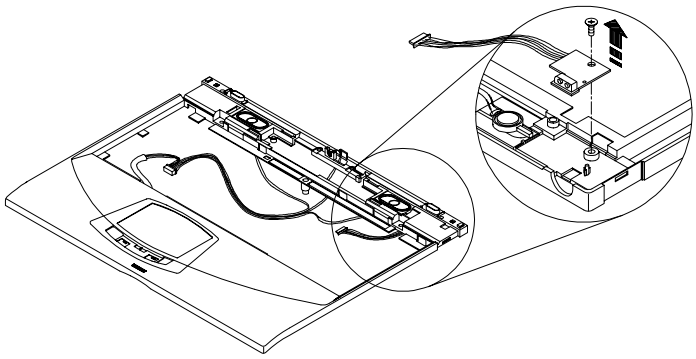


Figure 4-22: Removing the IR Board

Note

The following disassembly instructions assume that the LCD assembly has been disconnected from the Keyboard Deck.

Disassembling the LCD Assembly

The notebook supports 13.0 and 13.3" LCD assemblies. The disassembly procedure for each LCD is fundamentally the same.

Removing the LCD Display Bezel

To remove the LCD Display Bezel refer to the following instructions and figure 4-23 and figure 4-24.

1. Remove the LCD assembly.
2. Remove the two fillers on the lower section of the LCD Display Bezel.
3. Remove the two screws that secure the LCD Display Bezel to the LCD housing.
4. Grasp the bottom of bezel from the inside edge and carefully pull towards the outside to release the catches. Carefully separate the bezel from the housing.

a) Release the lower right corner of the bezel.

b) Release the lower left corner of the bezel.

c) Carefully separate the rest of the bezel by working your fingers around the inside of the bezel.

Caution

Be careful when removing the bezel. Excessive pressure can cause the bezel to crack.

Removing the LCD Panel

To remove the LCD Panel refer to the following instructions and figures 4-23 and 4-24.

1. Remove the LCD Assembly .
2. Remove the LCD Bezel as described in the preceding section.
3. Remove the four screws (two on each side) that secure the panel to the housing.
4. Lift the top of the panel upright and disconnect the LCD display cable from its panel connector.
5. Disconnect the panel power cable from the motherboard extension cable
6. TFT only. Remove the screw that secures the panel grounding cable to the housing.
7. Remove the LCD Panel.

Note

When re-assembling the LCD assembly, ensure that the power and signal cables are routed properly through the notches provided in the housing hinges so as not to be pinched.

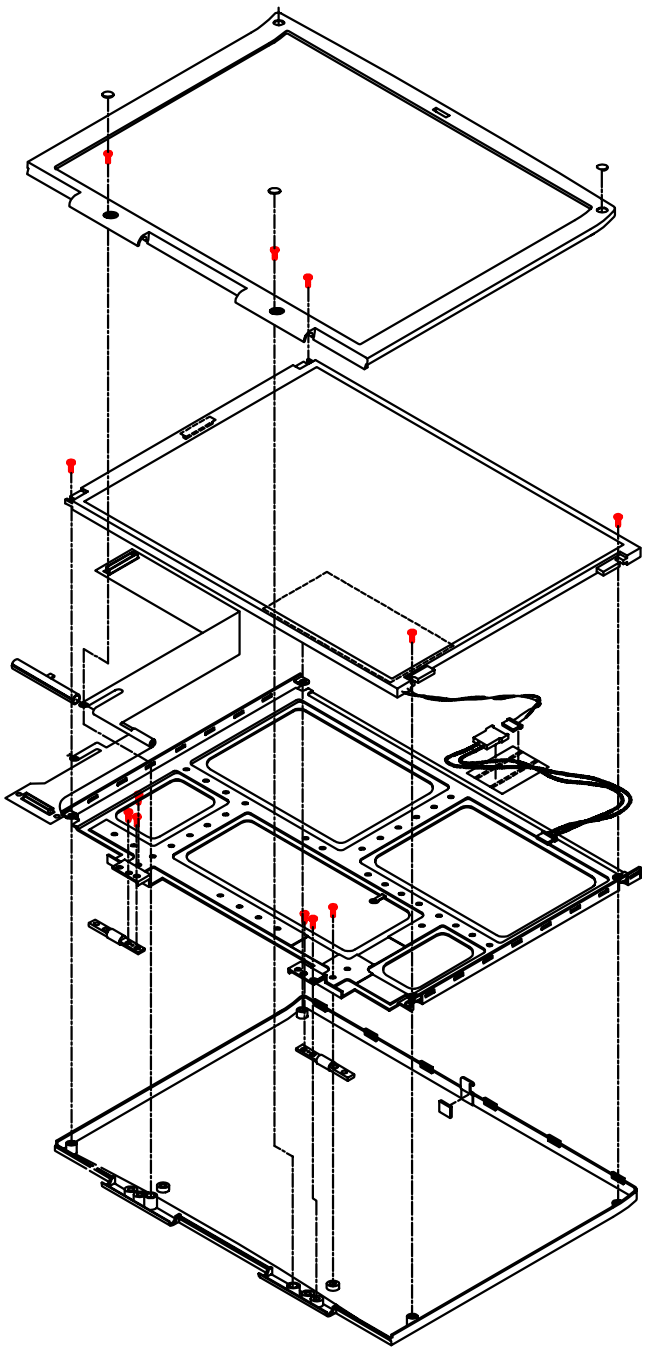


Figure 4-23: 13.0" LCD Disassembly

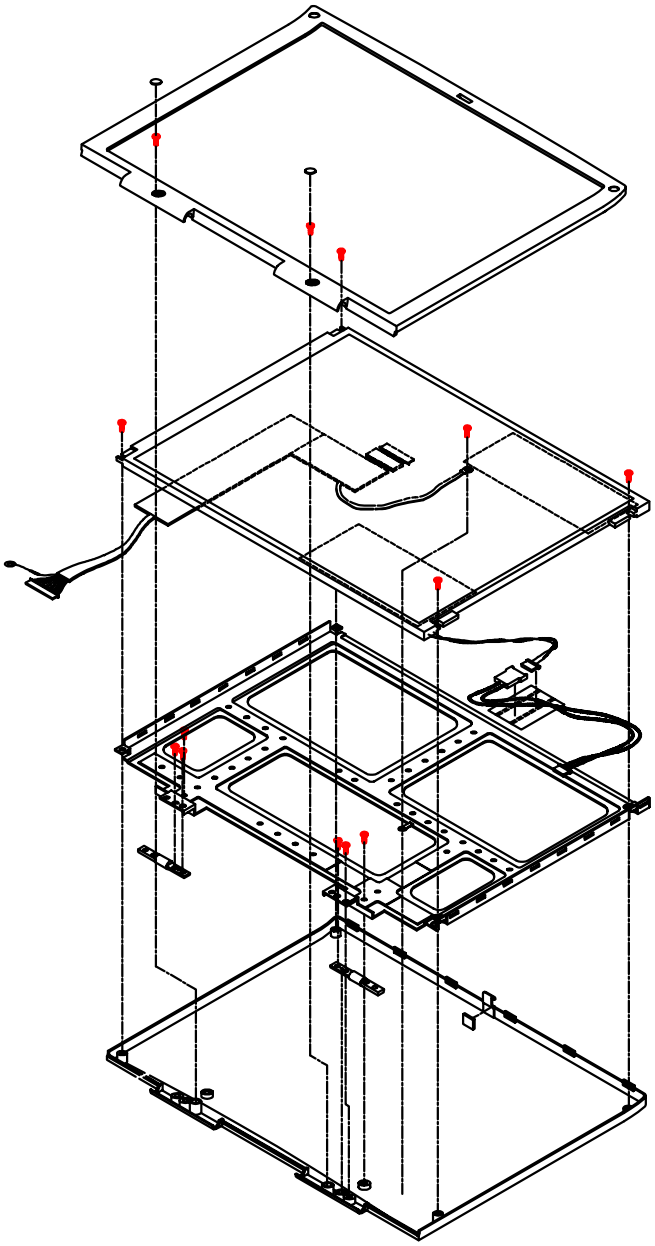


Figure 4-24: 13.3" LCD Disassembly

Detailed System Assembly Overview

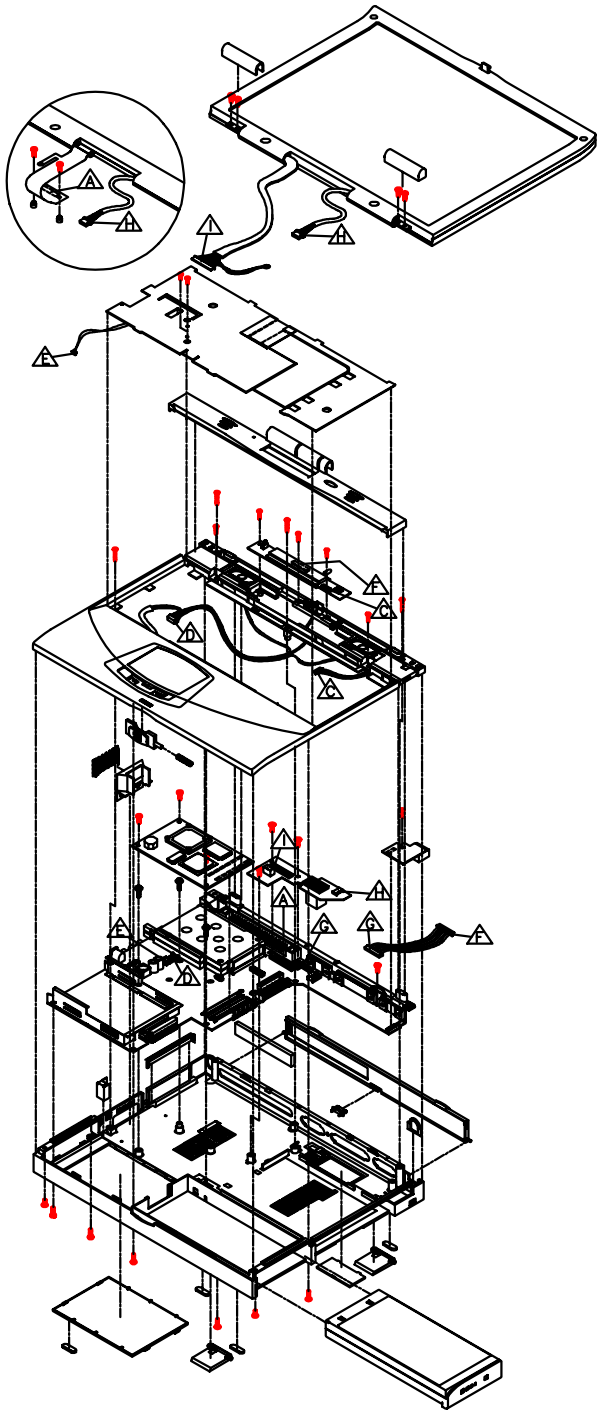


Figure 4-25: Detailed System Assembly

5
Part Numbers

This chapter contains a listing of the orderable parts and options for the DIGITAL HiNote VP 700 series notebook computer.

Spare Parts Listing

This section contains a listing of orderable spare parts.

LCD Display (including Bezel, Housing, & Panel)

Orderable Spare Part	Compal P/N	Description
30-49025-01	7102301A03U	Assy, LCD Display 13.0", DSTN Sanyo
30-49026-01	7102301A04S	Assy, LCD Display 13.3", TFT NEC
30-49208-01	7102301A05Q	Assy, LCD Display 13.3", TFT IBM

Display Bezels

Orderable Spare Part	Compal P/N	Description
30-49028-01	7102321A01M	LCD Display Bezel, 13.0"
30-49029-01	7102321A02V	LCD Display Bezel, 13.3"

LCD Housings

Orderable Spare Part	Compal P/N	Description
30-49209-01	7102331A03M	Assy, Housing Display Cover, 13.0", Sanyo
30-49031-01	7102331A04L	Assy, Housing Display Cover, 13.3", NEC
30-49210-01	7102331A05U	Assy, Housing Display Cover 13.3", IBM

LCD Panels

Orderable Spare Part	Compal P/N	Description
30-49032-01	7102341A03S	LCD Panel, 13.0", Sanyo (LM-GD53)
30-49033-01	7102341A04Q	LCD Panel, 13.3", NEC (NL102768BC26)
30-49035-01	7102341A05N	LCD Panel, 13.3", IBM (ITXG70M)

MMO Modules

Orderable Spare Part	Compal P/N	Description
30-49037-01	7102361A01V	MMO Module, 166MHz/MMX/L2 256KB/INTEL
30-49039-01	7102361A03R	MMO Module, 233MHz/MMX/L2 512KB/INTEL

Expansion Modules

Orderable Spare Part	Compal P/N	Description
30-49167-01	7102591A02U	FDD Module 1.44MB (Citizen)
30-49068-01	7102621A01M	Combo Module (CD-ROM/FDD), HiNote VP7h
30-49069-01	7102631A01S	CD-ROM, 20X (Sanyo)

Inverter Boards

Orderable Spare Part	Compal P/N	Description
30-49218-01	7102521A01U	Inverter Board w/o LVDS 13.0", Sanyo
30-49219-01	7102531A01N	Assy, Inverter/LVDS Board, 13.3", NEC
30-49220-01	7102531A02M	Assy, Inverter/LVDS Board, 13.3", IBM

Motherboards

Orderable Spare Part	Compal P/N	Description
30-49036-01	7102351A01Q	Assy, MLB 16MB, NM2160 (w/o CPU/L2)

Cables

Orderable Spare Part	Compal P/N	Description
30-49041-01	7102381A01L	Assy, Cable, LCD FPC, 13.0" DSTN Sanyo
30-49042-01	7102381A01U	Assy, Cable, LCD FPC, 13.3" TFT
30-49211-01	7102371A03L	Cable, LCD FPC, 13.0" DSTN Sanyo
30-49212-01	7102851A01N	Cable, Wafer Connector Set, 13.0", 13.3"
30-49213-01	7102861A01T	Cable, Wire, LCD, 13.3" NEC (LVDS Bd-LCD)
30-49214-01	7102771A01U	Cable for Inverter Board
30-49215-01	7102780A01N	Cable for IR Board
30-49216-01	7102791A01T	Cable for System Window

Keyboards

Orderable Spare Part	Compal P/N	Description
30-49080-01	n/a	Keyboard, Blank, HiNote VP7h
30-49081-01	7102651A02P	Keyboard, US/American, HiNote VP7h
30-49082-01	7102651A03M	Keyboard, UK/British, HiNote VP7h
30-49083-01	7102651A05L	Keyboard, Japanese, HiNote VP7h
30-49084-01	7102651A05U	Keyboard, French, HiNote VP7h
30-49085-01	7102651A06S	Keyboard, German, HiNote VP7h
30-49086-01	7102651A07Q	Keyboard, Italian, HiNote VP7h
30-49087-01	7102651A08N	Keyboard, Spanish, HiNote VP7h
30-49088-01	7102651A09M	Keyboard, Danish, HiNote VP7h
30-49089-01	7102651A10Q	Keyboard, Swed/Finn (Suomi), HiNote VP7h
30-49090-01	7102651A11N	Keyboard, Swiss, HiNote VP7h

Orderable Spare Part	Compal P/N	Description
30-49091-01	7102651A12M	Keyboard, Norwegian, HiNote VP7h
30-49092-01	7102651A13V	Keyboard, FR/Canadian, HiNote VP7h
30-49093-01	7102651A14T	Keyboard, Belgian, HiNote VP7h
30-49094-01	7102651A15R	Keyboard, Portuguese, HiNote VP7h
30-49095-01	7102651A16P	Keyboard, Turkish, HiNote VP7h
30-49096-01	7102651A17M	Keyboard, Russian, HiNote VP7h
30-49097-01	7102651A18L	Keyboard, Hebrew, HiNote VP7h
30-49098-01	7102651A19U	Keyboard, Thia, HiNote VP7h
30-49099-01	7102651A20M	Keyboard, Chinese, HiNote VP7h
30-49118-01	7102651A21L	Keyboard, Arabic, HiNote VP7h

Hard Drives

Orderable Spare Part	Compal P/N	Description
30-49066-01	7102601A01N	Assy, HDD Bracket/Cable (w/o HDD)
30-48530-01	7102691A01P	HDD, 2.1GB, 2.5” x .5” H (Toshiba - MK2103MAV)
30-48531-01	7102691A02M	HDD, 2.1GB, 2.5” x .5” H (IBM - DTNA-22160)
30-49043-01	7102691A03L	HDD, 3.0GB, 2.5” x .5” H (IBM - DTCA-23240)
30-49044-01	7102691A04U	HDD, 3.0GB, 2.5” x .5” H (Toshiba)
30-49045-01	7102691A05S	HDD, 4.0GB, 2.5” x .5” H (IBM - DTCA-24090)
30-49221-01	7102701A01S	HDD, 2.1GB, 2.5” x .5” H (Toshiba)*
30-49222-01	7102701A02Q	HDD, 2.1GB, 2.5” x .5” H (IBM)*
30-49046-01	7102701A03N	HDD, 3.0GB, 2.5” x .5” H (IBM)*
30-49047-01	7102710A04M	HDD, 3.0GB, 2.5” x .5” H (Toshiba)*
30-49048-01	7102710A05V	HDD, 4.0GB, 2.5” x .5” H (IBM)*
74-52746-01	7102711A01M	HDD Holder, Plastic

*Packaged with 30-49066-01 attached.

Trackpad

Orderable Spare Part	Compal P/N	Description
30-49058-01	7102491A01S	Assy, Trackpad Button Board w/ cable
30-47934-01	7102581A01R	Trackpad Board

Audio, IR, USB

Orderable Spare Part	Compal P/N	Description
30-49059-01	7102501A01V	Assy, Audio Board
30-49060-01	7102501A02T	Assy, Audio Board w/ Wavetable
30-49118-01	7102841A01U	IR Lens
30-49062-01	7102541A01T	Assy, IR Board w/o cable
30-49065-01	7102571A01M	USB Board

Housings, Heatsinks, Doors, Miscellaneous Parts

Orderable Spare Part	Compal P/N	Description
30-49050-01	7102421A01Q	Feet, Rubber
30-49051-01	7102431A01V	Assy, Deck, Keyboard
30-49052-01	7102441A01P	Assy, Housing, Lower Logic
30-49055-01	7102461A01N	Assy, Display Latch w/spring
30-49056-01	7102471A01T	Assy, CardBus Connector
30-49057-01	7102481A01M	Assy, LCD Status Module w/o cable
30-49217-01	7102411A01L	Bumper, Rubber 13.0"/13.3"
30-49063-01	7102551A01M	Door I/O
30-49064-01	7102561A01S	Assy, Memory Door
30-49233-01	7102681A01V	PCMCIA Spring
70-33392-01	7102641A01M	Thermal Heatsink Plate, HiNote VP7h
74-52736-01	7102661A01L	Tilt Leg (L/R)
74-52737-01	7102671A01Q	Assy, PCMCIA Louvre Door
74-52747-01	7102611A01T	Assy, Speaker Cover
30-49201-01		PS/2 Y Cable, HiNote Series
74-52748-01	7102721A01R	Plastic, PCMCIA Plate (Arm)
74-52751-01	7102731A01L	Plastic, Battery, Second
74-52752-01	7102741A01Q	Plastic, Audio Jack Cover
74-52783-01	7102821A01V	Hinge Cover, Plastic
74-52784-01	7102751A01V	Door, BIOS
74-52785-01	7102761A01P	Door, I/O Latch

Power

Orderable Spare Part	Compal P/N	Description
30-49013-01	7102811A02N	AC Adapter Module, Module only, HiNote VP 700
30-49117-01		Spare Main Battery, NiMH, HiNote VP7h
17-04105-01		Power Cord, US/American
17-04105-02		Power Cord, Central European
17-04105-03		Power Cord, UK/British
17-04105-06		Power Cord, Japanese
17-04105-07		Australian/New Zealand

Option List

Digital Opt P/N	Digital FRU P/N	Compal P/N	Description
FR-PCPEF-AA	30-49006-01	7102801A02U	Minidock Port Replicator w/o CardBus, HiNote VP7h
FR-PCPEF-AB	30-49007-01	7102801A01L	Minidock Port Replicator w/CardBus, HiNote VP7h
FR-PCPDJ-AB	30-49008-01		AC Adapter, Cent European, HiNote VP 700
FR-PCPDJ-AC	30-49009-01		AC Adapter, N. American, HiNote VP 700
FR-PCPDJ-AE	30-49010-01		AC Adapter, UK/British, HiNote VP 700
FR-PCPDJ-AJ	30-49011-01		AC Adapter, Japanese, HiNote VP 700
FR-PCPDJ-AZ	30-49012-01		AC Adapter, Aust/NZ, HiNote VP 700
FR-PCPDJ-BW	30-49013-01		AC Adapter w/o Power Cord, HiNote VP 700
FR-PCPZJ-AB	30-49015-01		Airline/Car Power Adapter, HiNote VP 700
FR-PCPM7-AB	30-49193-01		16MB Memory Module, SODIMM
FR-PCPM7-AC	30-49194-01		32MB Memory Module, SODIMM
FR-PCPM7-AD	30-49195-01		64MB Memory Module, SODIMM
FR-PCPHJ-AA	30-49016-01		Battery Charger, HiNote VP 700
FR-PCPQJ-AA	30-49017-01		Main Spare Battery, LiIon, HiNote VP7h
FR-PCPQJ-AB	30-49018-01		Secondary Battery Module, LiIon, HiNote VP7h
FR-PCPHK-AA	30-49229-01		External FDD Cable, HiNote VP 700
FR-PCP9X-BA	30-47956-01		Deluxe Carrying Case for HiNote Series

Parts Identification

The following figures and tables identify the major FRUs and provide the order number for the part. For a listing of all FRUs, refer the the “Spare Parts Listing” section of this chapter.

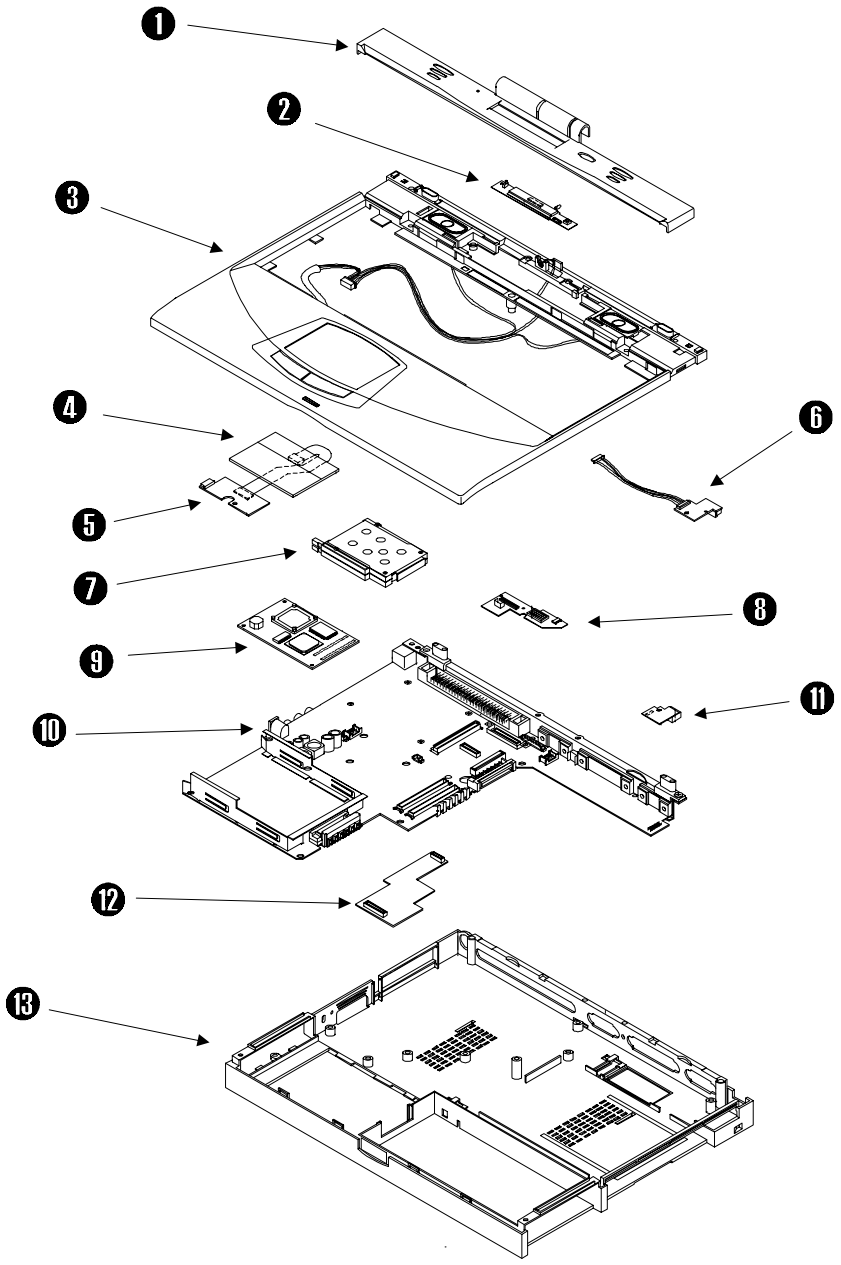


Figure 5-1 System Unit

Ref	Orderable Spare Part	Compal P/N	Description
1	74-52747-01	7102611A01T	Assy, Speaker Cover
2	30-49057-01	7102481A01M	Assy, LCD Status Module w/o cable
3	30-49051-01	7102431A01V	Assy, Deck, Keyboard
4	30-47934-01	7102581A01R	Trackpad Board
5	30-49058-01	7102491A01S	Assy, Trackpad Button Board w/ cable
6	30-49062-01	7102541A01T	Assy, IR Board w/o cable
7	30-49056-01	7102471A01T	Assy, CardBus Connector
8	30-49218-01	7102521A01U	Inverter Board w/o LVDS 13.0", Sanyo
	30-49219-01	7102531A01N	Assy, Inverter/LVDS Board, 13.3", NEC
	30-49220-01	7102531A02M	Assy, Inverter/LVDS Board, 13.3", IBM
9	30-49037-01	7102361A01V	MMO Module, 166MHz/MMX/L2 256KB/INTEL
	30-49039-01	7102361A03R	MMO Module, 233MHz/MMX/L2 512KB/INTEL
10	30-49036-01	7102351A01Q	Assy, MLB 16MB, NM2160 (w/o CPU/L2)
11	30-49065-01	7102571A01M	USB Board
12	30-49059-01	7102501A01V	Assy, Audio Board
	30-49060-01	7102501A02T	Assy, Audio Board w/ Wavetable
13	30-49052-01	7102441A01P	Assy, Housing, Lower Logic

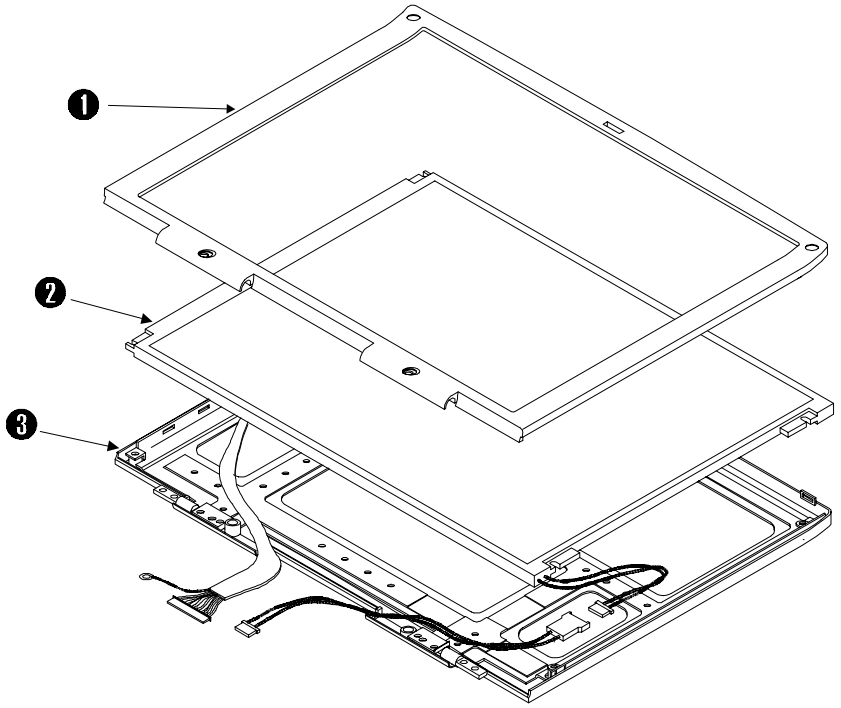


Figure 5-2 LCD Assembly

Ref.	Orderable Spare Part	Compal P/N	Description
1,2,3	30-49025-01	7102301A03U	Assy, LCD Display 13.0", DSTN Sanyo
	30-49026-01	7102301A04S	Assy, LCD Display 13.3", TFT NEC
	30-49208-01	7102301A05Q	Assy, LCD Display 13.3", TFT IBM
1	30-49028-01	7102321A01M	LCD Display Bezel, 13.0"
	30-49029-01	7102321A02V	LCD Display Bezel, 13.3"
2	30-49032-01	7102341A03S	LCD Panel, 13.0", Sanyo (LM-GD53)
	30-49033-01	7102341A04Q	LCD Panel, 13.3", NEC (NL102768BC26)
	30-49035-01	7102341A05N	LCD Panel, 13.3", IBM (ITXG70M)
3	30-49209-01	7102331A03M	Assy, Housing Display Cover, 13.0" Sanyo
	30-49031-01	7102331A04L	Assy, Housing Display Cover, 13.3", NEC
	30-49210-01	7102331A05U	Assy, Housing Display Cover 13.3", IBM

A

Specifications

Base Unit

Feature	Model MSX5166M- 2.1GB - 13.0”	 MTX5166M - 2.1GB - 13.3”	 MTX5233M - 4.0GB - 13.3”
CPU Intel Pentium	166 MHz MMX	166 MHz MMX	233 MHz MMX
LCD	13.0" XGA DSTN	13.3" XGA TFT	13.3” XGA TFT
HDD	2.16 GB	2.16 GB	4.0GB
Upgradeable HDD	Yes	Yes	Yes
L1 Cache	32KB Internal	32KB Internal	32KB Internal
L2 Cache	256KB	256KB	512KB (on MMO Module)
Architecture (Mobile Triton)	PCI	PCI	PCI
Base RAM	16MB SDRAM	32MB SDRAM (16MB installed in memory socket)	32MB SDRAM (16MB installed in memory socket)
Maximum RAM	144MB	144MB	144MB
RAM Expansion	144 pin SO–DIMM 3.3v self-refresh SDRAM	144 pin SO–DIMM 3.3v self-refresh SDRAM	144 pin SO–DIMM 3.3v self-refresh SDRAM
Battery	NiMH –37.4Whrs	LiIon – 40Whrs	LiIon – 40Whrs
Audio	Yes	Yes	Yes
CardBus/Zoomed Video	Supported	Supported	Supported
Fast IR (4 Mbps)	Yes	Yes	Yes
USB	Yes	Yes	Yes
Diskette and CD-ROM Combo Drive	3.5” floppy 20X CD-ROM	3.5” floppy 20X CD-ROM	3.5” floppy 20X CD-ROM
Diskette supports Japanese Mode	Yes	Yes	Yes
Pointing Device	Touch pad	Touch pad	Touch pad
DIGITAL HiNote VP 700 Series Minidock	Optional	Optional	Optional
PC 97 Compliant	Yes	Yes	Yes

Ports

Feature	Model		
	MSX5166M-2.1GB - 13.0”	MTX5166M - 2.1GB - 13.3”	MTX5233M - 4.0GB - 13.3”
Keyboard/Mouse	PS/2	PS/2	PS/2
External Video Interface	XGA	XGA	XGA
External Video, Maximum Resolution	1024x768 256 Colors	1024x768 256 Colors	1024x768 256 Colors
External Video, Refresh Rate in 1024x768x256 Colors in Simultaneous Mode	60Hz	60Hz	60Hz
Serial	Yes	Yes	Yes
Parallel	ECP/EPP	ECP/EPP	ECP/EPP
Audio Line-in	Yes	Yes	Yes
Audio Line-out	Yes	Yes	Yes
Microphone	Yes	Yes	Yes
Infrared	Fast IR/Serial	Fast IR/Serial	Fast IR/Serial

Audio

Feature	Model		
	MSX5166M-2.1GB - 13.0”	MTX5166M - 2.1GB - 13.3”	MTX5233M - 4.0GB - 13.3”
Audio	3D Sound	3D Sound	3D Sound
Audio Compatibility	WSS and SoundBlaster with OPL3 Compatibility	WSS and SoundBlaster with OPL3 Compatibility	WSS and SoundBlaster with OPL3 Compatibility
Wavetable	NO	NO	Yes
Audio Volume	Hot Key	Hot Key	Hot Key
Internal Microphone	Yes	Yes	Yes
Built-in Stereo Speakers	Yes	Yes	Yes

LCD Display

Feature	Model		
	MSX5166M-2.1GB - 13.0”	MTX5166M - 2.1GB - 13.3”	MTX5233M - 4.0GB - 13.3”
Display Type	13.0" XGA DSTN	13.3" XGA TFT	13.3” XGA TFT
Video Processor	NM2160	NM2160	NM2160
Video Accelerator	BitBLT Hardware	BitBLT Hardware	BitBLT Hardware
Video RAM (non-upgradeable)	2MB	2MB	2MB
Graphic Resolution	1024x768	1024x768	1024x768
Colors	64,000	64,000	64,000
Zoomed Video	Yes	Yes	Yes

PCMCIA (PCI)

	Model		
Feature	**MSX5166M-2.1GB - 13.0”**	**MTX5166M - 2.1GB - 13.3”**	**MTX5233M - 4.0GB - 13.3”**
PCMCIA Controller	TI1131	TI1131	TI1131
PCMCIA Type II/III Support	2 Type II or 1 Type III	2 Type II or 1 Type III	2 Type II or 1 Type III
Cardbus Revision Support	3.0	3.0	3.0

BIOS Support

	Model		
Feature	**MSX5166M-2.1GB - 13.0”**	**MTX5166M - 2.1GB - 13.3”**	**MTX5233M - 4.0GB - 13.3”**
BIOS Supplier	Phoenix 4.06	Phoenix 4.06	Phoenix 4.06
PC ’97 Compliant	Yes	Yes	Yes
Flash ROM Size	256KB	256KB	256KB
Suspend to RAM	Yes	Yes	Yes
Suspend to File	Yes	Yes	Yes
Password	On Boot & Resume	On Boot & Resume	On Boot & Resume

Power

	Model		
Feature	**MSX5166M-2.1GB - 13.0”**	**MTX5166M - 2.1GB - 13.3”**	**MTX5233M - 4.0GB - 13.3”**
AC Power Supply/Battery Charger	90/264V 47-63Hz	90/264V 47-63Hz	90/264V 47-63Hz
Main Battery	NiMH (37.4WHrs.)	LiIon (40WHrs.)	LiIon (40WHrs.)
Battery Life with single battery	3.0Hrs. with PM Off	3.0Hrs. with PM Off	3.0Hrs. with PM Off
Battery recharge with system OFF	3Hrs. for single battery	3Hrs.for single battery	3Hrs. for single battery
Battery recharge with system ON	3.5Hrs. for single battery	3.5Hrs. for single battery	5Hrs. for single battery

Status Display, Keyboard, Pointing Device

	Model		
Feature	**MSX5166M-2.1GB - 13.0”**	**MTX5166M - 2.1GB - 13.3”**	**MTX5233M - 4.0GB - 13.3”**
Status LCD	Battery Gas Gauge, PCMCIA, HDD/CD-ROM, FDD, CRT/LCD/Simul, Caps Lock, NUM Lock, Embedded Key Pad Lock, Scroll Lock, LED for AC and Battery charging		
Standard Keyboard	83 Keys + 2 Win 95 Keys	83 Keys + 2 Win 95 Keys	83 Keys + 2 Win 95 Keys
Japanese Keyboard	83 Keys + 2 Win 95 Keys	83 Keys + 2 Win 95 Keys	83 Keys + 2 Win 95 Keys
Integrated Pointing Device	Synaptics Trackpad Version 4.3	Synaptics Trackpad Version 4.3	Synaptics Trackpad Version 4.3

Physical

	Model		
Feature	**MSX5166M-2.1GB - 13.0”**	**MTX5166M - 2.1GB - 13.3”**	**MTX5233M - 4.0GB - 13.3”**
Size	11.9" x 9.3" x 2.1"	11.9" x 9.3" x 2.1"	11.9" x 9.3" x 2.1"
Weight (including Combo Drive)	7.4 lbs. (approximate)	7.4 lbs. (approximate)	7.4 lbs. (approximate)

* Available separately as a customer installable option.

B

Device Mapping

Memory Map

Range	Name	Function
0h to 9FFFFh	640KB System Memory	System Memory Space
A0000h to BFFFFFh	128K Video Memory	Graphics Display Memory Buffer
C0000h to C9FFFh	40KB Video BIOS ROM	Shadow BIOS of VGA
CA000h to DFFFFh	96KB I/O Expansion ROM	Reserved ROM Space for I/O Adapter
E0000h to FFFFFh	128KB System ROM	BIOS of System & VGA
100000h to 4FFFFFFh	Additional Memory Space	Extended Memory Space, Size from 16MB up to 144MB

DMA Channel Assignments

Channel	Controller	Function
0	1	Audio
1	1	Audio
2	1	Diskette controller
3	1	Parallel Port ECP (if enabled)
4	2	Reserved
5	2	Reserved
6	2	Reserved
7	2	Reserved

Notebook Computer Interrupt Levels

IRQ	Normal Assignments (FIS)
0	System Timer
1	Keyboard
2	Programmable Interrupt Controller
3	Serial Port Com2, PCMCIA Com2, Infrared
4	Serial Port Com1, PCMCIA Com 1
5	Audio
6	Floppy Disk Controller
7	Parallel Port LPT1
8	Real time clock
9	Wavetable/Joystick
10	PCI INTB/USB
11	PCMCIA Card Insert/Remove Event (CardBus)
12	Track Pad, PS/2 Mouse
13	Numeric data processor
14	Primary Fixed Disk (HDD)
15	Secondary Fixed Disk (CD-ROM)

I/O Address Map

Range (hexadecimal)	Function
0h-1h	DMA Channel 0
2h-3h	DMA Channel 1
4h-5h	DMA Channel 2
6h-7h	DMA Channel 3
8h-0Fh	DMA Controller 1
20h-21h	Interrupt Controller 1
40h-43h	Timer Counter
60h, 64h	Keyboard Controller
61h	Port 61
70h-71h	CMOS RAM
80h	Reserved
81h-83h	DMA Memory Address Mapper
84h-86h	Reserved
87h	DMA Memory Address Mapper
88h	Reserved
89h-8Bh	DMA Memory Address Mapper
8Ch-8Eh	Reserved
8Fh	DMA Memory Address Mapper
92h	Port 92
0A0h-0A1h	Interrupt Controller 2
0C0h-0C2h	DMA Channel 4
0C4h-0C6h	DMA Channel 5
0C8h-0CAh	DMA Channel 6
0CCh-0CEh	DMA Channel 7
0D0h-0DEh	DMA Controller 2
0F0h-0FFh	Math Co-processor
1F0-1F7	Fixed Disk
220h*	Audio I/O Port
278h-27Ah*	LPT2
2F8h-2FFh*	Serial Control Port B
378h-37Ah*	LPT1
398-399	Super I/O Controller
3B0-3BA	VGA Registers
3BCh-3Beh*	LPT3
3C0-3DF	VGA Registers
3E0h-3E1h	PCMCIA
3F0h-3F5h*	Floppy Disk Controller
3F6h	Fixed Disk Register
3F7h*	Floppy Disk Controller
3F7h	Fixed Disk Decode
3F8h-3FFh*	Serial Controller Port A

*Enabled and disabled using the Setup Utility or Windows 95

C

System Connector Pin Assignments

System Interconnection Diagram

Figure C-1 shows the location of the motherboard connectors. The following sections provide a tabular listing the pin assignments for each of these connectors.

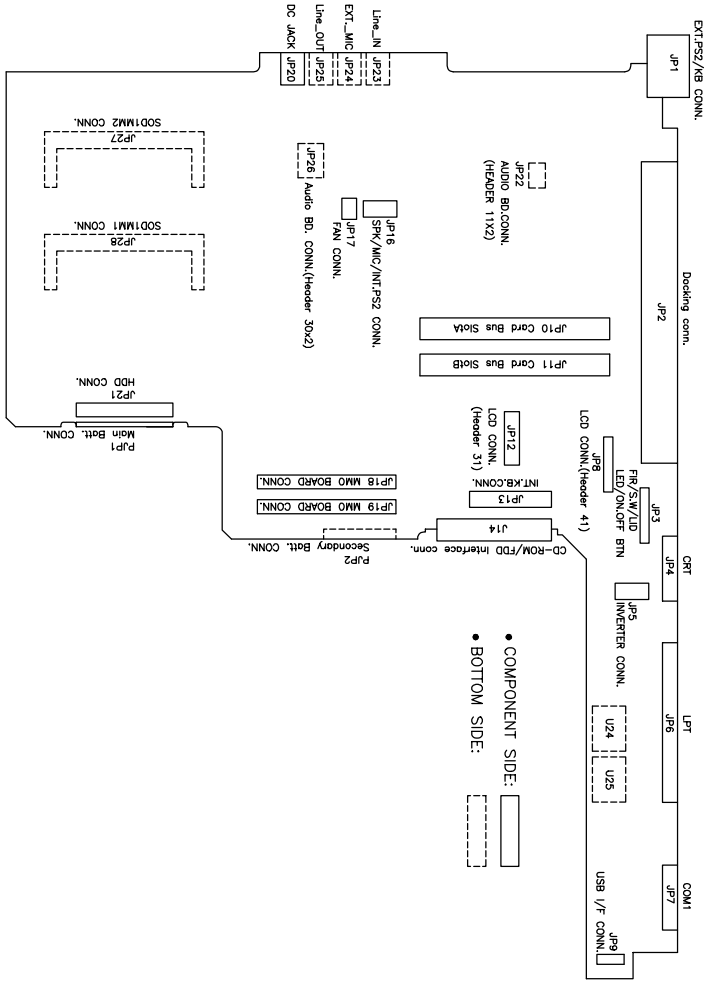


Figure C-1 System Connector Locations

External KBD Connector – JP1

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	KB/PS2_DATA	2.	NC
3.	GND	4.	+5VS
5.	KB/PS2_DCLK	6.	NC

Docking Connector – JP2

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	PREMATE#
3.	CONA#	4.	GND
5.	DGNTB#	6.	SDDREQ
7.	SDDACK#	8.	LEFT
9.	+5VS	10.	DPCLKDOCK
11.	DCBE#0	12.	DCBE2#
13.	DCBE3#3	14.	DADO
15.	DAD4	16.	GND
17.	DPLOCK#	18.	DAD10
19..	DAD14	20.	DPERR#
21.	+5VS	22.	DAD18
23.	DAD22	24.	NC
25.	NC	26.	Q_BFVCC
27.	DINTC#	28.	GND
29.	DAD26	30.	DAD30
31.	SDD0	32.	SDD1
33.	SDD3	34.	SDD4
35.	+3VS	36.	SDIAG#
37.	SHDD_LED#	38.	GND
39.	SWB#	40.	GAME_TB
41.	GAME_TC	42.	DDC_DATA
43.	NC	44.	INSPKOFF#
45.	+5VS	46.	DSR1#
47.	RXD1	48.	CTS1#
49.	RI1#	50.	LPD5
51.	LPD1	52.	USB0_D_
53.	HSYNC	54.	CRT_GND
55.	CRT_GND	56.	CRT_GND
57.	VIN	58.	DS_IDEPWR#
59.	PREMATE#	60.	GND
61.	GND	62.	GND
63.	LINE_IN_L	64.	LIN_IN_R
65.	GND	66.	BASE/DS#
67.	RIGHT	68.	DPCIRST#

69.	SIRQ	70.	GND
PIN NO	**SIGNAL**	**PIN NO**	**SIGNAL**
71.	DCBE1#	72.	+3VS
73.	DDEVSEL#	74.	DAD2
75.	DAD6	76.	DFRAME#
77.	DAD8	78.	DAD12
79.	GND	80.	DSTOP#
81.	DAD16	82.	DAD20
83.	GND	84.	DREQ#1
85.	DGNT#1	86.	DINTA#
87.	DCLKRUN#	88.	DAD24
89.	DAD28	90.	GND
91.	DERQB#	92.	SDD2
93.	GND	94.	SDD6
95.	SUSP#	96.	RST_BTN#
97.	SDAP4	98.	DOC_CLK
99.	SWD#	100.	IRQ5
101.	GND	102.	IRQ7
103.	IRQ9	104.	EXTFDD
105.	DCD1#	106.	TXD1
107.	DTR1#	108.	RTS1#
109.	LPD7	110.	LPD3
111.	USB0_D+	112.	VSYNC
113.	G	114.	R
115.	B	116.	ACCON
117.	VIN	118.	GND
119.	GND	120.	DCGND
121.	SPKOUTR	122.	CD_L
123.	EXT_MIC	124.	CD_R
125.	MSEN#	126.	MIDI_IN
127.	PCM1_SPK#	128.	DOCKON
129.	NC	130.	DIOR#
131.	SDA0	132.	SA1
133.	PCM1_RI#	134.	+3VS
135.	DAD5	136.	DIRDY#
137.	DAD9	138.	DAD13
139.	GND	140.	DTRDY#
141.	DAD17	142.	DAD21
143.	GND	144.	DREQ#0
145.	+3VS	146.	PIRQB#
147.	NC	148.	DAD25
149.	DAD29	150.	+3VS
151.	KBD_CLK	152.	EXT_DATA
153.	SDD5	154.	SDD8

155.	SDD10	156.	SDCS1#
PIN NO	**SIGNAL**	**PIN NO**	**SIGNAL**
157.	SCKP4	158.	SDD11
159.	SDD13	160.	SDD15
161.	IRQ10	162.	SWA#
163.	SWC#	164.	+3VS
165.	+5V	166.	+5V
167.	USB1_D-	168.	OVCUR#1
169.	NC	170.	LPD4
171.	LPD2	172.	LPTSLCT
173	LPTPE	174.	LPTACK#
175.	LPTERR#	176.	CONA#
177.	VIN	178.	NC
179..	GND	180.	GND
181.	SPKOUTL	182.	GND
183.	GND	184.	GND
185.	+12VS	186.	S_UNDOCK
187.	MIDI_OUT	188.	DOCKED#
189.	NC	190.	SDIOW#
191.	IRQ15	192.	ON/OFFBTN
193.	SDA2	194.	DAD1
195.	DAD3	196.	DAD7
197.	DPAR	198.	DAD11
199.	DAD15	200.	DSERR#
201.	+5VS	202.	DAD19
203.	DAD23	204.	DREQ#2
205.	NC	206.	NC
207.	DINTD#	208.	GND
209.	DAD27	210.	DAD31
211.	KBD_DATA	212.	EXT_CLK
213.	+5VS	214.	SDD7
215.	SDD9	216.	GND
217.	SDCS3#	218.	SIORDY
219.	SDD12	220.	SDD14
221.	GND	222.	IRQ11
223.	UNDOCK	224.	NC
225.	+5V	226.	+5V
227.	USB1_DX	228.	OVCUR#0
229.	+5VS	230.	LPD6
231.	LPTBUSY	232.	LPD0
233.	AFD#/3M#	234.	LPTINIT#
235.	LPTSLCTIN#	236.	+5VEFDD
237.	VIN	238.	VIN
239.	QVCC_OK	240.	GND

FIR/S.W./LID/LED/ON_OFFBTN – JP3

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	IRRXA
3.	GND	4.	IRTX
5.	+5VS	6.	IRMODE
7.	+5VS	8.	ON/OFFBTN
9.	LEDON#	10.	GND
11	+5V51	12	SW_CLK
13	SW_DATA	14	COVER#

CRT Connector – JP4

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	R	2.	G
3.	B	4.	NC
5.	CRTGND	6.	CRTGND
7.	CRTGND	8.	CRTGND
9.	+ 5VS	10.	CRTGND
11.	MSEN#	12.	DDC_DATA
13.	HSYNC1	14.	VSYNC1
15.	DD_CLK		

Inverter Connector – JP5

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	B+	2.	SMC
3.	B+	4.	SMD
5	+5V51	6	DISPOFF#
7.	GND	8.	NC
9.	GND	10.	VCON

Parallel Port Connector – JP6

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	LPTSTB#	2.	FD0
3.	FD1	4.	FD2
5.	FD3	6.	FD4
7.	FD5	8.	FD6
9.	FD7	10.	LPTACK#
11.	LPTBUSY	12.	LPTPE
13.	LTPSLCT	14.	LPTAFD#
15.	LPTERR#	16.	LPTINIT#
17.	LPTSLCTIN#	18.	GND
19.	GND	20.	GND

21.	GND	22.	GND
23.	GND	24.	GND
25.	GND		

Serial Port (COM1) Connector – JP7

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	DCD1#	2.	RXD1#
3.	TXD1	4.	DTR1#
5.	GND	6.	DSR1#
7.	RTS1#	8.	CTS1#
9.	RI1#		

LCD Connector (Header 41) – JP8

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	GND
3.	DISPOFF#	4.	GND
5.	DE	6.	FLM
7.	LP	8.	VCON
9.	GND	10.	PID0
11.	PID1	12.	LCD17
13.	LCD16	14.	PID2
15.	PID3	16.	LCD15
17.	LCD14	18.	LCD13
19..	LCD12	20.	LCDVDD
21.	LCDVDD	22.	LCD11
23.	LCD10	24.	LCD9
25.	LCD8	26.	LCD7
27.	LCD6	28.	+5V
29.	+3VS	30.	LVDDVGA
31.	+5VS	32.	LCD5
33.	LCD4	34.	LCD3
35.	LCD2	36.	LCD1
37.	LCD0	38.	GND
39.	GND	40.	SHFCLK
41.	ENVDD		

USB Connector – JP9

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	GND
3.	USB0_D-	4.	USB0_D+
5.	OVCUR#0	6.	GND
7.	+5VS	8.	+5VS
9.	NC	10.	USBPWR#
11.	NC	12.	NC
13.	NC	14.	+3V
15.	+3VS	16.	NC

CardBus Slot A – JP10

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2	S1_D3
3.	S1_D4	4	GND
5.	S1_D5	6	S1_D6
7.	GND	8	S1_D7
9.	S1_CE1#	10	GND
11.	S1_A10	12	S1_OE#
13.	GND	14	S1_A11
15.	S1_A9	16	GND
17.	S1_A8	18	S1_A13
19..	GND	20	S1_A14
21.	S1_WE#	22	GND
23.	S1_RDY#	24	S1_VCC
25.	S1_VCC	26	S1_VPP
27.	S1_VPP	28	S1_A16
29.	GND	30	S1_A15
31.	S1_A12	32	GND
33.	S1_A7	34	S1_A6
35.	GND	36	S1_A5
37.	S1_A4	38	GND
39.	S1_A3	40	S1_A2
41.	GND	42	S1_A1
43.	S1_A0	44	GND
45.	S1_D0	46	S1_D1
47.	GND	48	S1_D2
49..	S1_WP	50	GND
51.	GND	52	S1_CD1#
53.	S1_D11	54	GND
55.	S1_D12	56	S1_D13
57.	GND	58	S1_D14
59.	S1_D15	60	GND
61.	S1_CE2#	62	S1_VS1

63.	GND	64	S1_IORD#
65.	S1_IOWR#	66	GND
67.	S1_A17	68	S1_A18
69.	GND	70	S1_A19
71.	S1_A20	72	GND
73.	S1_A21	74	S1_VCC
75.	GND	76	S1_VPP
77.	A_VPP	78	S1_A22
79.	GND	80	S1_A23
81.	S1_A24	82	GND
83.	S1_A25	84	S1_VS2
85.	GND	86	S1_RST
87.	S1_WAIT#	88	GND
89.	S1_INPACK#	90	S1_REG#
91.	GND	92	S1_BVD2
93.	S1_BVD1	94	GND
95.	S1_D8	96	S1_D9
97.	GND	98	S1_D10
99.	S1_CD2#	100	GND

CardBus Slot B – JP11

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	S2_D3
3.	S2_D4	4.	GND
5.	S2_D6	6.	S2_D6
7.	GND	8.	S2_D7
9.	S2_CE1#	10.	GND
11.	S2_A10	12.	S2_OE#
13.	GND	14.	S2_A11
15.	S2_A9	16.	GND
17.	S2_A8	18.	S2_A13
19..	GND	20.	S2_A14
21.	S2_WE#	22.	GND
23.	S2_RDY#	24.	S2 _VCC
25.	S2_VCC	26.	GND
27.	S2_VPP	28.	S2_A16
29.	GND	30.	S2_A15
31.	S2_A12	32.	GND
33.	S2_A7	34.	S2_A6
35.	GND	36.	S2_A5
37.	S2_A4	38.	GND
39.	S2_A3	40.	S2_A2
41.	GND	42.	BS2_A1

43.	S2_A0	44.	GND
45.	S2_D0	46.	S2_D1
47.	GND	48.	S2_D2
49.	S2_WP	50.	GND
51.	GND	52.	S2_CD#
53.	S2_D11	54.	GND
55.	S2_D12	56.	S2_D13
57.	GND	58.	S2_D14
59.	S2_D15	60.	GND
61.	S2_CE2#	62.	S2_VS#
63.	GND	64.	S2_IORD#
65.	S2_IOWR#	66.	GND
67.	S2_A17	68.	S2_A18
69.	GND	70.	S2_A19
71.	S2_A20	72.	GND
73.	S2_A21	74.	S2_VVV
75.	S2_VCC	76.	S2_VPP
77.	S2_VPP	78.	S2_A22
79.	GND	80.	S2_A23
81.	S2_A24	82.	GND
83.	S2_A25	84.	S2_VS2
85.	GND	86.	S2_RST
87.	S2_WAIT#	88.	GND
89.	S2_INPACK#	90.	S2_REG#
91.	GND	92.	S2_BVD2
93.	S2_BVD#	94.	GND
95.	S2_D8	96.	S2_D9
97.	GND	98.	S2_D10
99.	S2B_CD2#	100.	GND

LCD Connector (Header 31) – JP12

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	LCD35
3.	LCD34	4.	LCD33
5.	LCD32	6.	LCD31
7.	LCD30	8.	LCD29
9.	LCD28	10.	GND
11.	GND	12.	LCD27
13.	LCD26	14.	LCD25
15.	LCD24	16.	LCD23
17.	LCD22	18.	LCD21
19..	LCD20	20.	LCD19
21.	LCD18	22.	GND

23.	GND	24.	NC
25.	+5V51	26.	+3V
27	B+	28	B+
29	B+	30	SMD
31	SMC		

Internal Keyboard Connector – JP13

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	KSO0	2.	KSO1
3.	KSO2	4.	KSO3
5.	KSO4	6.	KSO5
7.	KSO6	8.	KSO7
9.	KSO8	10.	KSO9
11.	KSO10	12.	KSO11
13.	KSO12	14.	KSO13
15.	KSO14	16.	KSO15
17.	KSI0	18.	KSI1
19.	KSI2	20.	KSI3
21.	KSI4	22.	KSI5
23.	KSI6	24	KSI7

CD-ROM/FDD Interface Connector – JP14

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	SDD7	2.	SIDERST#
3.	SDD6	4.	SDD8
5.	SDD5	6.	SDD9
7.	SDD4	8.	SDD10
9.	SDD3	10.	SDD11
11.	SDD2	12.	SDD12
13.	SDD1	14.	SDD13
15.	SDD0	16.	SDD14
17.	SDDACK#	18.	SDD15
19..	SDDREQ	20.	CD#
21.	WP#/IOW#	22.	GND
23.	RDATA/IOR#	24.	HSEL/RDY
25.	GND	26.	GND
27.	TK0#/IRQ15	28.	WG#/SA1
29.	WD/SDIAG#	30.	FDD#
31.	STEP#/SA0	32.	3M#/SA2
33.	MTR0#/CS1#	34.	DIR/CS3#
35.	DCHG#/HLED#	36.	+5VCD
37.	DRV0#/LOUT	38.	+5VCD

39.	IDX#/ROUT	40.	+5VCD

SPK/MIC/INT.PS2 Connector – JP16

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	SPKR+	2.	SPKR-
3.	INT_MIC	4.	AGND
5.	SPKL+	6	SPKL-
7.	+5V	8.	GND
9.	PS2_DATA	10.	PS2_CLK

Fan Connector – JP17

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	+5V	2.	Q27.1

MMO AA/AB Connector – JP18

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	MD0
3.	MD1	4.	MD2
5.	MD3	6.	+3VS
7.	MD4	8.	MD5
9.	MD6	10.	MD7
11.	GND	12.	RCAS#0
13.	RCAS#1	14.	MMA0
15.	CKEA	16.	+3VS
17.	MMA2	18.	MMA3
19..	MD8	20.	MD9
21.	GND	22.	MD10
23.	MD11	24.	MD12
25.	MD13	26.	+3VS
27.	MD14	28.	MD15
29.	SRASA#	30.	SRASB#
31.	GND	32.	RRAS#0
33.	RMWEB#	34.	PDIAG
35.	RRAS#1	36.	+5VS
37.	MD16	38.	MD17
39.	MD18	40.	GND
41.	MD19	42.	MD20
43.	MD21	44.	MD22
45.	+5VS	46.	MD23
47.	MMA6	48.	MMA7
49.	MMA8	50.	GND

51.	MMA9	52.	RCAS#2
53.	RCAS#3	54.	MMA10
55.	+5VS	56.	MMA11
57.	MD24	58.	MD25
59.	MD26	60.	GND
61.	MD27	62.	MD28
63.	MD29	64.	MD30
65.	MD31	66.	+3VS
67.	GND	68.	FQS0
69.	HCLK_SRAM	70.	GND
71.	GND	72.	MD32
73.	MD33	74.	MD34
75.	MD35	76.	+3VS
77.	MD36	78.	MD37
79.	MD38	80.	MD39
81.	GND	82.	RCAS#4
83.	RCAS#5	84.	MMA1
85.	NC	86.	+3VS
87.	MMA4	88.	MMA5
89.	MD40	90.	MD41
91.	GND	92.	MD42
93.	MD43	94.	MD44
95.	MD45	96.	+3VS
97.	MD46	98.	MD47
99.	SCASA#	100.	SCASB#
101.	GND	102.	NC
103.	NC	104.	NC
105.	NC	106.	+3VS
107.	NC	108.	NC
109.	NC	110.	GND
111.	NC	112.	MD48
113.	MD49	114.	MD50
115.	+3VS	116.	MD51
117.	MD52	118.	MD53
119.	MD54	120.	GND
121.	MD55	122.	RCAS#6
123.	RCAS#7	124.	MMA12
125.	+3VS	126.	MMA13
127.	MD56	128.	MD57
129.	MD58	130.	GND
131.	MD59	132.	MD60
133.	MD61	134.	MD62
135..	MD63	136.	+3VS
137.	PCLK_MTXC	138.	NC

139.	HCLK_CPU	140.	GND

MMO BA/BB Connector – JP19

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	MID0
3.	NC	4.	MMOB+
5.	MMOB+	6.	MMOB+
7.	MMOB+	8.	MMOB+
9.	NC	10.	MID2
11.	GND	12.	AD0
13.	AD1	14.	AD2
15.	AD3	16.	+3VS
17.	AD4	18.	AD5
19..	AD6	20.	AD7
21.	GND	22.	AD8
23.	AD9	24.	AD10
25.	AD11	26.	+3VS
27.	AD12	28.	AD13
29.	AD14	30.	AD15
31.	GND	32.	AD16
33.	AD17	34.	AD18
35.	AD19	36.	+3VS
37.	AD20	38.	AD21
39.	AD22	40.	GND
41.	RRAS#2	42.	RRAS#3
43.	RAS#4/MA12	44.	RAS#5/MA13
45.	+3V	46.	AD23
47.	AD24	48.	AD25
49.	AD26	50.	GND
51.	AD27	52.	AD28
53.	AD29	54.	AD30
55.	+3VS	56.	AD31
57.	C/BE#0	58.	C/BE#1
59.	C/BE#2	60.	GND
61.	C/BE#3	62.	IGNNE#
63.	FERR#	64.	A20M#
65.	+CPU_IO	66.	TD0
67.	PRDY	68.	R/S#
69.	CPU2.5#/3.3	70.	GND
71.	GND	72.	MID1
73.	NC	74.	MMOB+
75.	MMOB+	76.	MMOB+
77.	MMOB+	78.	MMOB+

79.	NC	80.	MID3
81.	GND	82.	FRAME#
83.	PLOCK#	84.	DEVSEL#
85.	IRDY#	86.	+3VS
87.	TRDY#	88.	STOP#
89.	PHLD#	90.	PHLDA#
91.	GND	92.	PCIRST#
93.	PAR	94.	NC
95.	REQ#0	96.	REQ#1
97.	REQ#2	98.	REQ#3
99.	GNT#0	100.	GNT#1
101.	GND	102.	GNT#2
103.	GNT#3	104.	L2_ZZ
105.	+3V	106.	L2_ZZ
107.	NC	108.	CONFIG1
109.	CLKRUN#	110.	GND
111.	SCKATF	112.	SDAATF
113.	ATF#	114.	RTCCLK
115.	+3V	116.	SUS_STAT#
117.	+3V	118.	+3V
119.	SUSP_MMO#	120.	GND
121.	VR_POK	122.	+3V
123.	+3V	124.	NC
125.	NC	126.	CPUINIT#
127.	+CPU_IO	128.	INTR
129.	CPURST	130.	GND
131.	STPCLK#	132.	SMI#
133.	NMI	134.	+5V
135..	+CPU_IO	136.	TRST#
137.	TPI	138.	TMS
139.	TCLK	140.	GND

DC Jack – JP20

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	VIN	2.	L5-2
3.	GND		

IDE (HDD) Connector – JP21

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	+5VHDD	2.	GND
3.	+5VHDD	4.	+5VHDD
5.	GND	6.	PHDD_LED#

7.	PDCS3#	8.	PDCS1#
9.	PSA2	10.	PDA0
11.	GND	12.	PDA1
13.	NC	14.	PIRQ14
15.	PDDACK#	16.	IORDY
17.	PDDREQ	18.	PDIOR#
19.	GND	20.	PDIOW#
21.	GND	22.	GND
23.	PDD15	24.	PDD0
25.	PDD14	26.	PDD1
27.	PDD13	28.	PDD2
29.	PDD12	30.	PDD3
31.	PDD11	32.	PDD4
33.	PDD10	34.	PDD5
35.	PDD9	36.	PDD6
37.	PDD8	38.	PDD7
39.	PHDD#	40.	PIDERST#

Audio BD. Connector (Header IIX2) – JP22

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	+ 5VS	2.	AGND
3.	RIGHT	4.	LEFT
5.	AGND	6.	AGND
7.	LINE_IN_L	8.	LINE_IN_R
9.	AGND	10.	AGND
11.	MIC+	12.	EXT_MIC
13.	GND	14.	GND
15.	AUX_IN_R	16.	AUX_IN_L
17.	+3VS	18.	+15VS
19..	NC	20.	NC
21.	+5VS	22.	+5VS

Line_In Jack – JP23

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	AGND	2.	LINE_IN_L
3.	NC	4.	NC
5.	LINE_IN_R		

Ext_Mic Jack – JP24

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	AGND	2.	MIC+

3.	INT_MIC	4.	NC
5.	NC		

Line_Out Jack – JP25

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	AGND	2.	LEFT
3.	BLEFT	4.	BRIGHT
5.	RIGHT		

Audio BD. Connector (Header 30 x 20) – JP26

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	GND
3.	GND	4.	RSTDRV
5.	S1_LRCLK	6.	MCLK
7.	SCLK	8.	SDATA
9.	SUSP#	10.	MONO_IN
11.	SWA#	12.	SWC#
13.	GAMF_TA	14.	GAME_TC
15.	GAMF_TD	16.	GAME_TB
17.	SWD#	18.	SWB#
19..	MIDI_OUT	20.	MIOI_IN
21.	DACK#0	22.	DACK#3
23.	DACK#1	24.	DRQ0
25.	DRQ3	26.	DRQ1
27.	SD7	28.	SD6
29.	SD5	30.	SD4
31.	SD3	32.	SD2
33.	SD1	34.	SD0
35.	IOCHRDY	36.	AEN
37.	IOW#	38.	IOR#
39.	SA15	40.	SA14
41.	SA13	42.	SA12
43.	SA11	44.	SA10
45.	SA9	46.	SA8
47.	SA7	48.	SA6
49.	SA5	50.	SA4
51.	SA3	52.	SA2
53.	SA1	54.	SA0
55.	IRQ5	56.	IRQ7
57.	IRQ9	58.	IRQ11
59.	IRQ10	60.	IRQ15

SODIMM2 Connector – JP27

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	GND
3.	MD0	4.	MD32
5.	MD1	6.	MD33
7.	MD2	8.	MD34
9.	MD3	10.	MD35
11.	+3V	12.	+3V
13.	MD4	14.	MD36
15.	MD5	16.	MD37
17.	MD6	18.	MD38
19..	MD7	20.	MD39
21.	GND	22.	GND
23.	RCAS#0	24.	RCAS#4
25.	RCAS#1	26.	RCAS#5
27.	+3V	28.	+3V
29.	MMA0	30.	MMA3
31.	MMA1	32.	MMA4
33.	MMA2	34.	MMA5
35.	GND	36.	GND
37.	MD8	38.	MD40
39.	MD9	40.	MD41
41.	MD10	42.	MD42
43.	MD11	44.	MD43
45.	+3V	46.	+3V
47.	MD12	48.	MD44
49.	MD13	50.	MD45
51.	MD14	52.	MD46
53.	MD15	54.	MD47
55.	GND	56.	GND
57.	NC	58.	NC
59.	NC	60.	NC
61.	CLK_SDRAM1	62.	CLKE2
63.	+3V	64.	+3V
65.	SRASB#	66.	SCASB#
67.	RMWEB#	68.	CLKE3
69.	RRAS#1	70.	MMA12
71.	RRAS#2	72.	MMA13
73.	GND	74.	CLK_SDRAM2
75.	GND	76.	GND
77.	NC	78.	NC
79.	NC	80.	NC
81.	+3V	82.	+3V

83.	MD16	84.	MD48
85.	MD17	86.	MD49
87.	MD18	88.	MD50
89.	MD19	90.	MD51
91.	GND	92.	GND
93.	MD20	94.	MD52
95.	MD21	96.	MD53
97.	MD22	98.	MD54
99.	MD23	100.	MD55
101.	+3V	102.	+3V
103.	MMA6	104.	MMA7
105.	MMA8	106.	MMA11
107.	GND	108.	GND
109.	MMA9	110.	MMA12
111.	MMA10	112.	MMA13
113.	+3V	114.	+3V
115.	RCAS#2	116.	RCAS#6
117.	RCAS#3	118.	RCAS#7
119.	GND	120.	GND
121.	MD24	122.	MD56
123.	MD25	124.	MD57
125.	MD26	126.	MD58
127.	MD27	128.	MD59
129.	+3V	130.	+3V
131.	MD28	132.	MD60
133.	MD29	134.	MD61
135..	MD30	136.	MD62
137.	MD31	138.	MD63
139.	GND	140.	GND
141.	SDADIMM1	142.	SCKDIMM1
143.	+3V	144.	+3V

SODIMM1 Connector – JP28

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	GND	2.	GND
3.	MD0	4.	MD32
5.	MD1	6.	MD33
7.	MD2	8.	MD34
9.	MD3	10.	MD35
11.	+3V	12.	+3V
13.	MD4	14.	MD36
15.	MD5	16.	MD37
17.	MD6	18.	MD38

19..	MD7	20.	MD39
21.	GND	22.	GND
23.	RCAS#0	24.	RCAS#4
25.	RCAS#1	26.	RCAS#6
27.	+3V	28.	+3V
29.	MMA0	30.	MMA3
31.	MMA1	32.	MMA4
33.	MMA2	34.	MMA5
35.	+GND	36.	GND
37.	MD8	38.	MD40
39.	MD9	40.	MD41
41.	MD10	42.	MD42
43.	MD11	44.	MD43
45.	+3V	46.	+3V
47.	MD12	48.	MD44
49.	MD13	50.	MD45
51.	MD14	52.	MD46
53.	MD15	54.	MD47
55.	GND	56.	GND
57.	NC	58.	NC
59.	NC	60.	NC
61.	CLK_SDRAM3	62.	CLKE4
63.	+3V	64.	+3V
65.	SRASA#	66.	SCASA#
67.	RMWEA#	68.	CLKE5
69.	RRAS#3	70.	MMA12
71.	RRAS#4	72.	MMA13
73.	GND	74.	CLK_SDRAM4
75.	GND	76.	GND
77.	NC	78.	NC
79.	NC	80.	NC
81.	+3V	82.	+3V
83.	MD16	84.	MD48
85.	MD17	86.	MD49
87.	MD18	88.	MD50
89.	MD19	90.	MD51
91.	GND	92.	GND
93.	MD20	94.	MD52
95.	MD21	96.	MD53
97.	MD22	98.	MD54
99.	MD23	100.	MD55
101.	+3V	102.	+3V
103.	MMA6	104.	MMA7
105.	MMA8	106.	MMA11

107.	GND	108.	GND
109.	MMA9	110.	MMA12
111.	MMA10	112.	MMA13
113.	+3V	114.	+3V
115.	RCAS#2	116.	RCAS#6
117.	RCAS#3	118.	RCAS#7
119.	GND	120.	GND
121.	MD24	122.	MD56
123.	MD25	124.	MD57
125.	MD26	126.	MD58
127.	MD27	128.	MD59
129.	+3V	130.	+3V
131.	MD28	132.	MD60
133.	MD29	134.	MD61
135.	MD30	136.	MD62
137.	MD31	138.	MD63
139.	GND	140.	GND
141.	SDAD/MM2	142.	SCKD/MM2
143.	+3V	144.	+3V

Main Battery – PJP1

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	BATTA+	2.	TSA
3.	ALI/NIMH#	4.	SMCA
5.	SMD	6.	GND

Secondary Battery – PJP2

PIN NO	SIGNAL	PIN NO	SIGNAL
1.	BATTB+	2.	TSB
3.	BLI/NIMH#	4.	SMCB
5.	SMD	6.	GND

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