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Stylistic LT C-500

# Technical Reference Guide

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58-734-00B

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# About This Guide

This guide provides technical information on the Fujitsu Stylistic LT C-500 pen tablet computer for technicians, hardware developers, and software developers.

## Organization

This guide is organized as follows:

- **Chapter 1: Stylistic LT C-500 Features**
  This chapter discusses some of the system's main features and technology.
- **Chapter 2: System Software**
  This chapter gives an overview of system software and utilities preinstalled on the Stylistic LT C-500 pen tablet.
- **Chapter 3: Configuring the Stylistic LT C-500 Pen Tablet System**
  This chapter provides details on using BIOS Setup and other configuration utilities for the Stylistic LT C-500 pen tablet. BIOS configuration options are explained in detail.
- **Chapter 4: Installing Hardware Options**
  This chapter gives detailed instructions on installing hardware options such as PCMCIA Cards and DIMM modules. (For instructions on replacing the internal hard disk drive, see "Replacing the IDE Hard Disk Drive" on page 69.)
- **Chapter 5: Hardware Specifications**
  This chapter gives hardware specifications on the pen tablet system. Industry standards supported by the Stylistic LT C-500 pen tablet are listed.
- **Chapter 6: Peripheral Interfaces**
  This chapter provides details on peripheral interfaces provided by the Stylistic LT C-500 pen tablet and the Stylistic LT C-500 port replicator and mini-dock.
- **Chapter 7: System Power**
  This chapter gives details on the pen tablet's power system and power management implementation.
- **Appendix A: Replacing the IDE Hard Disk Drive**
  This appendix provides instructions on removing and replacing the system's built-in IDE hard disk drive.
- **Appendix B: Glossary**
  The glossary provides definitions for many of the terms found in this document.

## Related Documentation

Documentation relating to the Stylistic LT C-500 pen tablet system is listed below. Refer to these documents for details on topics not covered in this guide.

***Stylistic LT C-500 User's Guide***
The system user's guide provides an introduction to the Stylistic LT C-500 pen tablet's basic functions for the end user.

The following documents, available from retail book sellers, contain additional information about software preinstalled on the Stylistic LT C-500 pen tablet. For additional information about Microsoft Windows 98 publications, go to the Microsoft Press web site: http://mspress.microsoft.com/

***Microsoft Windows 98 Resource Kit (ISBN: 1-57231-644-6)***
This manual is a technical guide for installing, configuring, and supporting Windows 98 and is published by Microsoft Press, 1-800-MSPRESS in the U.S. as well as from retail book sellers.

***Microsoft Windows 2000 Professional Resource Kit (ISBN 1-57231-808-2)***
This manual is a technical guide for installing, configuring, and supporting Windows 2000 Professional and is published by Microsoft Press, 1-800-MSPRESS in the U.S. as well as from retail book sellers.

The following resources contain information on software development tools for Windows:

***Microsoft Developer's Network***
The Microsoft Developer's Network web site provides links to information on application programming interfaces (APIs) used with Microsoft Windows. The site address is <http://MSDN.microsoft.com/developer/>.

The following documents provide information on industry standards supported by the Stylistic LT C-500 pen tablet system.

***Advanced Configuration and Power Interface (ACPI) Specification, Revision 1.0***
The ACPI was developed by Microsoft, Intel, and Toshiba to manage device control in order to conserve power. The ACPI specification and additional detailed information is available at the ACPI web site, <http://www.teleport.com/~acpi/>.

***PC Card Standards***
The Stylistic LT C-500 pen tablet and supporting system software comply with PCMCIA and PC Card standards specifications up to and including the *PC Card Standard – February 1995* (also referred to as *PC Card Standard Release 3.0* in this document and other related documentation). PC Card standards are published by: Personal Computer Memory Card International Association, 2635 North First Street, Suite 209, San Jose, CA 95131, <http://www.pc-card.com/>, (408) 433-CARD (2273).

***IrDA Standards***
The IrDA port on the Stylistic LT C-500 pen tablet is compliant with *IrDA (Infrared Data Association) Standard Version 1.1* published by: Infrared Data Association, <http://www.irda.org>, (510) 943-6546.

***Universal Serial Bus Specification***
The Universal Serial Bus (USB) ports on the Stylistic LT C-500 pen tablet and docking peripherals are compliant with the *Universal Serial Bus Specification Version 1.0*. Refer to this specification for USB details including: cable requirements, topology, and USB power distribution. This specification and other technical documents regarding USB are available on the Universal Serial Bus Implementer's Forum home page at <http://www.usb.org/>.

***Desktop Management Interface (DMI) 2.0 Specification***
The Stylistic LT C-500 BIOS supports DMI. The DMI specification and other information relating to DMI are available on the Desktop Management Task Force web site at <http://www.dmtf.org/>.

## Technical Support

For technical support on the Stylistic LT C-500 pen tablet system, Fujitsu resellers (VARs) should contact your assigned Fujitsu PC Systems Engineer or contact Fujitsu PC Technical Support at 408-764-9388 during normal business days from 7:30 to 5:00 Pacific Time. (Voice mail is available at this number during nonbusiness hours.) Technical support can also be reached by Fax at 408-764-9418.

Chapter 1

# Stylistic LT C-500 Features

This chapter provides an introduction to the Stylistic LT C-500 pen tablet system hardware and gives an overview of some of the pen tablet system's features. Detailed specifications on the features discussed in this chapter are given in other chapters of this guide.

The Stylistic LT C-500 pen tablet computer is designed for the Windows 98 Second Edition and Windows 2000 Professional operating systems using IBM-AT compatible architecture. The system uses a resistive pen digitizer and an indoor/outdoor color TFT display.

The Stylistic LT C-500 pen tablet system has been tested by Windows Hardware Quality Labs (WHQL) at Microsoft Corporation and is compliant with PC 99 system design guidelines.

## PC Card Support

The Stylistic LT C-500 pen tablet is equipped with a PC Card slot that allows you to install a Type II PC Card. The PC Card slot is compliant with PC CardBus Standard Release 3.0 and provides support for the following PC Card features:

- Multivoltage 3.3/5 V PC Cards (detected automatically)
- CardBus (PCI bridge) type PC Cards
- Supports PCIC (PC Card I/O Card) protocol
- Backward compatibility with previous PC Card Standard Release level PC Cards

## Compact Flash Card Support

The Stylistic LT C-500 pen tablet is equipped with a Compact Flash Card slot that allows you to install a Type I or Type II compact flash (CF) module for compact, removable data storage. The Compact Flash slot is compatible with Compact Flash Standard Release 1.4.

## Internal LAN/Modem

Most models of the Stylistic LT C-500 pen tablet systems* are equipped with a combination LAN/56 Kbps** internal modem (V.90) module (53 Kbps receive/33.6 Kbps send/14.4 Kbps fax). For details on the built-in modem, see "Internal Modem Specifications" on page 43.

## ACPI Support

The Stylistic LT C-500 pen tablet supports the *Advanced Configuration and Power Interface (ACPI) Specification,* revision 1.0.

* The LAN/modem module is certified in the following countries: United States, Canada, Japan, Belgium, Denmark, Finland, France, Germany, The Netherlands, Italy, Norway, Sweden, Switzerland, United Kingdom, Austria, Portugal, Ireland, Spain, and Greece.

** The 56 Kbps rate is nominal; due to U.S. FCC restrictions, actual rates are limited to 53 Kbps.

Chapter 2

# System Software

This chapter outlines system software supported on the Stylistic LT C-500 pen tablet including operating system software, and drivers and utilities developed specifically for the Stylistic LT C-500 pen tablet.

## Supported Operating Systems

The Stylistic LT C-500 pen tablet is distributed with either the Windows 98 Second Edition or Windows 2000 Professional operating system preinstalled.

Licensing and user documentation for the operating system installed on your system is also included with the pen tablet. For details on the operating system, refer to the documentation provided, or refer to the documents listed in "Related Documentation" in the About This Guide section of this manual.

## Pen Support

Pen support for the Stylistic LT C-500 pen tablet is provided by the following pen subsystems:

- Pen Services 2.0 with HRS 5.0.5
- PenX 2.0 (Windows 2000 only)
- PenX 1.7 (Windows 98 only)
- Mouse Emulation

You can select one of these subsystems "on the fly" using the pen configuration control panel applet. See "Pen Configuration" on page 3 for details. (Software for all of these subsystems runs at the same time. Pen information is routed to the selected subsystem.)

Pen drivers (developed by Fujitsu PC) for the Stylistic LT C-500 support the pen digitizer system as a Plug and Play (PnP) device. To view information on these pen drivers, open Pen Configuration in Control Panel and choose the About tab. Select the desired file from the list and choose File Info.

## PC Card Support

The Stylistic LT C-500 pen tablet fully supports the PC CardBus standard release 3.0. System resources for PC Cards are configured automatically by Windows 98 and Windows 2000.

## Overview of System Configuration Tools and Utilities

The following system configuration tools and utilities are supported for use with the pen tablet. Unless otherwise noted, details on using these programs are given in Chapter 3 of this manual.

- **BIOS Setup**
  A BIOS configuration utility stored in the system's CMOS memory.
- **Handwriter Settings**
  A control panel applet that allows you to configure settings for handwriting recognition and inking.
- **Pen Configuration**
  A control panel applet that allows you to select the pen subsystem, calibrate the pen, and configure pen settings.
- **PHDISK (Windows 98 only)**
  A utility used to prepare your hard disk for using save-to-disk suspend mode.

Chapter 3

# Configuring the Stylistic LT C-500 Pen Tablet System

This chapter provides instructions on how to use various configuration utilities to configure the Stylistic LT C-500 pen tablet BIOS.

## Pen Configuration

The Stylistic LT C-500 system includes a pen configuration control panel applet which allows you to select the pen subsystem, configure pen buttons, and calibrate the pen. To use this applet, open Pen Configuration in Control Panel and select the desired tab as follows:

- **Pen Subsystem**
  Allows you to choose the active pen subsystem and apply your changes "on the fly". See "Pen Subsystems" for more information.
- **Pen Buttons**
  Allows you to configure the functions and behavior of the pen "buttons" (simulating left- and right-clicks).
- **Calibration**
  Allows you to calibrate the pen digitizer system.
- **Sampling**
  Displays the sampling rate and sampling distance used by your system.
- **About**
  Allows you to view file information about the installed pen drivers.

For details on each of these features, tap the Help button for each tab.

## Pen Subsystems

The Stylistic LT C-500 supports the following pen subsystems: PenX 1.7 (Windows 98 only), PenX 2.0 (Windows 2000 only), Pen Services 2.0, or Emulate Mouse. You choose one of these subsystems using the Pen Configuration Control Panel applet, as described earlier.

***Note:*** *Training utilities such as Handwriting Trainer for Pen Windows and Handwriter Help for PenX can be referenced whether or not the specific subsystem is selected.*

## Permanent and Current BIOS Settings

Some BIOS configuration utilities allow you to select permanent and/or current settings when configuring BIOS options. When you change a permanent setting, BIOS parameters stored in CMOS memory are changed and the new setting is applied *after* the system is restarted. When you change a current setting, BIOS parameters stored in dynamic memory are changed and the new setting is applied for the current session. Also, note that a change to the current setting only remains in effect until the system is restarted or shut down.

BIOS data resides in the system's CMOS memory. When the system is powered on, BIOS data is copied or "shadowed" into the system's dynamic memory and the system runs using BIOS parameters stored in dynamic memory.

# BIOS Setup

BIOS Setup is a configuration utility that you can use to change your system's permanent BIOS settings. The BIOS Setup application is stored in the BIOS flash ROM. (BIOS Setup values or settings are stored in CMOS memory.) Instructions for starting and running BIOS Setup are given in the following discussions.

## Starting BIOS Setup

To start BIOS Setup, restart your system and when the following message is displayed,

```
<F2>, Double Tap: BIOS Setup
```

Double-tap the pen on the display screen or press F2 on your external keyboard.

The system starts BIOS Setup and the BIOS Setup **Main** menu is displayed. Note that the system can be configured to start without displaying the message above. If this is the case, you must attach an external keyboard and hold down the F2 key while you start your system until the BIOS Setup screen is displayed.

Options and settings for menus in BIOS Setup are described in tables appearing later in this chapter.

## Using BIOS Setup

Once BIOS Setup is started, you can use BIOS Setup to change your system's BIOS settings. The BIOS Setup screen consists of a menu bar, menu items, a command bar, and a window for item-specific help as shown in Figure 3-1.

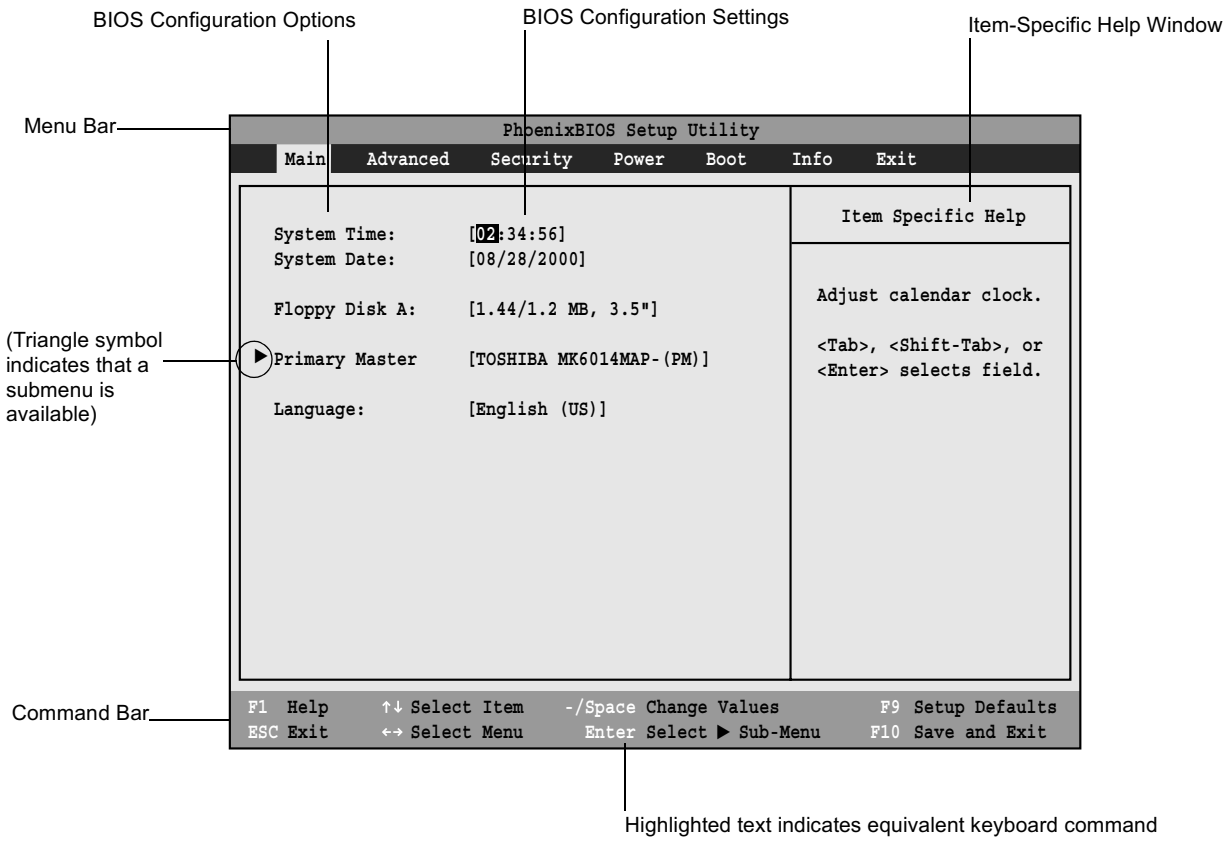



*Figure 3-1 BIOS Setup Screen*

Instructions for selecting and changing BIOS options and navigating BIOS Setup menus using a pen or external keyboard are given below:

- **To select a BIOS Setup menu from the menu bar**, tap on the menu name in the menu bar, tap on the right or left side of the Select Menu field in the command bar, or use the right or left arrow keys on an external keyboard to highlight the menu and display a list of menu options.
- **To select a BIOS option**, tap on the setting field for the option, tap on the right or left side of the Select Item field in the Command Bar, or use the up and down arrow keys on an external keyboard to highlight the option in the list of items for a given menu.
- **To change the setting of a selected BIOS option**, tap directly on the setting field, tap on the highlighted commands to the right or left of Change Values in the command bar, or use the -, +, /, and space keys on an external keyboard to cycle through the list of possible settings. (You can also change settings using a pop-up menu as described next.)
- **To access a pop-up menu with a list all possible settings for a given BIOS option**, first tap on the [option], then tap on the right mouse button hotpad. Tap on the setting once more to view the pop-up menu. Double-click on the setting of your choice to select it.
- **To select and enter a submenu**, tap twice on the submenu name or select the submenu using the up and down arrow keys on an external keyboard and press Enter. (The Main, Advanced, Security, Power, and Boot menus contain submenus.)
- **To view Item-Specific Help** for a BIOS option, select the option. Item specific help is displayed in the Item Specific Help panel on the right-hand side of the screen.
- **To view General Help for BIOS Setup**, tap on Help in the command bar or press F1 on your external keyboard. The BIOS Setup help screen is displayed giving general instructions for using BIOS Setup.
- **To exit BIOS Setup**, choose the appropriate option from the Exit menu, or tap Save and Exit in the command bar, or press F10 on an external keyboard. See “Exiting BIOS Setup” on page 5 for details.
- **To load factory default settings for all BIOS options**, select Load Defaults from the command bar.

## Exiting BIOS Setup

Once you are finished making changes in BIOS Setup, you must exit BIOS Setup and allow the system to boot to apply your configuration changes. You can exit BIOS Setup by selecting options in the Exit menu. The Exit menu includes options that allow you to load default BIOS settings, load previous settings, discard your changes, save your changes, and exit BIOS Setup. For details on Exit menu options, see “Exit Menu Options” on page 24.

## BIOS Setup Main Menu Options

BIOS Setup Main menu options are given in Table 3-1. (Options and settings for other BIOS Setup menus are described in the tables that follow.) The default setting for each option is listed in bold type when applicable.

*Table 3-1. BIOS Setup Main Menu Options*

| Option | Settings | Description |
|---|---|---|
| System Time | 00:00:00 to 23:59:59 | Real Time Clock (RTC) setting in hours, minutes, and seconds. Note that the system time option uses a 24 hour format. |
| System Date | 01/01/1980 to 12/31/2099 | RTC calendar setting in month/day/year format. |
| Floppy Disk A: | **1.44/1.2 MB, 3.5”**<br>Disabled | Floppy disk drive type for external floppy drive. Selecting [Disabled] disables the floppy disk drive port. |
| Primary Master Submenu | | Select this field to access the primary disk drive submenu. (See “Primary Master Options” later in this section.) |
| Language | **English**<br>Japanese | Select the display language for the BIOS. |

## Primary Master Submenu Options

Options and settings for the Primary Master Submenu are given in Table 3-2.

*Table 3-2. BIOS Setup Primary Master Configuration Options*

| Option | Settings | Description |
|---|---|---|
| Type | **Auto**<br>None<br>Hard Disk | IDE hard disk drive configuration method.<br>Select [Auto] to load configuration parameters from the hard disk drive automatically. Selecting [None] disables the hard drive. Selecting [Hard Disk] allows you to manually enter parameter values for the remaining options listed in this table. |
| Cylinders* | 0 to 65535 | Number of cylinders. |
| Heads* | 1 to 16 | Number of read/write heads. |
| Sectors* | 0 to 63 | Number of sectors per track. |
| Maximum Capacity | xxxxMB | Display only. |
| Multi-Sector Transfers* | Disabled<br>2 Sectors<br>4 Sectors<br>8 Sectors<br>**16 Sectors**<br>32 Sectors<br>64 Sectors<br>128 Sectors | Number of sectors used in multisector transfers. You can cycle through the settings for this option to select values up to the maximum 128 sectors allowable for the hard disk drive. (Selecting the maximum, or values larger than the default may degrade performance.) |
| LBA Mode Control* | Disabled<br>**Enabled** | Logical Block Address (LBA) mode control. Selecting [Enabled] causes logical block addressing to be used. Selecting [Disabled] causes cylinder, head, and sector addressing to be used. |
| PIO Transfer Mode* | Standard<br>**Fast PIO 1**<br>Fast PIO 2<br>Fast PIO 3<br>Fast PIO 4 | Determines the method for data transfers to and from the hard disk drive.<br>(Choosing [Auto] for the HDD Configuration option selects the optimum setting for this option.) |
| DMA Transfer Mode* | Disabled<br>Multiword DMA 1<br>Multiword DMA 2<br>Ultra DMA 0<br>Ultra DMA 1<br>**Ultra DMA 2** | Determines the mode used for DMA transfers to/from the drive. (Choosing [Auto] for the HDD Configuration option selects the optimum setting for this option.) |

* These values can be changed when Hard Disk is selected.

## Advanced Menu Options

Options in the Advanced menu are described in Table 3-3.

*Table 3-3. BIOS Setup Advanced Menu Options*

| Option | Settings | Description |
|---|---|---|
| Plug & Play OS | **Yes**<br>No | Determines whether BIOS support for Plug and Play device configuration is enabled.<br><br>Select [Yes] if your operating system supports Plug and Play configuration. Select [No] if your operating system does not support Plug and Play configuration. (Windows 98 and Windows 2000 support Plug and Play configuration.)<br><br>If this option is set to [Yes], the BIOS only enables devices required to boot the system; further configuration is performed by the operating system. |
| Protected Device Configurations | **No**<br>Yes | Select [Yes] to prevent a Plug and Play operating system from changing device configuration settings. Select [No] to allow a Plug and Play operating system to configure system devices. |
| SERIAL/PARALLEL PORT CONFIGURATIONS SUBMENU | | Enter this submenu to configure peripheral interfaces. (See “Serial/Parallel Port Configurations Submenu Options” on page 9 for details.) |
| KEYBOARD/MOUSE FEATURES SUBMENU | | Enter this submenu to configure the system keyboard and mouse. (See ““Keyboard/Mouse Features Submenu Options” on page 11 for details). |
| VIDEO FEATURES SUBMENU | | Enter this submenu to configure system resources for the video controller. (See “Video Features Submenu Options” on page 12 for details.) |
| INTERNAL DEVICE CONFIGURATIONS SUBMENU | | Enter this menu to configure additional device controllers. (See “Internal Device Configurations Submenu Options” on page 13 for details.) |
| PCI CONFIGURATIONS SUBMENU | | Enter this menu to reserve specific IRQs for use by ISA devices. (See “PCI Configurations/IRQ Reservation Submenu Options” on page 14 for details.) |
| EVENT LOGGING SUBMENU | | Enter this submenu to view the Event Log features. (See “Event Logging Submenu Options” on page 15 for details). |
| Hotpad | **Enabled**<br>Disabled | This setting determines whether the following hotpads are enabled: Speaker On/Mute, Volume Up/Down, Display Select, and Brightness Up/Down. |

## Serial/Parallel Port Configuration Submenu Options

Configuration options for the Serial/Parallel Port Configuration submenu are given in Table 3-4. Note that some peripheral interfaces are only available when using a device attached to the mini-dock interface port such as the mini-dock.

*Table 3-4. Serial/Parallel Port Configurations Submenu Options*

| Option | Settings | Description |
|---|---|---|
| Serial Port | Disabled<br>**Enabled**<br>Auto | Determines whether the serial port is active and the method used to configure the serial port.<br><br>Select [Auto] to allow the BIOS or operating system to configure the port automatically.<br><br>Select [Enabled] to configure the Base I/O Address and Interrupt options manually in BIOS setup.<br><br>Select [Disabled] to turn serial port A off. |
| I/O Address | **3F8 - 3FF**<br>2F8 - 2FF<br>3E8 - 3EF<br>2E8 - 2EF | Determines the base I/O address used for the serial port. The Serial Port option must be set to [Enabled] before this setting can be changed. |
| Interrupt | IRQ 3<br>**IRQ 4** | Determines the interrupt request level used for the serial port. The Serial Port option must be set to [Enabled] before this setting can be changed. |
| Infrared Port | Disabled<br>**Enabled**<br>Auto | Determines whether the infrared port is active and the method used to configure the infrared port.<br><br>Select [Auto] to allow the BIOS or operating system to configure the port automatically.<br><br>Select [Enabled] to configure the I/O Address and Interrupt options manually in BIOS setup.<br><br>Select [Disabled] to turn off the infrared port. |
| Mode | IrDA<br>**FIR** | Determines which physical interface the infrared port is assigned to. Select IrDA to use the IrDA port in Standard IR (SIR) mode (115 Kbps). Select FIR to use the IrDA port in Fast IR mode (4 Mbps). |
| I/O Address | 3F8 - 3FF<br>2F8 - 2FF<br>3E8 - 3EF<br>**2E8 - 2EF** | Determines the base I/O address used for the infrared port. The Infrared Port option must be set to [Enabled] before this setting can be changed. |
| Interrupt | **IRQ 3**<br>IRQ 4 | Determines the interrupt request level used for the infrared port. The Infrared Port option must be set to [Enabled] before this setting can be changed. |
| I/O Address | 100 - 107<br>108 - 10F<br>110 - 117<br>**118 - 11F** | Determines the base I/O address for the infrared port. This option is only selectable when the Infrared Port Mode setting is FIR. |

*Table 3-4. Serial/Parallel Port Configurations Submenu Options (Continued)*

| Option | Settings | Description |
|---|---|---|
| DMA Channel | DMA 1<br>**DMA 3** | Determines the DMA channel assigned to the infrared port when using Fast IR mode. This option is only selectable when the Infrared Port Mode setting is FIR. |
| Parallel Port | Disabled<br>**Enabled**<br>Auto | Determines how system resources for the parallel port are configured.<br><br>Select [Enabled] to configure resources manually. Select [Auto] to allow the BIOS (or Plug and Play operating system) to configure system resources for the parallel port.<br><br>Select [Disabled] to disable the parallel port. |
| Mode | Output Only<br>**Bidirectional**<br>ECP | Determines the operational mode for the parallel port. Select Output Only, Bidirectional, or ECP (Extended Capabilities Port) depending on which setting is appropriate for your application.<br><br>This option is not displayed when the Parallel Port option is set to [Disabled]. |
| I/O Address | **378 - 37F**<br>278 - 27F<br>3BC - 3BF | Determines the base I/O address used for the parallel port. This option is not displayed when the Parallel Port option is set to [Disabled]. |
| Interrupt | IRQ 3<br>IRQ 4<br>**IRQ 7** | Determines the interrupt request level used for the parallel port. This option is not displayed when the Parallel Port option is set to [Disabled]. |
| DMA Channel | **DMA 1**<br>DMA 3 | Determines the DMA channel assigned to the parallel port when using ECP mode.<br><br>This option is only displayed when the Parallel Port option is set to ECP. |

## Keyboard/Mouse Features Submenu Options

Configuration options for the Keyboard/Mouse Features submenu are given in Table 3-5.

*Table 3-5. Keyboard/Mouse Features Submenu Options*

| Option | Settings | Description |
|---|---|---|
| Numlock | Off<br>Auto<br>**On** | This option determines the state of the NumLock key when the system is powered on. This option is applicable to both wired and wireless keyboards. |
| Hot Plug | **Enabled**<br>Disabled | This option determines whether the system is hot-pluggable (i.e., when it is cradled in the docking station, the PS/2 port is hot-pluggable).<br><br>Select [Enabled] to allow devices to be connected while the system is running.<br><br>Select [Disabled] to prevent devices from being hot-plugged into the system. |
| USB Keyboard/Mouse | **Auto**<br>Disabled<br>Enabled | When [Auto] is selected, Legacy (PS/2) Emulation is enabled if a USB keyboard/mouse is connected at boot.<br><br>When [Disabled] is selected, Legacy Emulation is disabled.<br><br>When [Enabled] is selected, Legacy Emulation is enabled and a USB keyboard/mouse is available without a USB-aware operating system. |

## Video Submenu Options

Options for the Video Features submenu are given in Table 3-6.

*Table 3-6. Video Features Submenu Options*

| Option | Settings | Description |
|---|---|---|
| Display | **Internal Flat Panel**<br>External<br>Simultaneous | Determines the default display device.<br><br>Select the appropriate option to choose the LCD (internal flat panel), an external video monitor, or both as the default display device.<br><br>Note that using the Display Select hotpad will change this setting. |
| Compensation | **Disabled**<br>Enabled | Determines whether the VGA images will expand to full screen on an SVGA display, or cause VGA images to stretch to SVGA on an XVGA display (not full screen). Note that if compensation is enabled, the display quality will not be as good as if it is disabled.<br><br>Select [Disabled] to use the center portion of the screen.<br><br>Select [Enabled] to expand the image. |

## Internal Device Configurations Submenu

Options for the Internal Device Configurations submenu are given in Table 3-7.

*Table 3-7. Internal Device Configurations Submenu Options*

| Option | Settings | Description |
|---|---|---|
| Floppy Disk Controller | **Enabled**<br>Disabled | When [Enabled] is selected, the floppy disk drive is enabled.<br><br>When [Disabled] is selected, the floppy disk drive is disabled. |
| IDE Controller | **Enabled**<br>Disabled | When [Enabled] is selected, the IDE port is enabled.<br><br>When [Disabled] is selected, the IDE port is disabled. |
| LAN Controller | **Auto**<br>Enabled<br>Disabled | When [Auto] is selected, the LAN device is always enabled when AC power is supplied. When running on battery power, the LAN device is only enabled when the link is active.<br><br>When [Enabled] is selected, the LAN device is enabled.<br><br>When [Disabled] is selected, the LAN device is disabled. |
| Modem Controller | **Enabled**<br>Disabled | When [Enabled] is selected, the modem is enabled.<br><br>When [Disabled] is selected, the modem is disabled. |

## PCI Configurations/IRQ Reservation Submenu

The PCI Configuration submenu has only one selection: the IRQ Reservation submenu. The IRQ Reservation submenu allows you to reserve specific IRQs that are used by legacy devices. Unless you need to reserve specific IRQs to resolve a resource conflict, the recommended setting for each of these options is Available.

*Table 3-8. PCI Configurations/IRQ Reservation Submenu Options*

| Option | Settings | Description |
|---|---|---|
| IRQ 3 | **Available**<br>Reserved | Select Reserved if the IRQ is needed for use by a legacy ISA device. |
| IRQ 4 | **Available**<br>Reserved | Select Reserved if the IRQ is needed for use by a legacy ISA device. |
| IRQ 7 | **Available**<br>Reserved | Select Reserved if the IRQ is needed for use by a legacy ISA device. |
| IRQ 9 | **Available**<br>Reserved | Select Reserved if the IRQ is needed for use by a legacy ISA device. |
| IRQ 10 | **Available**<br>Reserved | Select Reserved if the IRQ is needed for use by a legacy ISA device. |
| IRQ 11 | **Available**<br>Reserved | Select Reserved if the IRQ is needed for use by a legacy ISA device. |
| IRQ 15 | **Available**<br>Reserved | Select Reserved if the IRQ is needed for use by a legacy ISA device. |

## Event Logging Submenu

The Event Logging Submenu allows you to configure DMI (Desktop Management Interface) event logging options. To access this submenu, select Event Logging Submenu from the Advanced menu.

*Table 3-9. Event Logging Submenu Options*

| Option | Settings | Description |
|---|---|---|
| Event Log Capacity | | Status of the event log is displayed. |
| Event Log Validity | | Indicates whether data in the event log is valid. |
| View Event Log | **Enter** | Press the <Enter> key or select the [Enter] option to view the contents of the event log. |
| Event Logging | Disabled<br>**Enabled** | Determines whether DMI event logging is enabled. |
| System Boot Event | **Disabled**<br>Enabled | This option is only available when [Enabled] is selected for Event Logging.<br><br>When [Enabled] is selected, the event may be logged.<br><br>When [Disabled] is selected, the event is ignored. |
| Clear All Event Logs | **No**<br>Yes | Choose [Yes] to clear all DMI event logs at the next boot. (This setting is reset to No after the event logs are cleared.) |
| Mark Events as Read | **Enter** | Press [Enter] or press the <Enter> key to mark all events currently in the event log as read. Marked events will not be displayed the next time View Event Log is selected. |

## Security Menu Options

Security menu options for the Stylistic LT C-500 pen tablet are described in Table 3-10. Note that settings for some security menu options determine whether other options are available.

*Table 3-10. BIOS Setup Security Menu Options*

| Option | Settings | Description |
|---|---|---|
| Supervisor Password Is | Enabled<br>**Disabled** | Indicates whether a supervisor password has been specified. (This field cannot be changed directly. To enable or disable the supervisor password, enter a new password or clear the old password using the Set Supervisor Password option.) |
| User Password Is | Enabled<br>**Disabled** | Indicates whether a user password has been specified. (This field cannot be changed directly. To enable or disable the user password, enter a new password or clear the old password using the Set User Password option.) |
| Security Mode | **Normal**<br>Security Card | Select Normal to allow the password to be input from the keyboard (either a hardware keyboard, or the pop-up software keyboard). Select Security Card to input the password from the security card. |
| Set Supervisor Password | (Tap on the setting field for this option or press the <Enter> key to specify a supervisor password.) | Specifying a supervisor password grants access to all password protected Security menu options. When a supervisor password is enabled and a user password is used to enter BIOS Setup, the user cannot access the following Security menu options: Set Supervisor Password, Floppy Disk Access, and Hard Disk Boot Sector.<br><br>When enabled, a supervisor password (or user password if used) is required to run BIOS Setup. |
| Set User Password | (Tap on the setting field for this option or press the <Enter> key to specify a user password.) | Specifying a user password grants access to the following Security menu options only: User Password, Password On Boot. Other Security menu options are not accessible.<br><br>(When a supervisor password is enabled and a user password is used to enter BIOS Setup, the user cannot access the following Security options: Set Supervisor Password, Floppy Disk Access, Hard Disk Boot Sector.)<br><br>When enabled, a user (or supervisor) password is required to run BIOS Setup.<br><br>Note that a supervisor password must be enabled before a user password can be specified. |
| Minimum User Password Length | | Set the minimum length for the user password. Once this field is set, the user cannot enter any passwords less than the minimum length. |
| Password On Boot | **Disabled**<br>Enabled | Select [Enabled] to require a user or supervisor password to boot the system. Note that a user or supervisor password must be specified before this option can be enabled. |

*Table 3-10. BIOS Setup Security Menu Options (Continued)*

| Option | Settings | Description |
|---|---|---|
| Boot from Removable Media | **All**<br>Supervisor Only | This option determines who has permission to boot the system using removable media. Select [Supervisor Only] to allow the system only to be booted from removable media after the system is started by entering a supervisor password when the Password On Boot option is enabled.<br><br>When [Supervisor Only] is selected, the system cannot be booted from removable media if Supervisor Password is enabled and the Supervisor password was not entered at boot time. |
| Floppy Disk Access | **All**<br>Supervisor Only | This option determines who has access to an external floppy drive. Select [Supervisor Only] to allow diskette access only after the system is started by entering a supervisor password when the Password On Boot option is enabled. If the Password On Boot option is disabled, the floppy drive is not accessible.<br><br>When [Supervisor Only] is selected, the system prevents diskette access if Supervisor Password is enabled and the Supervisor password was not entered at boot time. |
| HARD DISK SECURITY SUBMENU | | Enter this submenu to configure the hard disk security. (See “Hard Disk Security Submenu Options” on page -18 for details.) |
| OWNER INFORMATION SUBMENU | | Enter this submenu to view and change system owner information. (See “Owner Information Submenu Options” on page -18 for details.) |
| Hard Disk Boot Sector | **Normal**<br>Write Protected | This option write-protects the boot sector on the hard disk, to protect against viruses.<br><br>Select [Write Protect] to grant read only access to the hard disk drive’s boot sector.<br><br>Select [Normal] to allow read and write access to the boot sector.<br><br>**Caution**<br>Selecting [Write Protect] is not advisable on systems running Windows 98 or Windows 2000, since those operating systems must occasionally write to the boot sector. Select [Normal] if your system runs Windows 98 or Windows 2000. |

## Hard Disk Security Submenu

Hard Disk Security submenu options for the Stylistic LT C-500 pen tablet are described in Table 3-11.

*Table 3-11. Hard Disk Security Submenu Options*

| Option | Settings | Description |
|---|---|---|
| Primary Master | **Disabled**<br>Enabled | When [Enabled] is selected, the hard disk is locked with the password. Data in the locked disk cannot be read on any system other than the original system on which it was locked, or on systems with identical password settings.<br><br>If the Supervisor Password has not yet been set, this item is grayed, and cannot be selected or changed.<br><br>When [Disabled] is selected, this feature is disabled. |

## Owner Information Submenu

Owner Information submenu options for the Stylistic LT C-500 pen tablet are described in Table 3-12.

*Table 3-12. Owner Information Submenu Options*

| Option | Settings | Description |
|---|---|---|
| Owner Information Is | **Clear**<br>Set | Display only. Depending upon the current setting of the owner information, either [Clear] or [Set] is displayed. |
| Set Owner Information | **Enter** | Press the <Enter> key or select [Enter] to set owner information.<br><br>If the Supervisor Password has not yet been set, this item is grayed, and cannot be selected or changed.<br><br>The owner information is always displayed on the bottom line of the screen during POST. |
| Foreground Color | Black<br>Blue<br>Green<br>Cyan<br>Red<br>Magenta<br>Brown<br>White<br>**Gray**<br>Light Blue<br>Light Green<br>Light Cyan<br>Light Red<br>Light Magenta<br>Yellow<br>Bright White | Select the foreground color of the owner information display.<br><br>If the Supervisor Password has not yet been set, this item is grayed, and cannot be selected or changed.<br><br>The owner information is always displayed on the bottom line of the screen during POST. |
| Background Color | **Black**<br>Blue<br>Green<br>Cyan<br>Red<br>Magenta<br>Brown<br>White<br>Gray<br>Light Blue<br>Light Green<br>Light Cyan<br>Light Red<br>Light Magenta<br>Yellow<br>Bright White | Select the background color of the owner information display.<br><br>If the Supervisor Password has not yet been set, this item is grayed, and cannot be selected or changed.<br><br>The owner information is always displayed on the bottom line of the screen during POST. |

## Power Savings Menu Options

Options for the Power Savings menu are described in Table 3-13. Default settings for most options in this menu differ depending on the setting selected for the Power Savings BIOS option. (Refer to Chapter 7 of this manual for more information on power management.)

**Caution**

- Power savings options should be set to the most conservative values possible for your application; doing so extends battery life and lowers internal temperatures of the pen tablet.
- Systems with Windows 2000 have ACPI features that allow you to manage power via the operating system rather than the BIOS. Possible conflicts may occur if changes are attempted in both the OS and the BIOS.

*Table 3-13. BIOS Setup Power Savings Options*

| Option | Settings | Description |
|---|---|---|
| Power Savings | Disabled<br>**Customized**<br>Maximum Power Savings<br>Maximum Performance | Select [Maximum Power Savings] to use a power management profile designed to maximize battery life.<br><br>Select [Maximum Performance] to configure the system to use a power management profile designed for maximum system performance.<br><br>Select [Customized] to edit power management BIOS options directly and create a custom power management profile.<br><br>Select [Disabled] to use no power management (all devices remain on). |
| Hard Disk Timeout | **Off**<br>30 Seconds<br>1 Minute<br>2 Minutes<br>4 Minutes<br>6 Minutes<br>8 Minutes<br>10 Minutes<br>15 Minutes<br>20 Minutes | Determines the amount of time elapsed with no hard disk drive activity before the hard disk drive is spun down. Select [Off] to keep the hard disk fully powered (always spinning) while the system is running. Note that the hard disk drive is more vulnerable to shock and vibration damage when it is spinning. |
| Display Timeout | **Off**<br>2 Minutes<br>4 Minutes<br>6 Minutes<br>8 Minutes<br>10 Minutes<br>15 Minutes<br>20 Minutes | Use this option to determine the amount of time the user input devices are inactive before the screen is turned off automatically.<br><br>This setting affects any external video monitor as well as the pen tablet display screen.<br><br>Select [Off] to keep the video system fully powered while the system is running. |
| Standby Timeout | Off<br>1 Minute<br>2 Minutes<br>**4 Minutes**<br>6 Minutes<br>8 Minutes<br>12 Minutes<br>16 Minutes | Standby Mode turns off various devices in the system, including the screen and the CPU until you start using the computer again.<br><br>Select the period of time the system should be inactive before it automatically enters standby mode. When in standby mode, some system components, including the display, are turned off to conserve battery power. Select Off to disable the Standby Mode Timeout feature. (See “Standby Mode” on page 65 for more information.) |

*Table 3-13. BIOS Setup Power Savings Options (Continued)*

| Option | Settings | Description |
|---|---|---|
| Auto Suspend Timeout | Off<br>5 Minutes<br>10 Minutes<br>**15 Minutes**<br>20 Minutes<br>30 Minutes<br>40 Minutes<br>60 Minutes | Determines the amount of time elapsed with no system activity before system operation is suspended automatically. |
| Suspend Mode (Windows 98 only) | **Suspend**<br>Save To Disk | Determines the suspend mode used when you press the Suspend/ Resume button or when the Suspend Mode Timeout expires.<br><br>Selecting [Suspend] also allows you to configure the Save-To-Disk Timeout option.<br><br>Note: You must choose [Suspend] to use the Resume On Modem Ring and Resume On Time options. If [Save To Disk] is selected, and either Resume On Modem Ring or Resume On Time are enabled, the system will suspend to RAM and won't save to disk. |
| Auto Save-To-Disk (Windows 98 only) | **Off**<br>After 1 Hour | Determines whether the system automatically performs a save-to-disk operation after 1 hour in Suspend mode.<br><br>To use this feature, the Suspend Mode option must be set to [Suspend]. |
| Resume On Modem Ring | **Off**<br>On | Select [On] to configure the system to resume operation when an incoming call is detected by your modem.<br><br>This feature will detect a modem ring on the built-in modem, a modem installed in a PC Card slot, or an external modem connected to a serial port; however, implementation of the ring indicator function differs between modem vendors, so this feature may not be supported by some third-party modems.<br><br>To use this feature, the Suspend Mode option must be set to [Suspend]. If [Save To Disk] is selected, and Resume On Modem Ring is On, the system will suspend to RAM and won't save to disk. |
| Resume On Time | **Off**<br>On | Select [On] to configure your system to resume operation at the time of day specified in the Resume Time field.<br><br>To use this feature, the Suspend Mode option must be set to [Suspend]. If [Save To Disk] is selected, and Resume On Time is On, the system will suspend to RAM and won't save to disk. |
| Resume Time | 00:00:00 | Determines time of day system will resume when the Resume On Time option is On. Enter the time of day in HH:MM:SS format. Note: system uses a 24-hour clock. |
| ADVANCED FEATURES SUBMENU | | Select this submenu to further refine power management BIOS options. See Table 3-14 for more information. |

## Advanced Features Options Submenu

Options for the Advanced Features Options submenu are described in Table 3-14.

*Table 3-14. BIOS Advanced Features Options Submenu*

| Option | Settings | Description |
|---|---|---|
| Suspend/Resume Switch | **Enabled**<br>Disabled | Determines whether the Suspend/Resume switch is enabled or disabled. Note that when this option is in Disabled mode, the switch will still resume from an auto-suspended state. |
| Resume On LAN | **Off**<br>On | Selecting [On] allows the system to wake up when the internal LAN device receives a Magic Packet while in Suspend Mode. |
| Serial Mouse Activity | **Disabled**<br>Enabled | Determines whether the video system resumes when external RS-232 activity is detected.<br><br>Select Enabled to resume video system operation when a connected serial device (such as a serial mouse) is active. |
| Thermal Control | **Maximum Power Savings**<br>Maximum Performance | This selection determines the method of thermal control used by the system.<br><br>Select [Maximum Power Savings] to use CPU slowdown as the primary cooling method.<br><br>Select [Maximum Performance] to use the fan as the primary cooling method.<br><br>Note that - if the temperature is too high - both systems may be used to cool it down. |

## Boot Menu Options

Boot menu options are described in Table 3-15.

*Table 3-15. BIOS Setup Boot Menu Options*

| Option | Settings | Description |
|---|---|---|
| Quick Boot | Disabled<br>**Enabled**<br>Auto | Determines whether the full set of tests are run during the Power-On Self Test (POST).<br><br>When [Enabled] is selected, a less extensive memory test is performed and the size of installed memory is not displayed during the memory test.<br><br>When [Auto] is selected, diagnostic tests will either be skipped or performed according to the order of the ACPI OS.<br><br>When [Disabled] is selected, the full set of tests is run. |
| Boot-Time Diagnostic Screen | **Disabled**<br>Enabled | Determines whether status messages are displayed as the Power On Self Test (POST) is performed.<br><br>Select [Enabled] to display messages.<br><br>If [Disabled] is selected, messages are not displayed and the logo screen is displayed. (If POST errors occur, POST messages are displayed regardless of this setting.) |
| Preboot Execution Environment | **Disabled**<br>Enabled | Determines whether or not to boot up from a network server.<br><br>Select [Enabled] to allow the system to boot from a network server (Preboot Execution Environment).<br><br>If [Disabled] is selected, this feature is disabled. |
| BOOT DEVICE PRIORITY SUBMENU | | Select this submenu to configure the order in which drives are searched for a bootable image. |

## Boot Device Priority Submenu

Table 3-16. describes settings in the Boot Device Priority submenu.

*Table 3-16. BIOS Setup Boot Sequence Submenu*

| Setting | Description |
|---|---|
| **1. [Floppy Disk Drive]**<br>**2. [Hard Disk Drive]** | Determines the order that the systems searches drives for a bootable image.<br><br>Tap on item 2 to change the boot sequence. |
| 1. [Hard Drive]<br>2. [Diskette Drive] | |

## Info Menu

The Info menu displays information about the pen tablet hardware and BIOS software installed on the system as described in Table 3-17.

*Table 3-17. BIOS Setup Info Menu*

| Field | Description |
|---|---|
| BIOS Version | Version number of the BIOS software installed on system. |
| BIOS Date | Release date of the BIOS software. |
| BIOS Area | Memory area used by the BIOS. |
| CPU Type | Pen tablet CPU. |
| CPU Speed | Processor speed. |
| L1 Cache | Size of level 1 cache. |
| L2 Cache | Size of level 2 cache. |
| Total Memory | Total memory installed in pen tablet (including built-in memory). |
| Memory Slot | Size of memory installed in DIMM slot. |

## Exit Menu Options

Exit menu options are described in Table 3-18.

*Table 3-18. BIOS Setup Exit Menu Options*

| Option | Description |
|---|---|
| **Exit Saving Changes** | Exit after writing all changed BIOS Setup settings to CMOS memory. |
| Exit Discarding Changes | Exit without saving changes to BIOS Setup settings to CMOS memory. |
| Load Setup Defaults | Load default settings for all BIOS Setup options. |
| Discard Changes | Read previous settings from CMOS memory and load in all BIOS Setup options. |
| Save Changes | Save BIOS changes to CMOS. |

# PHDISK Hard Disk Preparation Utility

***Note:*** *The PHDISK utility is applicable only to systems running Windows 98 as their operating system.*

The PHDISK hard disk preparation utility can be used to prepare either a dedicated partition or create a hidden MS-DOS file for storing system data during a "save-to-disk" operation.

***Note:*** ***The Save-to-Disk operation will not work unless the Resume On Modem Ring is disabled in both the BIOS and in Windows.*** *In order to disable Resume On Modem Ring, contact Fujitsu PC to obtain a patch program which will allow you to disable the function through Windows.*

**Caution**

Creating a save-to-disk partition will reformat the hard disk drive, erasing all data on the disk. Back up your hard disk before using PHDISK to create a save-to-disk partition.

## Command Line Options

Table 3-19 lists PHDISK command line options and additional parameters. Note that PHDISK options can be invoked using only the first letter of each option and parameter. For example either,

```
PHDISK /REFORMAT
```

or

```
PHDISK /R
```

can be used to invoke the reformat option.

*Table 3-19. PHDISK Command Line Options*

| Option | Parameters | Description |
|---|---|---|
| None | | Displays the PHDISK Opening Screen. |

*Table 3-19. PHDISK Command Line Options (Continued)*

| Option | Parameters | Description |
|---|---|---|
| /CREATE | /PARTITION | Creates a save-to-disk partition. (Entire hard disk is reformatted.)<br>**Caution**<br>Creating a save-to-disk partition will reformat the hard disk drive, erasing all data on the disk. You must back up your hard disk before using PHDISK to create a save-to-disk partition. To avoid reformatting your hard disk, use the /FILE parameter instead of the /PARTITION parameter. |
| | /FILE | If no save-to-disk partition exists, PHDISK creates a save-to-disk file large enough for the current system configuration.<br>If a save-to-disk partition exists, PHDISK creates a save-to-disk file large enough to supplement the existing save-to-disk partition space. (The file created provides additional disk space required for save to disk operation.) |
| /DELETE | /PARTITION | Deletes all data in the save-to-disk partition and renders disk space occupied by the save-to-disk partition unusable. (You must reformat the entire hard disk to use the hard disk space occupied by the deleted partition.) |
| | /FILE | Delete save-to-disk file. |
| /INFO | /PARTITION | Displays data about the save-to-disk partition. |
| | /FILE | Displays data about the save-to-disk file. |
| /REFORMAT | /PARTITION | Reformat the save-to-disk partition. This option is typically used if a hard disk error is detected in the save-to-disk partition. |

The example below shows the type of information that is displayed when PHDISK is called without a command line option. This example displays both the save to disk FILE INFORMATION and save-to-disk PARTITION INFORMATION headers. These headers are displayed only when both a save-to-disk partition and a save to disk file exist. (The USAGE and OPTIONS headers are displayed in several screens displayed by PHDISK).

***Note:*** *When a save-to-disk partition and file both exist, save-to-disk data is stored in the partition first and any excess data is stored in the save-to-disk file. It is recommended that you configure your system to use either a save-to-disk partition exclusively or a save-to-disk file exclusively. This ensures that your save-to-disk data is stored in contiguous disk space.*

```
PHDISK 3.2.10 -- Phoenix NoteBIOS 4.0 (TM) Save to Disk Preparation Utility
Copyright (c) Phoenix Technologies Ltd. 1995-97.  All rights Reserved.
Copyright (c) FUJITSU LIMITED. 1998

Save to Disk file information:
   Your Save to Disk file is named C:\SAVE2DSK.BIN and has a size
   of xxxx KBytes. It has System, Hidden, and Read Only attributes.

Save to Disk partition information:
   Partition starts at sector xxxxx (head xx, cylinder xx, sector xx)
   Partition size: xxxx KBytes total

Current System Status:
   You currently need a Save to Disk area of xxxx KBytes. PhDisk will
   also require additional overhead and will automatically calculate the
   actual required space.
```

```
You have both a file and a partition. Save to Disk will default
to file. Either delete the file, or the partition.

Usage:PHDISK [options]
/CREATE     (/FILE or /PARTITION)      -- Create STD file or partition
/DELETE     (/FILE or /PARTITION)      -- Delete existing STD file or partition.
/INFO                                  -- Information on STD disk area(s)
/REFORMAT /PARTITION                   -- Reformat existing STD partition

This utility configures a hard disk to utilize the Phoenix NoteBIOS 4.0
Save to Disk feature. Please refer to your user manual for information
regarding Save to Disk.
```

## CREATE Option

The CREATE option measures the amount of on-board memory, and partitions a segment of the hard disk drive large enough to store all the data that might be there. The CREATE option formats the save-to-disk partition or file, marking bad spots on the hard disk drive as they are found.

### Automatic Memory Size Calculation

PHDISK automatically measures all system and video memory and calculates the exact amount of hard disk space required to store the maximum amount of data the memory might contain. The result of this measurement, [SIZE], is displayed on the PHDISK screen.

The total amount of system and video memory is calculated by the following formula:

Calculated memory = Physical System Memory + Video Memory + 0.3 KBytes (Save to Disk overhead)

Hard disk space is allocated by cluster, therefore, the save-to-disk partition may exceed [SIZE] by nearly one cluster. This space is used, as needed, for the bad-sector replacement pool.

### Specify Memory Size

The amount of disk space required to store all system and video memory is calculated automatically whenever the CREATE option is used. If you specify a specific amount of memory, [SIZE], equal to or larger than the calculated space required, the amount of memory specified by the [SIZE] parameter is allocated. [SIZE] is measured in kilobytes (the measurement notation K, or KB, or KBytes, is not entered in the command line).

- If [SIZE] is larger than or equal to the calculated space required:
  Save to Disk disk space allocated = [SIZE].
- If [SIZE] is smaller than the calculated space required:
  [SIZE] is ignored, no Save to Disk disk space is allocated, and an error message is displayed.

### /PARTITION or /P

PARTITION creates a hard disk partition where only save-to-disk data is stored.

**Caution**

Creating a save-to-disk partition will reformat the hard disk drive, erasing all data on the disk. You must back up your hard disk before using PHDISK to create a save-to-disk partition. To avoid reformatting your hard disk, use the /FILE parameter instead of the /PARTITION parameter.

***Note:*** *The hard disk drive boot sector BIOS configuration option must be set to normal to create a save-to-disk partition.*

### /FILE or /F

The /FILE parameter creates a file in the hard disk's MS-DOS partition that is used to store only save-to-disk data. When a save-to-disk partition already exists, a file large enough to supplement the save-to-disk partition is created by default.

When the system and video memory outgrows the [SIZE] of the save-to-disk partition, the /FILE option can be used to re-allocate disk space. Using /FILE eliminates the user's need to create a new save-to-disk partition, and also eliminates the time consuming task of backing up the entire hard disk drive before running PHDISK /CREATE /PARTITION.

If you want to use a save-to-disk file exclusively to store save-to-disk data, you must first delete any existing save-to-disk partition before creating a save-to-disk file.

### /CREATE Option Syntax

The syntax of the PHDISK /CREATE option is:

```
PHDISK /CREATE [SIZE][/FILE][/PARTITION]
```

Table 3-20 lists valid examples of the PHDISK /CREATE option.

*Table 3-20. PHDISK /CREATE Option*

| Command | Description |
|---|---|
| PHDISK /CREATE /FILE<br>(or PHDISK /C /F) | If no save-to-disk partition exists, PHDISK creates a save-to-disk file large enough for the current system configuration.<br><br>If a save-to-disk partition exists, PHDISK creates a save-to-disk file large enough to supplement the existing save-to-disk partition space. (The file created provides additional disk space required for save-to-disk operation.) |
| PHDISK /CREATE /PARTITION<br>(or PHDISK /C /P) | Creates a save-to-disk partition using the amount of memory required as calculated by PHDISK.<br><br>**Caution**<br><br>Creating a save-to-disk partition will reformat the hard disk drive, erasing all data on the disk. You must back up your hard disk before using PHDISK to create a save-to-disk partition. To avoid reformatting your hard disk, use the /FILE parameter instead of the /PARTITION parameter. |
| PHDISK /CREATE 10240 /FILE<br>(or PHDISK /C 10240 /F) | Creates a 10 MB save-to-disk file. The [SIZE] variable is 10240. |

## REFORMAT Option

The /REFORMAT option resets the pointers in a save-to-disk partition. Use this option after a save-to-disk operation is terminated by a read or write error.

***Note:*** *Only save-to-disk partitions can be reformatted; save-to-disk files cannot. If a hard disk error occurs while writing to a save-to-disk file, use PHDISK /DELETE /FILE to delete the save-to-disk file. Then, use PHDISK /CREATE /FILE to create a new save-to-disk file.*

### /REFORMAT Option Syntax

Table 3-21 lists an example of the PHDISK /REFORMAT option.

*Table 3-21. PHDISK /REFORMAT Option*

| Command | Description |
|---|---|
| PHDISK /REFORMAT /PARTITION<br>(or PHDISK /R /P) | Reformats the save-to-disk partition. |

## DELETE Option

When DELETE is specified, the pointers and data in the specified save-to-disk partition or file are deleted. Use DELETE when bad data is displayed after a Resume From Disk operation.

### /DELETE Option Syntax

Table 3-22 lists valid examples of the PHDISK /DELETE option.

*Table 3-22. PHDISK /DELETE Option*

| Command | Description |
|---|---|
| PHDISK /DELETE /FILE<br>(or PHDISK /D /F) | Delete save-to-disk file. |
| PHDISK /DELETE /PARTITION<br>(or PHDISK /D /P) | Deletes all data in the save-to-disk partition and renders disk space occupied by the save-to-disk partition unusable. (You must reformat the entire hard disk to use the hard disk space occupied by the deleted partition.) |

## INFO Option

The /INFO option displays data about the save-to-disk partition or file.

### /INFO Option Syntax

Table 3-23 lists valid examples of the PHDISK /INFO option.

*Table 3-23. PHDISK /INFO Option*

| Command | Description |
|---|---|
| PHDISK /INFO /FILE<br>(or PHDISK /I /F) | Displays the size (in kilobytes) of the save-to-disk file size. |
| PHDISK /INFO /PARTITION<br>(or PHDISK /I /P) | Displays the PHDISK /INFO screen. |

An example of the /INFO screen when a save-to-disk partition exists is shown below:

```
PHDISK 3.2.10 -- Phoenix NoteBIOS 4.0 (TM) Save to Disk Preparation Utility
Copyright (c) Phoenix Technologies Ltd. 1995-97.  All rights Reserved.
Copyright (c) FUJITSU LIMITED. 1998

Save to Disk partition information:
   Partition starts at sector xxxxx (head xx, cylinder xx, sector xx)
   Partition size: xxxx KBytes total

Current System Status:
   You currently need a Save to Disk area of xxxx KBytes. PhDisk will
   also require additional overhead and will automatically calculate the
   actual required space.
```

## Messages

PHDISK returns various informational messages, not all of which are listed here. The following listing emphasizes the error messages, including a possible course of action.

### PHDISK Sign-on Message

This message is displayed at system startup.

```
PHDISK X.X - Phoenix NoteBIOS 4.0 (tm) Save to Disk Preparation Utility
Copyright (c) Phoenix Technologies Ltd. 1995. All rights reserved.
```

### Help Screen

The HELP screen is displayed when PHDISK is called without options. The following text is displayed when a save-to-disk partition already exists.

```
Usage:PHDISK [options]
/CREATE    (/FILE or /PARTITION)    -- Create STD file or partition
/DELETE    (/FILE or /PARTITION)    -- Delete existing STD partition.
/INFO                               -- Information on STD disk area(s)
/REFORMAT /PARTITION                -- Reformat existing STD partition
This utility configures a hard disk to utilize the Phoenix NoteBIOS 4.0
Save to Disk feature. Please refer to your user manual for information
regarding Save to Disk.
```

### Unrecognized Option

The following text is displayed when an invalid option is entered at the command line.

```
Error: (User option) is an unrecognized command line option.
For a command line summary, invoke PHDISK without any parameters.
```

Run the PHDISK command again in this case.

### Fatal Error

The following text is displayed when a hard disk error is detected during any save-to-disk operation.

```
Error: A fatal hard disk error has occurred.
Check your hardware configuration and re-execute PHDISK.
```

Run a hard disk utility to determine the source of the error, then re-execute the PHDISK command.

### Not Enough Disk Space

The following text is displayed when the amount of unused disk space available is less than the amount required to create the save-to-disk partition.

```
Error: Not enough free disk space exists to create the suspend to disk
partition. Refer to the user manual for possible suggestions on increasing
the amount of free disk space for the suspend to disk partition.
```

Delete unused files, backup the DOS partition, reformat the disk, then run PHDISK /CREATE /PARTITION to create a larger partition.

### Save to Disk Partition Exists

The following text is displayed when a PHDISK /CREATE /PARTITION operation is attempted while a save-to-disk partition exists.

```
Error:Phoenix NoteBIOS Save to Disk partition already exists. To resize the
partition, delete the existing partition with PHDISK/DELETE and create the
partition with PHDISK/CREATE.
```

Reallocate the save-to-disk partition if needed, or use the /CREATE /FILE option instead. (Note that a partition will require contiguous disk space.)

### Too Many Bad Sectors

The following text is displayed when the save-to-disk partition is too small because of an increasing number of bad sectors.

```
Error: Too many errors exist in the Phoenix NoteBIOS (tm) Save to Disk
partition. Check your hardware configuration and rerun PHDISK.
```

Execute PHDISK /CREATE /FILE to create a save-to-disk file.

### First Two Sectors Bad

The following text is displayed when the save-to-disk partition cannot be used.

```
Error: The first two sectors in the Save to Disk partition are both
unusable. This disk is unsuitable for the Phoenix NoteBIOS Save to Disk
feature.
```

Attempt to reformat the partition using PHDISK /REFORMAT /PARTITION. (You may need to first delete the partition using PHDISK /DELETE /PARTITION depending on the disk error.)

### PHDISK /CREATE Failed to Execute

The following text is displayed when no save-to-disk partition exists, or the partition table on head 0, cylinder 0, sector 1 is corrupted.

```
Error: The Phoenix NoteBIOS (tm) Save to Disk partition doesn't exist or the
hard disk partition table on head 0, cylinder 0, sector 1 is corrupted.
Invoke PHDISK/CREATE to create the Save to Disk partition.
```

Execute PHDISK /CREATE /PARTITION.

### Good Sector Map Corrupted

The following text is displayed when a save-to-disk partition exists but the GSM is corrupted.

```
Error: The "Good sector map" (GSM) in the Phoenix NoteBIOS Save to Disk
partition is bad. Invoke PHDISK /REFORMAT to rebuild this table.
```

Use PHDISK /REFORMAT /PARTITION to reset the GSM flags.

### Not Enough System Memory

The following text is displayed when not enough system memory is available to execute PHDISK.

```
Error: Couldn't allocate additional memory required to execute PHDISK.
```

Add more system memory, then try the PHDISK command again.

### File Already Exists

The following text is displayed when the PHDISK /CREATE /FILE command is entered when a save-to-disk file already exists.

```
PHDISK X.X  -- Phoenix NoteBIOS 4.0 (tm) Save to Disk Preparation Utility
Copyright (c) Phoenix Technologies Ltd. 1995. All rights reserved.

Save to Disk file information:
   Your Save to Disk file is named C:\SAVE2DSK.BIN and has a size
   of xxxx KBytes. It has System, Hidden, and Read Only attributes.

The system will now be reset to allow the BIOS to
recognize the changes. If the system fails to reboot,
please reset the system manually.

Press any key to reset the system...
```

Delete the current file, using PHDISK /DELETE /FILE, before creating another save-to-disk file.

Chapter 4

# Installing Hardware Options

This chapter provides procedures for installing PC Cards, Compact Flash Cards, and DIMM modules. (For details on replacing the pen tablet's internal IDE hard disk drive, refer to "Removing the Hard Disk Drive" on page 69.)

## Installing a PC Card

You can install a PC Card while the system is running, when the system is off, or when system operation is suspended.

To install a PC Card,

1. With the arrow on the PC Card facing up, insert the card through the shutters in the PC Card slot, as shown in Figure 4-1.
2. Push the PC Card into the slot until it is seated.
3. If necessary, install any driver or application software necessary to use your PC Card. Do not, however, install any Card Services or Socket Services software provided with your PC Card. Card and Socket Services are configured automatically by the operating system.

The PC Card is now installed and you can use the PC Card with your system.

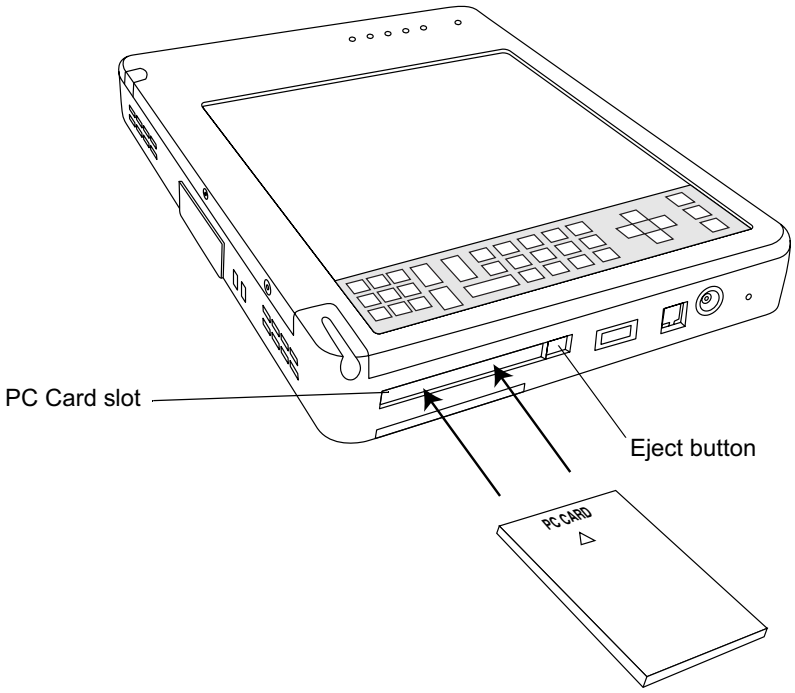



*Figure 4-1 Installing a PC Card*

## Removing a PC Card

To remove a PC Card,

1. Stop the PC Card using the appropriate features of your operating system.
2. Press the Eject button for the PC Card slot.
3. Pull the PC Card all the way out of the slot.

## Installing a Compact Flash Card

The compact flash memory slot allows you to add a flash card (CF Module) for compact, removable data storage. Note that the CF Module is a plug-and-play device.

To install a compact flash card,

1. Slide the Compact Flash slot cover in the direction indicated in Figure 4-2a. Once the tray is fully extended, the cover drops into a vertical position, as shown in Figure 4-2b.
2. With the arrow on the module label facing upwards, insert the compact flash card into the slot and push it in until it is firmly seated.
3. Swing the slot cover back into a horizontal position and push it into the system until it clicks in place.

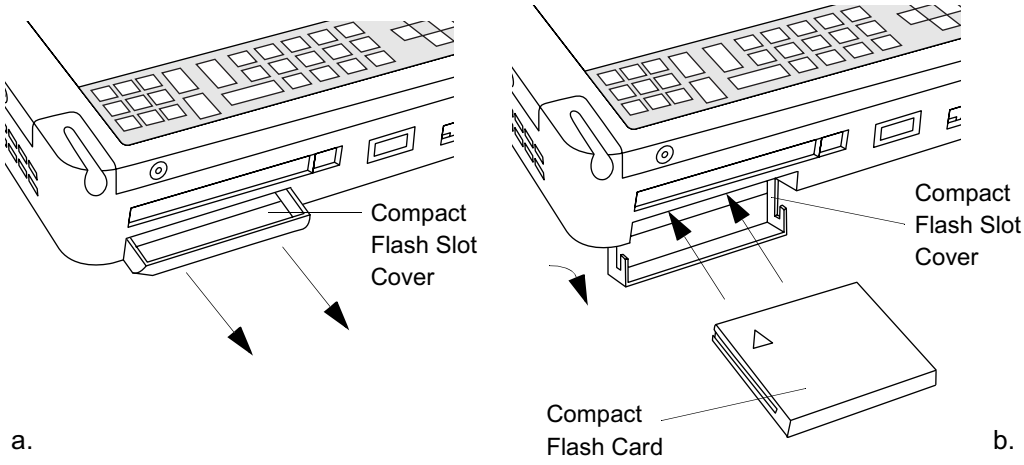



*Figure 4-2 Installing a Compact Flash Card*

To remove a compact flash card,

1. Slide the Compact Flash slot cover in the direction indicated in Figure 4-2a. Once the tray is fully extended, the cover drops into a vertical position, as shown in Figure 4-2b.
2. Pull the compact flash card out of the slot.
3. Swing the slot cover back into a horizontal position and push it into the system until it clicks in place.

# Installing a DIMM Module

**Caution**

DIMM replacement should only be performed at a static-free workstation. Avoid touching connector pins and circuit boards on the drive or pen tablet. Electrostatic discharge caused by doing so can damage sensitive components.

One of the following DIMM modules can be installed in the Stylistic LT C-500 pen tablet:

*Table 4-1. DIMM Module Sizes*

| DIMM Module Number | SDRAM Size |
|---|---|
| FMW28EM64 | 64MB SDRAM |
| FMW28EM128 | 128MB SDRAM |
| FMW28EM256 | 256MB SDRAM |

***Note:*** *The SDRAM located in the DIMM slot is the only RAN<M present in the system. The only way it can be expanded is by removing the old module and replacing it with a module with more RAM.*

Only one DIMM socket is available on the pen tablet. You will need to remove any DIMM module currently installed in the system before you can install a new DIMM module. See "Removing a DIMM Module" on page 36 for details.

To install a DIMM module in the pen tablet,

1. Ensure that the pen tablet is off. To do so, carry out the Shut Down command in the Start menu. (Do not attempt to remove or install a DIMM module when the system is in Suspend mode or running.)
2. Remove the two screws from the cover plate on the back of the pen tablet and remove the cover plate as shown in Figure 4-3.

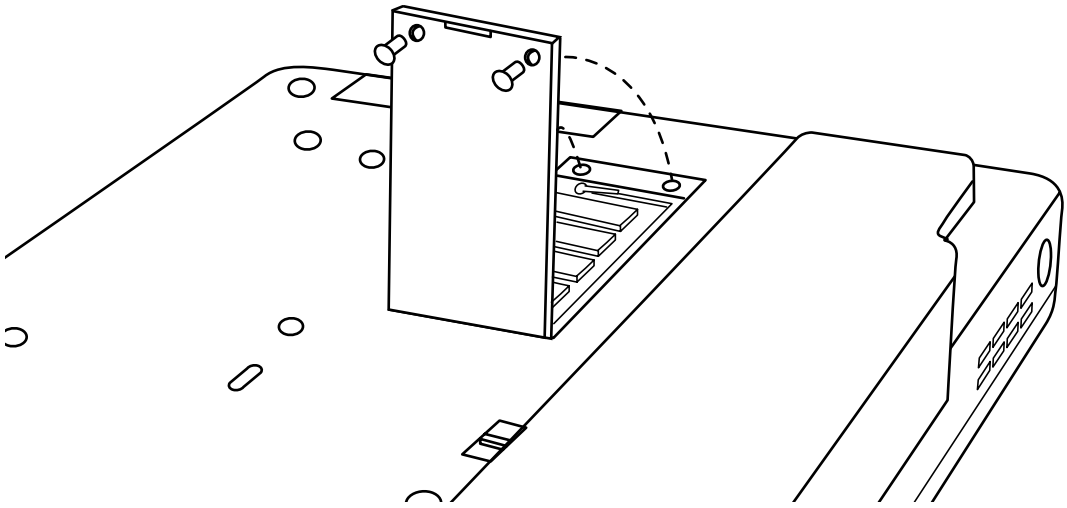


*Figure 4-3 Installing a DIMM Module*

3. Insert the DIMM module in the socket at an angle and push it down until it locks into place. Note that the DIMM module is keyed to prevent it from being inserted backwards.

4. Reinstall the cover and screws that you removed in step 2.

5. Confirm that the DIMM module is recognized by the system. To do so, run BIOS Setup. The size of the DIMM module should be displayed in the Info menu in BIOS Setup.

The DIMM module is installed in the pen tablet and you can now use the system.

## Removing a DIMM Module

To remove a DIMM module,

1. Ensure that the pen tablet is off. To do so, carry out the Shut Down command in the Start menu. (Do not attempt to remove or install a DIMM module when the system is in Suspend mode or running.)

2. Remove the screws from the cover plate on the back of the pen tablet and remove the cover plate as shown in Figure 4-3.

3. Spread the fingers on the socket that lock the DIMM module in place until the DIMM module is loose.

4. Remove the DIMM module from the socket.

The DIMM module is now removed from the pen tablet. Refer to “Installing a DIMM Module” on page 35 to install the new DIMM module.

# Chapter 5

# Hardware Specifications

Specifications for the Stylistic LT C-500 pen tablet and mini-dock are given in this chapter.

## General Specifications

General specifications for the pen tablet are given in Table 5-1.

*Table 5-1 Logic System Specifications*

| Feature | Specification | Comments |
|---|---|---|
| Architecture | IBM-AT compatible | |
| Microprocessor | Intel Celeron 500MHz | |
| Cache | Level 1 (L1) cache: 32 KB<br>Level 2 (L2) cache: 128 KB | L1 cache (internal CPU) is always enabled. |
| ROM | 512 KB | Flash ROM |
| RAM | Depending upon configuration, 64MB, 128MB, or 256MB is installed. | There is only one DIMM slot, representing all of the system RAM. In order to expand the RAM, the old DIMM must be removed and replaced with a DIMM with more RAM. |
| Video Controller | Cyber9525DVD<br>(Trident Microsystems) | VESA-compatible VGA controller with SVGA enhancements and MPEG decoding capability. |
| Video Memory | 2.5 MB SDRAM | High speed SDRAM integrated in video controller. |
| I/O Controller | FDC37N769<br>Standard Microsystems Corporation | Controller for: serial port, parallel port, IrDA port, and floppy disk drive. |
| PC Card Controller | PCI1420<br>Texas Instruments | Controller is on PCI bus. Supports CardBus (PCI bridge) and PCIC protocols. |
| Audio Controller | 440MX<br>(with STAC9721 Codec)<br>Intel Corporation | Full duplex 16-bit stereo digital audio.<br>Full Plug and Play (PnP) capability.<br>Sound Blaster Pro compatible.<br>Windows Sound System compatible. |

## Display Specifications

Specifications for the Stylistic LT C-500 pen tablet display are given in Table 5-2.

*Table 5-2 Display Specifications*

| Feature | Specification | Comments |
|---|---|---|
| TFT Color LCD | 8.4" diagonal<br>0.213 mm dot pitch<br>800 x 600 dot composition<br>256 K colors<br>Brightness: 8 gradations<br>Backlight: FL Tube x 1, lower side backlight<br>Brightness: max ~ 140 cd/$m^2$<br>Colors: 256 K<br>Active Area: 170.38 x 127.78<br>Backlight Inverter:<br>Input Voltage: ~7-17.6V<br>Output Voltage: Min 1600Vrms, Typ 1700Vrms<br>Power: Typ 4.5W, Max 4.53W | Viewable indoors and outdoors. |

## External Video Capabilities

The Stylistic LT C-500 pen tablet can drive an external video monitor using the video port on the optional mini-dock or the Video Out Adapter with the Interface Port. You can select an external monitor, the pen tablet display screen, or both as the active video display. The pen tablet supports VGA, SVGA, and XVGA video modes with external monitors. Screen resolutions supported for external video monitors are given in Table 5-3. For pin assignments on the video port connector, see "Video Port" on page 48.

*Table 5-3 Supported Video Modes for External Monitors*

| Resolution | Colors |
|---|---|
| 640x480 (VGA) | up to 16M |
| 800x600 (SVGA) | Up to 16M |
| 1024x768* (XVGA) | Up to 16M |

* The pen tablet display pans when using an external monitor at 1024x768 as the pen tablet display panel supports 800x600 resolution only.

Note that the display resolution is driver-dependent. You may need to obtain a driver from the manufacturer of your monitor to use it with the pen tablet.

# Digitizer Specifications

The Stylistic LT C-500 pen tablet uses a resistive digitizer. When the pen touches the screen, a conductive membrane contacts another conductive plane and determines the location of the pen. Table 5-4 shows the digitizer specifications.

***Note:*** *The digitizer system is designed for use with the pen. Although you can use your fingernail in the same manner as a pen, the digitizer system is not intended to be used as a "touch screen". Use of any tool other than the pen designed for this system may cause damage to the screen.*

## Technology Notice

The display for your pen tablet incorporates a breakthrough digitizer technology that dramatically improves outdoor viewability. Compared to traditional outdoor displays, the new display excels in providing superior visibility in full sunlight, and a clear, bright picture indoors, in low light conditions, or at night.

This new technology involves the use of a liquid between the digitizer layers to minimize light refraction and reduce glare. As a result of this technology, users may notice the appearance of tiny air bubbles which are caused by changes in pressure (such as that experienced in an airplane). These tiny bubbles are temporary and do not affect system performance or usability. The digitizer functions normally when the air bubbles are present.

The air bubbles are formed when the liquid vaporizes due to pressure change. When the pen tablet is returned to normal use conditions, the tiny air bubbles are absorbed back into the liquid after a short amount of time.

If these air bubbles are visually distracting, or if they form a larger bubble, gently rub the screen with a soft cotton cloth in a circular motion, similar to cleaning the screen of fingerprint oil.

*Table 5-4 Digitizer Specifications*

| Feature | Specification | Comments |
|---|---|---|
| Surface | Non-glare | |
| Active Area | 213.2 mm x 160.4 mm | Area of display screen that reacts with the pen. |
| Resolution | 0.1 mm | |
| Sampling Rate | 100 points per second | |

## Peripheral Interface Specifications

Specifications for peripheral interfaces on the Stylistic LT C-500 pen tablet are given in Table 5-5. For specifications on peripheral interfaces provided by the mini-dock, see "Mini-Dock Specifications" later in this chapter. Also note that pin assignments and other details for peripheral interfaces on the Stylistic LT C-500 pen tablet are given in Chapter 6 of this manual.

*Table 5-5 Peripheral Interface Specifications*

| Feature | Specification | Comments |
|---|---|---|
| PC Card Slot | One PC Card slot<br>Compliant with PC Card Standard Rev. 3.0<br>Supports:<br>CardBus<br>PCIC (PC Card I/O Cards) | System accepts:<br>One Type I or one Type II PC Card |
| Modem Port | RJ-11 connector for internal modem | Internal modem is certified only in the following countries: United States, Canada, Japan, Belgium, Denmark, Finland, France, Germany, The Netherlands, Italy, Norway, Sweden, Switzerland, United Kingdom, Austria, Portugal, Ireland, Spain, and Greece. |
| Universal Serial Bus | One USB Series A receptacle on pen tablet. | |
| IR Keyboard Port | An infrared receiver built into the pen tablet allows you to communicate with a wireless infrared keyboard. The keyboard infrared port works optimally between 10 to 30 cm (approximately 4 in. to 12 in.) from the keyboard infrared port, located on the bottom edge of the pen tablet. Ensure that there is a clear line-of-sight path between the infrared receiver on the pen tablet and the infrared transmitter on the keyboard. | The IR Keyboard Port is a proprietary port, and is not IrDA-compliant. |
| CF Slot | One slot for Type I or Type II Compact Flash card. | |
| IR I/O Port | An infrared transceiver built into the pen tablet allows you to communicate with other devices that are compliant with the IrDA Standard Revision 1.1. Effective range for infrared communication is about 3 feet, and within 15 degrees off of center. A clear line-of-sight path must exist between the IrDA port on the pen tablet and the IrDA transceiver on the other device. | |
| DC Power Input | 16 VDC ±10%, 3.36A<br>Connector vendor: Hosiden<br>(Hosiden part number HEC3900-01-010)<br>This connector is a EIAJ-RC5320A standard connector. | For use with FPCAC14A, FPCAC14B, and FPCAC14C AC adapters. External power can be connected to DC input connector on the pen tablet, mini-dock, or charge-only contacts. |
| Audio Jacks | Monaural microphone input mini jack<br>Stereo headphone output mini jack | Standard 3.5 mm mini jacks.<br>See "Audio Jacks" on page 59 for details on audio inputs and outputs. |

*Table 5-5 Peripheral Interface Specifications (Continued)*

| Feature | Specification | Comments |
|---|---|---|
| Mini-Dock Interface Port | 100-pin connector<br>Connector part numbers:<br>Connector on pen tablet:<br>KX20-100R-F2ST-A1<br>Connector on mini-dock:<br>KX20-100B-F2ST-A | For use with Stylistic LT C-500 mini-dock. |
| Charging Contacts | The two charge-only contacts are used when the pen tablet is installed in either the optional mini-dock or charge-only dock. | See Table 6-3 for signal assignments of the charge-only contacts. |

## Power System Specifications

Specifications for the Stylistic LT C-500 pen tablet power system are given in Table 5-6. The power system and power management characteristics are further described in Chapter 7 of this manual.

*Table 5-6 Power System Specifications*

| Feature | Specification | Comments |
|---|---|---|
| Power Management Specifications Supported | ACPI Specification Revision 1.0 | ACPI support can be configured in BIOS Setup.<br>Chapter 7 of this manual describes system power management in detail. |
| Battery Pack | **Rechargeable 6-cell lithium ion battery pack:**<br>Configuration: 3 cells in series x 2 in parallel<br>Capacity: 3100mAh<br>Nominal operating voltage: 10.8V<br>Charge time (in suspend or off mode):<br>90% charge: 3 hours<br>100% charge: 6 hours<br>Charge time (system running): 8 to 12 hours<br>Battery life: 2 to 4 hours | Charge times are for a 0% charged battery pack charging in pen tablet (not in and external battery charger).<br><br>In suspend mode, battery pack is charged in slow charge or “trickle charge” mode for 60 minutes after 100% charge is reached. Note that the Charging icon is not displayed in the Status display during slow charge mode.<br><br>Battery life values are approximate. |
| Bridge Battery | • Type: 6 cell NiMH<br>• Capacity: 7.2V, 40mAh (210mWh)<br>• Size: ~ 35 mm (W) x 12.5 mm(D) x 13.5 mm (H)<br>• Weight: ~10 g | Serves as bridge when exchanging main battery. |
| Sub Battery | Lithium battery (built in)<br>3.0 V, 265 mA | Provides real time clock power backup. Approximate battery life is 5 years. (Not field replaceable.) |
| AC Adapter | FPCAC14A, FPCAC14B, and FPCAC14C:<br>• Input: 100-200 VAC, 50/60 Hz<br>• Output: 16 VDC ±10%, 3.36 A | AC adapters approved for use with Stylistic LT C-500 include: FPCAC14A, FPCAC14B, FPCAC14C |

## Environmental Specifications

Environmental specifications for the Stylistic LT C-500 pen tablet are given in Table 5-7.

*Table 5-7 Environmental Specifications*

| Feature | Specification |
|---|---|
| Temperature | Operating: 0° to 40°C (32° to 104°F)<br>Nonoperating: -20° to 60°C (-4° to 140°F) |
| Humidity | Operating: 20% to 85% RH noncondensing<br>Nonoperating: 8% to 95% RH noncondensing |

## Physical Specifications

Physical specifications for the Stylistic LT C-500 pen tablet are given in Table 5-8.

*Table 5-8 Stylistic LT C-500 Pen Tablet Specifications*

| Feature | Specification |
|---|---|
| Pen Tablet Dimensions | 9.45 x 6.3 x 1.1/1.6 in (W240 x D160 x H28/41 mm) |
| Pen Tablet Weight (with battery pack) | 2.5 lb. (1.15kg) |

## Agency Approval Specifications

Specifications for government agency approvals are given in Table 5-9.

*Table 5-9 Agency Approval Specifications*

| Feature | Specification |
|---|---|
| Emissions | EN55022, Class B:1995<br>FCC Part 15, Class B |
| Immunity | EN61000-4-2:1995<br>EN61000-4-3:1995<br>EN61000-4-4:1995 |
| Safety | USL/CNL: UL1950, 3rd Edition<br>TUV T-Mark: EN60950 |
| Telecom | FCC Part 68, IC CS03 |

See Table 5-10 for communications agency approvals for systems equipped with an internal modem.

## Internal LAN/Modem Specifications

The optional internal LAN/modem connects to the system's PCI bus. Specifications for the internal LAN/modem are given in Table 5-10. The internal modem is built in and is not field replaceable. The internal modem is an option only in systems distributed in the United States and Canada.

*Table 5-10 Internal Modem Specifications*

| Feature | | Specification |
|---|---|---|
| Modem | Data rate | 56 Kbps |
| | Protocols | ITU-T V.90<br>ITU-T V.34<br>ITU-T V.32bis<br>ITU-T V.32<br>ITU-T V.22bis |
| | Standards | Hayes AT command set |
| | Compression method | V.42bis data compression<br>MNP Class 5 data compression |
| | Error correction | V.42 automatic correction<br>MNP Class 4 |
| Fax | Standard | EIA/TIA 578 (Class 1) |
| | Protocol | G3 facsimile standard: ITU-T T.30 |
| | Capability | ITU-T V.17<br>ITU-T V.29<br>ITU-T V.27ter<br>ITU-T V.21 ch2 |
| LAN * | Transmission media | Non-shielded twisted-pair |
| | Transmission system | Baseband method |
| | Data transfer rate | 100Mbps/10Mbps |
| | Network form | Star |
| | Maximum segment length | 100 m |
| | Data link control method | CSMA/CD |
| | Error correct method | 32-bit CRC check |
| | Data encode/decode method | Manchester method (10Mbps)<br>MLT-3 method (100Mbps) |
| Bus Connection | | PCI |
| Size | | 68.2 x 27.2 mm |
| Compliance Countires: | | United States, Canada, Japan, Belgium, Denmark, Finland, France, Germany, The Netherlands, Italy, Norway, Sweden, Switzerland, United Kingdom, Austria, Portugal, Ireland, Spain, and Greece. |

***Note:*** Although the LAN circuitry is contained in the core unit when a LAN is installed, there is no RJ-45 connector on the system. The LAN signal passes through the system interface connector to the mini-dock. There is an RJ-45 connector on the mini-dock for connecting the system to a standard Ethernet network.

## Mini-Dock Specifications

Specifications for interfaces on the Stylistic LT C-500 mini-dock are given in Table 5-11. Note that these interfaces duplicate corresponding ports on the pen tablet. Do not use ports on the pen tablet when using the mini-dock. For details on peripheral interfaces provided by the mini-dock, refer to Chapter 6 of this manual.

*Table 5-11 Stylistic LT C-500 Mini-Dock Specifications*

| Feature | Specification | Comments |
|---|---|---|
| DC power input | + tip / - sleeve<br>16 VDC ±10%, 3.36A | |
| Keyboard Port | 6-pin PS/2-style | Supports most PS/2-style keyboards and mouse devices. |
| Mouse Port | 6-pin PS/2-style | |
| Video Port | Standard 15-pin video connector | System supports simultaneous operation of external monitor with LCD. |
| Serial Port | Male 9-pin D connector.<br>NS 16C550 compatible, fully functional RS-232C serial port. | |
| Floppy Disk Drive Port | 26-pin connector for use with Fujitsu FMWFD2 floppy disk drive. | |
| LAN Port | RJ-45 connector located on the mini-dock. 100BaseTX port for the optional internal LAN. | No LAN port available on Stylistic LT C-500 core unit. |
| Parallel Port | 25-pin D connector, female | Output only, bidirectional, and ECP operational modes are supported. |
| USB Port | Second USB Series A receptacle | Both USB ports can be used at the same time. |

Chapter 6

# Peripheral Interfaces

Details on peripheral interfaces on the Stylistic LT C-500 pen tablet and the optional Stylistic LT C-500 mini-dock and charge-only cradle are described in this chapter. The Stylistic LT C-500 pen tablet, mini-dock, and charge-only cradle provide the following peripheral interfaces:

*Table 6-1 Stylistic LT C-500 Interface Locations*

| Peripheral Interface | Pen Tablet | Mini-dock | Charge-Only Cradle |
|---|---|---|---|
| DC Input Connector | Yes | Yes | No |
| Infrared I/O Port | Yes | No | No |
| Parallel Port | No | Yes | No |
| Serial Port | No | Yes | No |
| PS/2-style Mouse Port | No | Yes | No |
| PS/2-style Keyboard Port | No | Yes | No |
| Floppy Disk Drive Port | No | Yes | No |
| Video Port | No | Yes | No |
| Infrared Keyboard Port | Yes | No | No |
| Universal Serial Bus | Yes | Yes | No |
| RJ-11 Modem Jack | Yes | No | No |
| LAN Jack | No | Yes | No |
| Stereo Headphone Jack | Yes | No | No |
| Stereo Microphone Jack | Yes | No | No |
| Mini-dock Interface Port | Yes | Yes | No |
| High-Usage Contacts | Yes | Yes | Yes |
| PC Card Sockets | Yes | No | No |
| Compact Flash Card Socket (Type II) | Yes | No | No |
| HDD Connector | Yes | No | No |

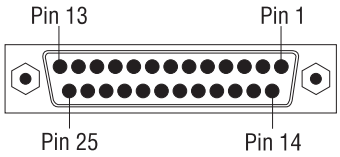
* Note that the mini-dock interface port allows you to connect the Stylistic LT C-500 mini-dock.

Pin assignments for peripheral interfaces are given in the following sections.

## Parallel Port

The parallel port connector is a 25-pin female D connector located on the Stylistic LT C-500 mini-dock. This connector provides a fully functional, ECP-compatible parallel port. Pin assignments, signal direction, and signal names are shown in Table 6-2.

*Table 6-2 Parallel Port Connector Pin Assignments*

| Connector Pin Locations | Pin | Host I/O | Signal |
|---|---|---|---|
|  | 1 | → | Strobe# (STB#) |
| | 2 | ← | Data bit 0 (PD0) |
| | 3 | ↔ | Data bit 1 (PD1) |
| | 4 | ↔ | Data bit 2 (PD2) |
| | 5 | ↔ | Data bit 3 (PD3) |
| | 6 | ↔ | Data bit 4 (PD4) |
| | 7 | ↔ | Data bit 5 (PD5) |
| | 8 | ↔ | Data bit 6 (PD6) |
| | 9 | ↔ | Data bit 7 (PD7) |
| | 10 | ← | Acknowledge# (ACK#) |
| | 11 | ← | Busy (BUSY) |
| | 12 | ← | Paper out (PE) |
| | 13 | ← | Select (SLCT) |
| | 14 | → | Auto feed# (AUTOFD#) |
| | 15 | ← | Error# (ERROR#) |
| | 16 | → | Initialize# (INIT#) |
| | 17 | → | Select input# (SLIN#) |
| | 18 – 25 | ---- | Ground (GND) |

# Indicates active-low signal.

## Charge-only Contacts

The charge-only contacts on the Stylistic LT C-500 pen tablet provide DC power inputs. Signal assignments for the metal contacts are shown in Table 6-3.

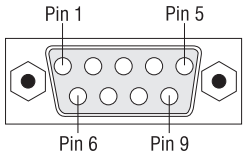
*Table 6-3 Metal Contacts*

| Connector Position Locations | Position | Signal | Description |
|---|---|---|---|
| Mini-dock Interface ← [1] [2] | 1 | GND | Ground |
| | 2 | +16V | DC Power Input: 16 VDC, 3.36A |

## Serial Port

The Stylistic LT C-500 mini-dock is equipped with a fully functional RS-232-C serial port (serial port A). Pin assignments for the serial port connectors are shown in Table 6-4.

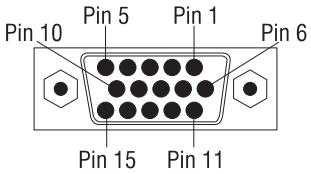
*Table 6-4 Serial Port Connector Pin Assignments*

| Connector Pin Locations | Pin | Host ↔ I/O | Signal |
|---|---|---|---|
|  | 1 | → | Carrier detect (CD) |
| | 2 | ← | Receive data (RxD) |
| | 3 | → | Transmit data (TxD) |
| | 4 | → | Data terminal ready (DTR) |
| | 5 | ---- | Ground (GND) |
| | 6 | ← | Data set ready (DSR) |
| | 7 | → | Request to send (RTS) |
| | 8 | ← | Clear to send (CTS) |
| | 9 | ← | Ring indicator (RI) |

## Video Port

The video port provides a standard VGA connector that allows you to use the pen tablet with an external monitor. Pin assignments for the video port connector are shown in Table 6-5.

*Table 6-5 Video Port Connector Pin Assignments*

| Connector Pin Locations | Pin | Host I/O | Signal |
|---|---|---|---|
|  | 1 | → | Red analog video output (RED) |
| | 2 | → | Green analog video output (GREEN) |
| | 3 | → | Blue analog video output (BLUE) |
| | 4 | ---- | Not used |
| | 5 – 8 | ---- | Ground (GND) |
| | 9 | ---- | DDC Vcc (DDCVCC) |
| | 10 | ---- | Ground (GND) |
| | 11 | ---- | Not used |
| | 12 | ↔ | DDC data (DDCDATA) |
| | 13 | → | Horizontal sync (HSYNC) |
| | 14 | → | Vertical sync (VSYNC) |
| | 15 | ↔ | DDC clock (DDCCLK) |

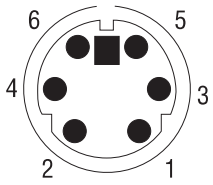
## Keyboard/Mouse Ports

The keyboard/mouse ports on the mini-dock can be used with most PS/2-style keyboard and mouse devices. The system determines whether a keyboard or mouse is connected automatically and activates the appropriate signals on the port as shown in Table 6-6.

***Note:*** *This port is compatible with most PS/2-style keyboards. Conventional PS/2-style keyboards are powered by 5 volts on pin 4.*

Pin assignments for the keyboard/mouse port on the pen tablet are shown in Table 6-6.

*Table 6-6 Keyboard/Mouse Port Connector Pin Assignments*

| Connector Pin Locations | Pin | Signal (Keyboard) | Signal (Mouse) |
|---|---|---|---|
|  | 1 | KDATA (Keyboard Data) | MDATA (Mouse Data) |
| | 2 | No connection | No connection |
| | 3 | Ground | Ground |
| | 4 | +5-Volt power, 150 mA | +5-Volt power, 150 mA |
| | 5 | KCLK (Keyboard Clock) | MCLK (Mouse Clock) |
| | 6 | No connection | No connection |
| | Sleeve | Ground | Ground |

## DC Power Input

The DC power input connector connects to the AC adapter or auto adapter to power the pen tablet. The DC power input connector is a two-conductor connector with a center pin and sleeve. Pin assignments for this connector are given in Table 6-7.

*Table 6-7 DC Power Input Connector Pin Assignments*

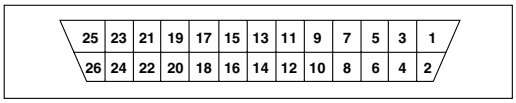
| Conductor | Description | Comments |
|---|---|---|
| Center Pin | 16 Volts DC ±10%, 3.36A | This connector is a EIAJ-RC5320A standard connector. See “Peripheral Interface Specifications” on page 40 for more details. |
| Sleeve | Ground | |

When a DC power source is connected to the DC power input on the pen tablet, circuitry built into the pen tablet provides protection against reverse polarity and overvoltage.

## Floppy Disk Drive Port

The floppy disk drive port on the Stylistic LT C-500 mini-dock is compatible with the Fujitsu FMWFD2 floppy disk drive. Pin assignments for the floppy disk drive connector are given in Table 6-8.

*Table 6-8 Floppy Disk Drive Connector Pin Assignments*

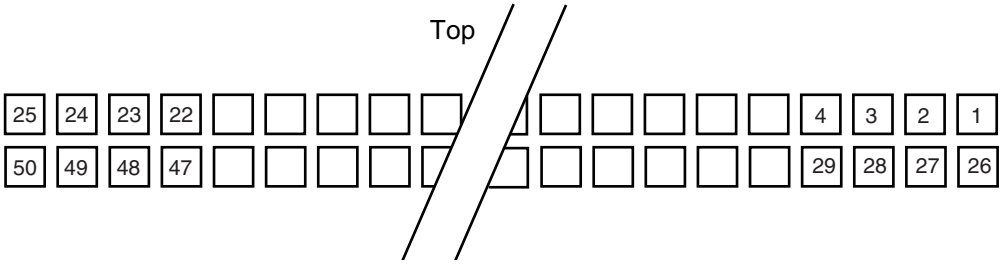
| Connector Pin Locations | Pin | Signal Description (Name) |
|---|---|---|
|  | 1 | Ground (GND) |
| | 2 | Ground (GND) |
| | 3 | Head select (HDSEL#) |
| | 4 | Read disk data (RDATA#) |
| | 5 | Floppy disk drive attached (FDATCH#) |
| | 6 | Write data (WDATA#) |
| | 7 | Mode select (MODE#) |
| | 8 | No connection |
| | 9 | Drive select (DRVSEL#) |
| | 10 | 5-Volt power (5VMAIN) |
| | 11 | 5-Volt power (5VMAIN) |
| | 12 | 5-Volt power (5VMAIN) |
| | 13 | Index (INDEX#) |
| | 14 | Write protected (WP#) |
| | 15 | Track 00 (TRK0#) |
| | 16 | Ground (GND) |
| | 17 | Write gate (WGATE#) |
| | 18 | Ground (GND) |
| | 19 | No connection |
| | 20 | Step pulse (STEP#) |
| | 21 | Direction control (DIR) |
| | 22 | Motor on (MOTOR#) |
| | 23 | No connection |
| | 24 | Disk change (DSKCHG#) |
| | 25 | GND |
| | 26 | No connection |

# Indicates active-low signal.

## Flash Card Interface

The Flash Card interface connectors allow you to connect a flash memory card into the pen tablet. The Flash Card interface connector is a 50-pin connector. Pin assignments for this connector are given in Table 6-9. This interface is compliant with Compact Flash Standard Revision 1.4.

*Table 6-9 Flash Card Interface Connector Pin Assignments*




| Pin | Signal | | True IDE | Pin | Signal | | True IDE |
|---|---|---|---|---|---|---|---|
| | Memory | I/O | | | Memory | I/O | |
| 1 | GND | GND | GND | 26 | -CD1 | -CD1 | -CD1 |
| 2 | D03 | D03 | D03 | 27 | D11[1] | D11[1] | D11[1] |
| 3 | D04 | D04 | D04 | 28 | D12[1] | D12[1] | D12[1] |
| 4 | D05 | D05 | D05 | 29 | D13[1] | D13[1] | D13[1] |
| 5 | D06 | D06 | D06 | 30 | D14[1] | D14[1] | D14[1] |
| 6 | D07 | D07 | D07 | 31 | D15[1] | D15[1] | D15[1] |
| 7 | -CE1 | -CE1 | -CS0 | 32 | -CE2[1] | -CE2[1] | -CS1[1] |
| 8 | A10 | A10 | A10[2] | 33 | -VS1 | -VS1 | -VS1 |
| 9 | -OE | -OE | -ATA SEL | 34 | -IORD | -IORD | -IORD |
| 10 | A09 | A09 | A09[2] | 35 | -IOWR | -IOWR | -IOWR |
| 11 | A08 | A08 | A08[2] | 36 | -WE | -WE | -WE[3] |
| 12 | A07 | A07 | A07[2] | 37 | RDY/BSY | IREQ | INTRQ |
| 13 | VCC | VCC | VCC | 38 | VCC | VCC | VCC |
| 14 | A06 | A06 | A06[2] | 39 | -CSEL | -CSEL | -CSEL |
| 15 | A05 | A05 | A05[2] | 40 | -VS2 | -VS2 | -VS2 |
| 16 | A04 | A04 | A04[2] | 41 | RESET | RESET | RESET |
| 17 | A03 | A03 | A03[2] | 42 | -WAIT | -WAIT | IORDY |
| 18 | A02 | A02 | A02 | 43 | -INPACK | -INPACK | -INPACK |
| 19 | A01 | A01 | A01 | 44 | -REG | -REG | -REG[3] |
| 20 | A00 | A00 | A00 | 45 | BVD2 | BVD2 | -DASP |
| 21 | D00 | D00 | D00 | 46 | BVD1 | -STSCHG | -PDIAG |
| 22 | D01 | D01 | D01 | 47 | D08[1] | D08[1] | D08[1] |
| 23 | D02 | D02 | D02 | 48 | D09[1] | D09[1] | D09[1] |
| 24 | WP | -IOCS16 | -IOCS16 | 49 | D10[1] | D10[1] | D10[1] |
| 25 | -CD2 | -CD2 | -CD2 | 50 | GND | GND | GND |

[1] These signals are required only for 16-bit access and are not required when installed in 8-bit systems. Devices should allow for 3-state signal in order not to consume current.

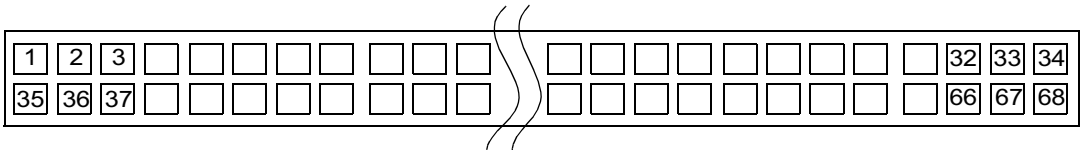
[2] Should be grounded by the host.

[3] Should be tied to VCC by the host.

## PC Card Interface

The PC Card interface connectors allow you to connect PC Cards to the pen tablet. The PC Card interface connector is a 68-pin connector. Pin assignments for this connector are given in Table 6-10. This interface is compliant with PC Card Standard Release 3.0.

*Table 6-10 PC Card Interface Connector Pin Assignments*




| Pin | 16-bit PC Card Interface | | CardBus | Pin | 16-bit PC Card Interface | | CardBus |
|---|---|---|---|---|---|---|---|
| | Memory-Only | I/O & Memory | | | Memory-Only | I/O & Memory | |
| 1 | GND | GND | GND | 35 | GND | GND | GND |
| 2 | D3 | D3 | CAD0 | 36 | CD1# | CD1# | CCD1# |
| 3 | D4 | D4 | CAD1 | 37 | D11 | D11 | CAD2 |
| 4 | D5 | D5 | CAD3 | 38 | D12 | D12 | CAD4 |
| 5 | D6 | D6 | CAD5 | 39 | D13 | D13 | CAD6 |
| 6 | D7 | D7 | CAD7 | 40 | D14 | D14 | RFU |
| 7 | CE1# | CE1# | CCBE0# | 41 | D15 | D15 | CAD8 |
| 8 | A10 | A10 | CAD9 | 42 | CE2# | CE2# | CAD10 |
| 9 | OE# | OE# | CAD11 | 43 | VS1# | VS1# | CVS1 |
| 10 | A11 | A11 | CAD12 | 44 | RUF | IORD# | CAD13 |
| 11 | A9 | A9 | CAD14 | 45 | RFU | IOWR# | CAD15 |
| 12 | A8 | A8 | CCBE1# | 46 | A17 | A17 | CAD16 |
| 13 | A13 | A13 | CPAR | 47 | A18 | A18 | RFU |
| 14 | A14 | A14 | CPERR# | 48 | A19 | A19 | CBLOCK# |
| 15 | WE# | WE# | CGNT# | 49 | A20 | A20 | CSTOP# |
| 16 | READY | IREQ# | CINT# | 50 | A21 | A21 | CDEVSEL# |
| 17 | Vcc | Vcc | Vcc | 51 | Vcc | Vcc | Vcc |
| 18 | Vpp1(+5V) | Vpp1(+5V) | Vpp1(+5V) | 52 | Vpp2(+5V) | Vpp2(+5V) | Vpp2(+5V) |
| 19 | A16 | A16 | CCLK | 53 | A22 | A22 | CTRDY# |
| 20 | A15 | A15 | CIRDY# | 54 | A23 | A23 | CFRAME# |
| 21 | A12 | A12 | CCBE2# | 55 | A24 | A24 | CAD17 |
| 22 | A7 | A7 | CAD18 | 56 | A25 | A25 | CAD19 |
| 23 | A6 | A6 | CAD20 | 57 | VS2# | VS2# | CVS2 |
| 24 | A5 | A5 | CAD21 | 58 | RESET | RESET | CRST# |
| 25 | A4 | A4 | CAD22 | 59 | WAIT# | WAIT# | CSERR# |
| 26 | A3 | A3 | CAD23 | 60 | RFU | INPACK# | CREQ# |
| 27 | A2 | A2 | CAD24 | 61 | REG# | REG# | CCBE3# |
| 28 | A1 | A1 | CAD25 | 62 | BVD2 | SPKR# | CAUDIO |
| 29 | A0 | A0 | CAD26 | 63 | BVD1 | STSCHG# | CSTSCHG |
| 30 | D0 | D0 | CAD27 | 64 | D8 | D8 | CAD28 |
| 31 | D1 | D1 | CAD29 | 65 | D9 | D9 | CAD30 |
| 32 | D2 | D2 | RFU | 66 | D10 | D10 | CAD31 |
| 33 | WP | IOIS16# | CCLKRUN# | 67 | CD2# | CD2# | CCD2# |
| 34 | GND | GND | GND | 68 | GND | GND | GND |

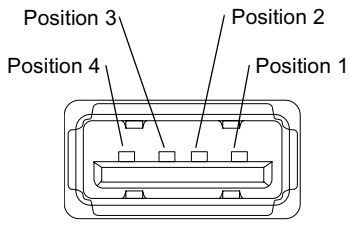
# Indicates active-low signal.

## Universal Serial Bus Port

The pen tablet provides a Universal Serial Bus (USB) port that is compliant with the *Universal Serial Bus Specification Revision 1.0*. The USB port is a powered USB hub and can support concurrent operation of up to 127 devices. The Stylistic LT C-500 pen tablet functions as a USB host and supports high-power, bus-powered functions as defined in the USB specification. System resources for the USB are assigned by the operating system, so no software configuration is necessary; however, it may be necessary to install drivers and application software to support your USB device.

The pen tablet can supply a maximum of 500 mA at 5 volts (or a 5-*unit load* as defined by the USB specification) on the USB connector. Ensure that your USB configuration does not exceed this maximum load. Note that the conductor gauge and length of your USB cabling will affect the voltage drop and signal propagation between USB devices. Refer to the *Universal Serial Bus Specification* for details on cable requirements or contact your cable vendor. Also note that some USB devices are self-powered and do not draw power over the USB cable. Contact pin assignments for the USB port are shown in Table 6-11.

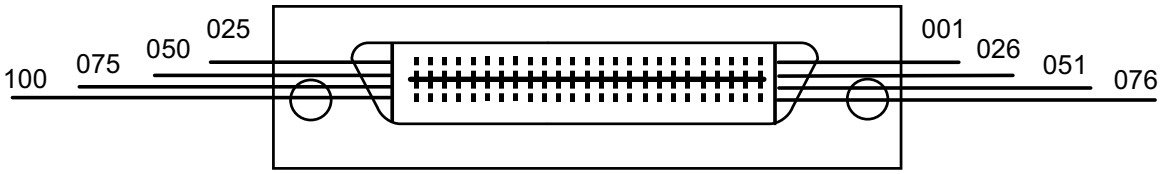
*Table 6-11 Universal Serial Bus Port Contact Pin Assignments*

| Contact Pin Locations | Contact Number | Signal Name | Comments |
|---|---|---|---|
|  | 1 | 5V | Cable power (+ 5 volts DC) |
| | 2 | DATA - | Data |
| | 3 | DATA + | Data |
| | 4 | GND | Cable ground |

## Mini-dock Interface Port

The mini-dock interface port on the Stylistic LT C-500 pen tablet allows you to attach the Stylistic LT C-500 mini-dock. The mini-dock interface port is a 100-pin connector. Figure 6-1 shows the pin locations for the mini-dock interface port connector on the pen tablet.

*Figure 6-1 Mini-Dock Interface Port Connector (On Pen Tablet)*




The pin assignments for the mini-dock interface port connector on the pen tablet are given in Table 6-12. Signals designated with the "pound" (#) symbol are active low.

***Note:***

- *Signal names listed in the second column of this table are not industry standard signal names. They are provided to assist in cross-referencing these signal names when they appear elsewhere.*
- *Signals provided on the mini-dock interface port duplicate signals for connectors on the pen tablet. Do not use peripheral connectors on the pen tablet when using corresponding interfaces on the mini-dock interface port.*

The mini-dock connector is not a "hot pluggable" connector. You must shut down or suspend the pen tablet before connecting the mini-dock. The mini-dock interface port is disabled (all signals de-asserted) when system operation is suspended.

*Table 6-12 Mini-dock Interface Port Connector Pin Assignments*

| Pin | Signal | Description | Input/Output (to/from system) |
|---|---|---|---|
| 001 | LANTX+ | LAN transmit signal | IN |
| 002 | LANTX- | LAN transmit signal | IN |
| 003 | GND | Ground | POWER |
| 004 | GND | Ground | POWER |
| 005 | GND | Ground | POWER |
| 006 | GND | Ground | POWER |
| 007 | 5VMAIN | 5-volts | POWER |
| 008 | 5VMAIN | 5-volts | POWER |
| 009 | 5VMAIN | 5-volts | POWER |
| 010 | 5VSUS | 5-volts for suspend | POWER |
| 011 | 5V669 | 5-volts for parallel port | POWER |
| 012 | FDIR# | FDD direction signal | IN |
| 013 | USBVCC1 | USB VCC Power Line | USB |

*Table 6-12 Mini-dock Interface Port Connector Pin Assignments (Continued)*

| Pin | Signal | Description | Input/Output (to/from system) |
|---|---|---|---|
| 014 | FMOTOR# | FDD motor on signal | IN |
| 015 | 12V | 12-volts for KBC update | OUT |
| 016 | KBWACT | Signal for KBC update | IN |
| 017 | DKUSBP1 | USB Data+ | USB |
| 018 | GND | Ground | POWER |
| 019 | VGAGND | VGA ground | POWER |
| 020 | VGAB | VGA blue signal | IN |
| 021 | VGAGND | VGA ground | POWER |
| 022 | VGAG | VGA green signal | IN |
| 023 | VGAGND | VGA ground | POWER |
| 024 | VGAR | VGA red signal | IN |
| 025 | VGAGND | VGA ground | POWER |
| 026 | LANRX+ | LAN receive signal | OUT |
| 027 | LANRX- | LAN receive signal | OUT |
| 028 | GND | Ground | POWER |
| 029 | GND | Ground | POWER |
| 030 | PRATCH# | Mini-dock (port replicator) distinguished signal | OUT |
| 031 | FRDDT# | FDD read signal | OUT |
| 032 | FSIDE# | FDD side select signal | IN |
| 033 | FDATCH# | FDD....signal | IN |
| 034 | FWD# | FDD write data signal | IN |
| 035 | FINDEX# | FDD index signal | OUT |
| 036 | FMODE# | FDD mode signal | IN |
| 037 | FWP# | FDD write protect signal | OUT |
| 038 | FDSEL# | FDD drive select signal | IN |
| 039 | FTRK0# | FDD track signal | OUT |
| 040 | FWG# | FDD write gate signal | IN |
| 041 | FDVHG# | FDD disk change signal | OUT |
| 042 | FSTEP# | FDD step signal | IN |
| 043 | VGAGND | VGA ground | POWER |
| 044 | VGAGND | VGA ground | POWER |
| 045 | HSYNC | VGA horizontal signal | IN |

*Table 6-12 Mini-dock Interface Port Connector Pin Assignments (Continued)*

| Pin | Signal | Description | Input/Output (to/from system) |
|---|---|---|---|
| 046 | DDCCLK | CRT DDC clock signal | IN/OUT |
| 047 | VSYNC | VGA vertical signal | IN |
| 048 | DDCDATA | CRT DDC data signal | IN/OUT |
| 049 | VGAGND | VGA ground | POWER |
| 050 | VGAGND | VGA ground | POWER |
| 051 | DKUSBP1- | USB Data- | USB |
| 052 | GND | Ground | POWER |
| 053 | GND | Ground | POWER |
| 054 | PRD7 | Parallel data signal | IN/OUT |
| 055 | GND | Ground | POWER |
| 056 | PRD6 | Parallel data signal | IN/OUT |
| 057 | GND | Ground | POWER |
| 058 | PRD5 | Parallel data signal | IN/OUT |
| 059 | GND | Ground | POWER |
| 060 | PRD4 | Parallel data signal | IN/OUT |
| 061 | GND | Ground | POWER |
| 062 | PRD3 | Parallel data signal | IN/OUT |
| 063 | GND | Ground | POWER |
| 064 | PRD2 | Parallel data signal | IN/OUT |
| 065 | GND | Ground | POWER |
| 066 | PRD1 | Parallel data signal | IN/OUT |
| 067 | GND | Ground | POWER |
| 068 | PRD0 | Parallel data signal | IN/OUT |
| 069 | KCLOCK | KB clock signal | IN/OUT |
| 070 | KDATA | KB signal data | IN/OUT |
| 071 | MDATA | Mouse data signal | IN/OUT |
| 072 | MCLOCK | Mouse clock signal | IN/OUT |
| 073 | KSW | KB distinguished signal | OUT |
| 074 | GND | Ground | POWER |
| 075 | USBVVCC1 | USB VCC Power Line | USB |
| 076 | GND | Ground | POWER |
| 077 | GND | Ground | POWER |
| 078 | PPERR# | Parallel error signal | OUT |

*Table 6-12 Mini-dock Interface Port Connector Pin Assignments (Continued)*

| Pin | Signal | Description | Input/Output (to/from system) |
|---|---|---|---|
| 079 | PSTB# | Parallel strobe signal | IN |
| 080 | PACK# | Parallel response signal | OUT |
| 081 | PAFD# | Parallel auto feed signal | IN |
| 082 | PSLIN# | Parallel select signal | IN |
| 083 | PINIT# | Parallel initial signal | IN |
| 084 | PBUSY | Parallel busy signal | OUT |
| 085 | PSLCT# | Parallel select signal | OUT |
| 086 | PPE | Parallel paper empty signal | OUT |
| 087 | GND | Ground | POWER |
| 088 | CTSA | Serial CS signal | OUT |
| 089 | GND | Ground | POWER |
| 090 | DSRA | Serial ER signal | IN |
| 091 | SOUT1 | Serial SD signal | IN |
| 092 | SINA# | Serial RD signal | OUT |
| 093 | RTS1# | Serial RS signal | IN |
| 094 | DCDA | Serial DCD signal | IN |
| 095 | DTR1# | Serial DR signal | OUT |
| 096 | RIA | Serial ring signal | OUT |
| 097 | GND | Ground | POWER |
| 098 | GND | Ground | POWER |
| 099 | GND | Ground | POWER |
| 100 | GND | Ground | POWER |

## IrDA I/O Port

The IrDA I/O port on the Stylistic LT C-500 pen tablet is compliant with the Infrared Data Association (IrDA) Standard Revision 1.1. Specifications for the IrDA port on the pen tablet are given in Table 6-13. Before you can use the IrDA port, the Serial Port B Device BIOS option must be set to IrDA or FIR. See "Serial/Parallel Port Configurations Submenu Options" on page 9 for details on BIOS options for the IrDA port.

*Table 6-13 IrDA Port Specifications*

| Feature | Specification |
|---|---|
| Standard supported | IrDA Standard Revision 1.1 |
| Distance | Up to 1 meter point to point (environmental conditions affect usable range) |
| Conveyable wave | Infrared rays (wavelength peak 875 nm) |
| Signal | Send data (transmission) / Receive data (reception) |
| Modulation/Data Rate | IrDA SIR: 9.6 - 115.2 Kbps<br>IrDA FIR: 4 Mbps |
| Angle | 0° to 15° from center of beam (30° viewing angle) |

## IR Keyboard Port

| Feature | Specification |
|---|---|
| Transmit Format | IR transmit (Fujitsu Takamizawa proprietary); one direction serial |
| Modulation Frequency | 455MHz |
| Transmit Method | Pulse Position Modulation (PPM) |
| Distance | 50 mm - 1 m point to point (environmental conditions may affect usable range) |
| Signal | Send data (transmission) |
| Viewing Angle | From center of beam:<br>Right direction: 30°<br>Left direction: 10°<br>Upper direction: 43°<br>Lower direction: 2° |

## Audio Jacks

All audio jacks on the Stylistic LT C-500 pen tablet are mini jacks. The microphone jack is mono; the headphone jack is stereo. Some audio functions on the pen tablet are disabled when audio jacks are used. Table 6-14 shows which audio outputs are disabled when outputs on the pen tablet and mini-dock are used.

*Table 6-14 Active Audio Outputs*

| Output Activity | Pen Tablet | |
|---|---|---|
| | **Speaker (built-in)** | **Headphone Jack** |
| Speaker On<br>(speaker built into pen tablet) | Enabled | Plug not inserted |
| Pen tablet Headphone jack used<br>(external headphone connected) | Disabled | Enabled |

Chapter 7

# System Power

This chapter covers the Stylistic LT C-500 pen tablet's system power hardware, power management states, and state transitions.

## System Power Hardware

The Stylistic LT C-500 pen tablet uses components designed for low power consumption in mobile applications. DC power, whether supplied by the battery pack or an external source, is regulated to different voltage levels required to power various components in the system.

### Battery Pack

When the system is not connected to external power, system power is provided by the battery pack. When an external DC power source is connected to the pen tablet, the battery pack is charged and the system is powered by the external source.

The battery pack can be removed from the pen tablet and charged in an external charger. When removing the battery pack, **be sure the system is first suspended-to-disk or attached to DC power**; failure to do so could result in loss of data.

The pen tablet is equipped with a microcontroller, called the power management microcontroller unit (PMU), which is dedicated to managing battery pack power. The battery pack charge is monitored by the PMU. The PMU determines the percent of charge remaining in the battery pack and supplies battery status information to the system through a dedicated interface.

A low voltage level detect circuit (independent of the PMU) measures the battery pack voltage level to determine whether the battery pack voltage has dropped to the critically low level (the critically low voltage varies depending on total current draw). When the system is running and the critically low voltage level is reached, the circuit forces the system into Suspend mode and the Power icon indicates the critically low condition.

When the system is forced into Suspend mode by a critically low battery, the system is powered by the remaining charge in the battery pack. In this mode, the Suspend/Resume button is disabled and system operation cannot be resumed until either an external DC power source is connected or a battery pack with adequate charge is installed. See "Battery Charge Level and Power Management" on page 68 for details on system activity for different battery charge levels.

## DC Power Inputs

External DC power can be connected at two locations on the pen tablet:

- DC power connector on the pen tablet
- DC input positions of the charge-only contacts

A DC power source connected to any of these inputs must provide 3.36 amps at a continuous DC voltage of 16 volts ±10%. Specifications for the DC input connectors on the pen tablet and port replicator are given below.

*Table 7-1 DC Input Connectors*

| | |
|---|---|
| Connector type | EIAJ RC-5320A Type 5 |
| Connector vendor | Hosiden |
| Vendor part number* | HEC3900-01-010 |
| Pin assignments | Center conductor: +16 VDC ±10%<br>Sleeve: ground |

* This is the part number for the female DC input connector on the pen tablet and the port replicator.

# Power Management

System behavior that affects power management is described in this section. Your system can be configured a number of different ways resulting in higher or lower power savings. More conservative power savings settings are recommended to maximize battery life and decrease internal temperatures of the pen tablet.

The Stylistic LT C-500 pen tablet BIOS and system hardware are compliant with the Advanced Configuration and Power Interface (ACPI) Specification Revision 1.0

***Note:*** *This section describes power management features as they are controlled and configured primarily by the BIOS and BIOS settings. The ACPI specifications allow for additional control over power management features such as state transitions and device timeouts. Refer to the ACPI specifications and the documentation for your operating system regarding power management for details on ACPI features.*

## Power States and State Transitions

The system manages power consumption by performing transitions between system power states, or modes. State transitions can be triggered by timeouts configured in the BIOS, and other types of system activity. Figure 7-1 shows system power states, transition paths and some typical events that trigger a transition from one state to the next. You can configure the pen tablet to utilize some or all of these states by setting power management options in the BIOS. Table 7-2 describes each power state. These states, and BIOS options that affect them, are also described in further detail in "Power Management States and BIOS Configuration Options" on page 64.

*Figure 7-1 Power Management State Transitions*

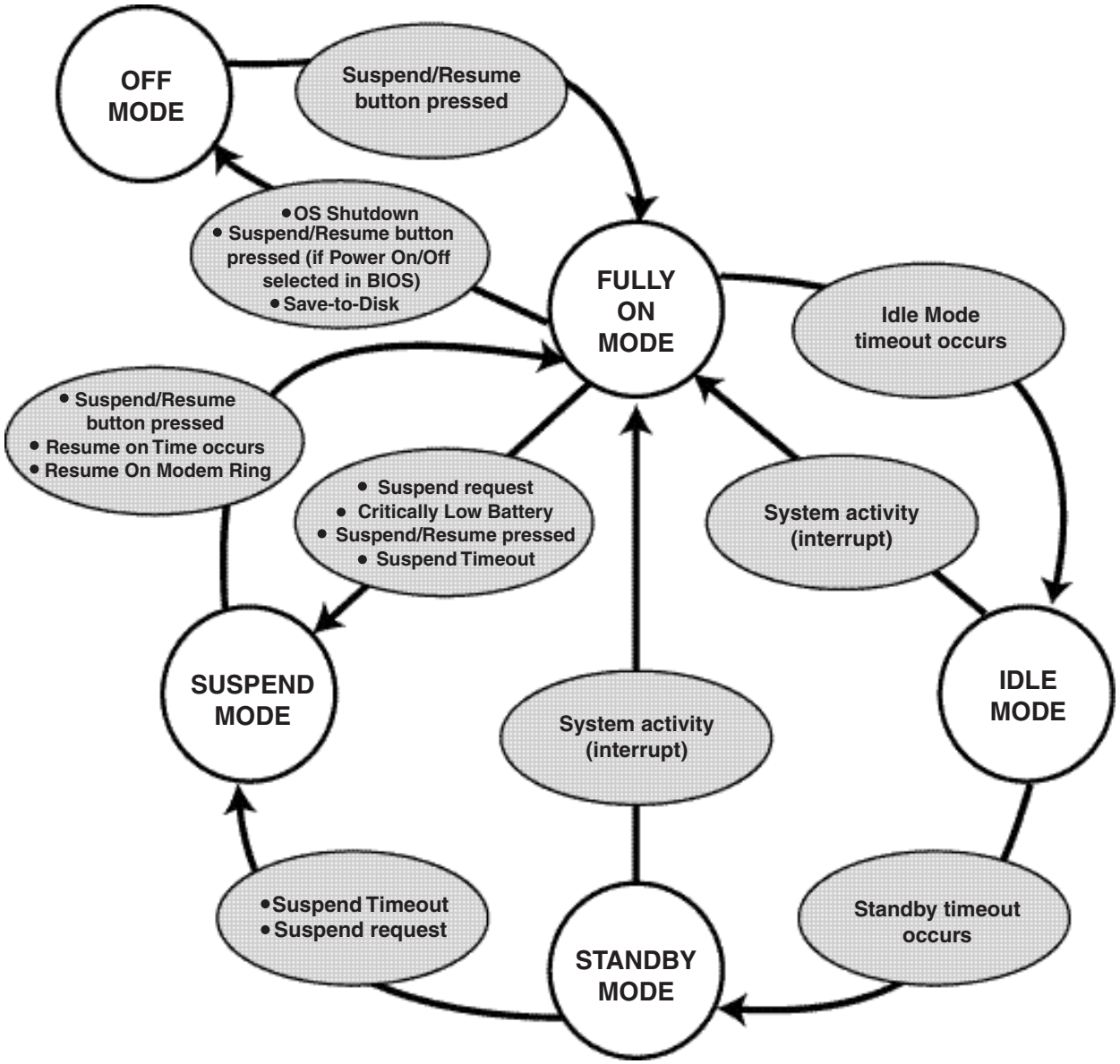


Table 7-2 describes system activity for each system power state and describes events that cause the system to enter each state. System power states are listed here in decreasing order from higher to lower power usage. The system can be configured to use some, all, or a combination of these system power states. These states are described in more detail later in this chapter, see "Power Management States and BIOS Configuration Options" on page 64. Also note that timeouts, such as the suspend timeout and hard disk drive spin-down timeout can be configured separately in the BIOS or controlled by system or application software through ACPI.

*Table 7-2 System Power States*

| System State | System Activity | Events Causing System to Enter State |
|---|---|---|
| Fully On Mode | System is running. CPU, system bus, and all other active interfaces operate at full speed. | From Standby or Idle mode: user activity detected.<br>From Off mode: system started.<br>From Suspend-to-RAM mode: system operation resumed (Suspend/Resume button pressed, resume on modem ring, resume on time). |
| Idle Mode | CPU speed reduced to the speed selected for the Idle Mode CPU Speed BIOS option.<br><br>See "Idle Mode" on page 64 for more details on Idle mode. | Idle mode timeout occurs. (No system activity for 1/2 second.)<br><br>Note: The low battery warning condition (less than 12% charge) will force the system to use Idle mode. Low battery warning (audible beep) is heard if Audio is enabled in the BIOS. |
| Standby Mode | CPU enters stop-grant state (CPU stopped).<br>Hard disk drive enters standby state (spun down).<br>Display and backlight are turned off. | Standby timeout occurs. |
| Suspend-to-RAM Mode* | Resume system logic remains powered (Suspend/Resume button circuitry) and RAM remains powered to maintain active data.<br>All other devices are powered off. | Suspend timeout occurs.<br><br>Suspend request (issued by software or Suspend/Resume button pressed).<br><br>Critically low battery. Note that a critically low battery forces system into Suspend-to-RAM mode regardless of the Suspend Mode setting in the BIOS. |
| Suspend-to-Disk Mode* | Active system data is saved to the hard disk drive. (Data is saved to a partition or file depending on save to disk configuration.)<br>System is fully powered off except for logic components required for Suspend/Resume button operation. | Suspend timeout occurs.<br><br>Suspend request (issued by software or Suspend/Resume button pressed).<br><br>Suspend-to-Disk mode can be entered either by pressing the Suspend/Resume button (if so configured in BIOS) or by pressing the Suspend-to-Disk hotpad which will always do a Suspend-to-Disk. |
| Off Mode | System is fully powered off except for logic components required for Suspend/Resume button and real-time clock operation. | System shutdown.<br>Suspend/Resume button pressed (if configured as Power On/Off button in BIOS). |

* The system can be configured to use Suspend-to-RAM mode or Suspend-to-Disk mode. See "Power Savings Menu Options on "Power Savings Menu Options" on page 19 for more information. If Suspend-to-Disk is used, the system must have a suspend-to-disk partition or file, see "PHDISK Hard Disk Preparation Utility" on page 24 for more information.

# Power Management States and BIOS Configuration Options

The system power states utilized by your system depend on how power management options are configured in the BIOS. System power states and BIOS options that affect each state are described in this section.

***Note:*** *Power management state transitions can also be controlled by Windows. Some of the power management features and states described in this section function differently when ACPI is active. Refer to your operating system documentation for details on configuring ACPI controls.*

## Timeouts

Timeouts for the Idle, Standby, and Suspend states are configured in the BIOS. (A timeout is the period of time that must elapse with no activity before the transition occurs.) In addition to overall system power states, power for some devices can be individually managed through timeouts configured in the BIOS such as the hard disk drive spin-down timeout.

## Fully On State

In the Fully On state, all devices are fully powered and the CPU runs at full speed. The system is in the Fully On state whenever user activity is detected. The system will remain in the Fully On state until an event such as the idle mode timeout or a suspend request occurs. Note that if Idle and Standby modes are not utilized, the system will remain in the Fully On state until an event such as a suspend request causes a transition out of the Fully On state.

## Idle Mode

When the Idle Mode Timeout BIOS option is enabled, the system will enter Idle mode after a period of 1/2 second with no activity. The system also runs in Idle mode (and does not use the Fully On state) under the following conditions regardless of the Idle Mode Timeout setting:

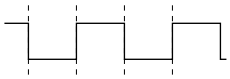
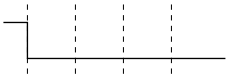
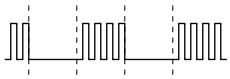
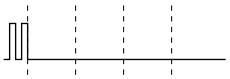
- When operating on battery power under the Low Battery or Very Low Battery conditions. (This conserves battery power.)
- When the system temperature is High. (This reduces the internal temperature of the system.)

In Idle mode, internal CPU clock signals are “throttled” or periodically switched on and off achieving a net reduction of the CPU speed which reduces the amount of power consumed by the CPU. This is done by switching the Stop Grant signal of the CPU on and off. In turn, most internal CPU clock signals are turned on and off.

Table 7-3 shows the activity of these signals in Idle and Standby modes. (The first dotted line in each column of this table indicates when the timeout occurs and the mode is entered.) If user activity generates

an interrupt, the system returns to the Fully On state. If the Idle Mode option is disabled in the BIOS, the system will not enter Idle mode.

*Table 7-3 System Activity in Idle and Standby Modes*

| System Activity | Idle Mode | Standby Mode |
|---|---|---|
| Stop Grant (STPCLK#) |  |  |
| Internal CPU Clock Signals |  |  |
| External Clock Signals |  |  |
| Hard Disk Drive | On* | Standby (spin down) |
| Display | On* | Off |

* Power saving timeouts can be configured independently for these devices allowing them to enter a low-power state while the system is in Idle mode.

Note that this table does not depict a precise timing diagram. The illustrations given in this table are intended to show the relative characteristics of these signals.

## Standby Mode

Standby mode is entered when the Standby Mode Timeout (configured in the BIOS) occurs. In Standby mode, the CPU, supporting chip set, and RAM remain powered, however, the CPU's internal clock signals are stopped (effectively stopping the CPU) as indicated in Table 7-3. Any user activity that generates an interrupt will cause a transition out of the Standby state to the Fully On state.

The hard disk drive is forced into standby mode (spun down) when the standby mode timeout occurs. Note, however, that the hard disk drive can be configured to spin down earlier by setting the HDD Spin-down Timeout BIOS option. The display system (including backlight) is also turned off when the standby timeout occurs. The display can also be configured to turn off earlier by setting the Video Timeout BIOS option.

## Suspend Modes

The system can be configured to use one of two different suspend modes: Suspend-to-RAM or Suspend-to-Disk. System power activity in each of these modes is described below.

### Suspend-to-RAM Mode

In Suspend-to-RAM mode, power is maintained to RAM, video memory, and circuitry for the Suspend/Resume button while all other system circuitry and power managed devices are powered off. The PC Card slots will also remain powered if the Resume On Modem Ring option is enable in the BIOS. Pressing the Suspend/Resume button, or a resume request generated by a modem ring will cause a transition to the Fully On state. Suspend-to-RAM mode is best suited for applications where system operation is suspended frequently and a quick resume is desired.

### Suspend-to-Disk Mode

***Note:*** *Suspend-to-Disk mode can be entered either by pressing the Suspend/Resume button (if so configured in BIOS) or by pressing the Suspend-to-Disk hotpad which will always do a Suspend-to-Disk.*

In Suspend-to-Disk mode, data in RAM and video memory are written to the hard disk drive and, with the exception of resume logic circuits connected to the Suspend/Resume button switch, the system is completely powered down. In this state, the system consumes about the same amount of power consumed in the Off mode. This suspend state uses the least amount of battery power.

Before you configure your system to use Suspend-to-Disk mode, consider the following factors:

- More time is required to suspend or resume system operation as data must be written to or read from the hard disk drive.
- You must first create a save-to-disk file or partition before you can use Suspend-to-Disk mode, see "PHDISK Hard Disk Preparation Utility" on page 24 for details.
- System operation can only be resumed if the Suspend/Resume button is pressed.
- Suspend-to-Disk mode cannot be used with the Resume On Modem Ring or Resume On Time BIOS features.

### Suspend Events

System operation is suspended when the Suspend Timeout occurs, the Suspend/Resume button is pressed, or a suspend request is generated by a software application.

## Off State

In the Off state, the system is fully powered off. Note, however, that some circuits connected to the battery will continue to draw a very small amount of current when the system is off. For this reason, the pen tablet should be stored with a fully charged battery pack if the system will not be in use for more than a few days.

## Other Power Management Issues

Issues described up to this point in this chapter deal with configurable options in the BIOS that affect system performance and power consumption. Other power management features are built into the system to prevent heat damage and data loss.

### System Temperature and Power Management

The system has a built in thermal detection circuit that monitors system temperature. If the system's internal temperature reaches an excessive level, the system enters thermal throttling mode. In thermal throttling mode, the CPU runs in Idle mode (as described in Table 7-3) at an effective CPU speed of 120 MHz. The CPU will not run at full speed until the system reaches a sufficiently cool temperature.

**Caution**

The pen tablet should not be used in the harsh environment case while the system is charging. External DC power should only be connected while the pen tablet is in the case if the pen tablet is off or the system is suspended.

## Battery Charge Level and Power Management

The pen tablet monitors the voltage of the battery pack. When the voltage drops to low levels, the system is forced into Idle or Suspend mode to increase battery life and prevent data loss. Table 7-4 describes system operation for different battery charge levels.

*Table 7-4 Low Battery Modes*

| Mode | Description |
|---|---|
| Normal mode:<br>Battery charge 12% to 100% or system connected to external power. | Power management features operate normally. |
| Low battery mode:<br>Battery charge below 12% | CPU speed is reduced to the speed selected for Low Battery CPU Speed BIOS option.<br>The Power icon turns red when the charge is below 12%. The low battery alarm (periodic audible “beep”) is sounded if the Audio BIOS option is enabled. |
| Critically low battery mode:<br>Battery charge below critical threshold. | The system is forced to suspend using Suspend-to-RAM mode. The system will not resume until a sufficiently charged battery pack is installed or external power is connected.<br>The power icon flashes red, indicating that the system is in Suspend mode.<br><br>Note:<br>• In the event of a critically low battery, the system is forced into Suspend-to-RAM mode regardless of the Suspend Mode setting in BIOS Setup.<br>• The percent of full battery charge cannot be determined for the critically low battery level because the circuit that detects the critically low voltage level monitors the battery voltage independent of the PMU. |

# Appendix A

# Replacing the IDE Hard Disk Drive

The internal IDE hard disk drive in the Stylistic LT C-500 pen tablet can be removed and replaced, if necessary.

**Caution**

Observe the following guidelines when handling the hard disk drive:

- Do not attempt to disassemble or modify the hard disk drive.
- Do not remove any labels from the hard disk drive.
- HDD replacement should only be performed at a static-free workstation. Avoid touching connector pins and circuit boards on the drive or pen tablet. Electrostatic discharge caused by doing so can damage sensitive components.

## Removing the Hard Disk Drive

To remove the hard disk drive from the pen tablet,

1. Ensure that the pen tablet is off. To do so, carry out the Shut Down command in the Start menu.
2. Using a Phillips screw driver (size #1), remove the two screws in the hard disk drive cover plate.

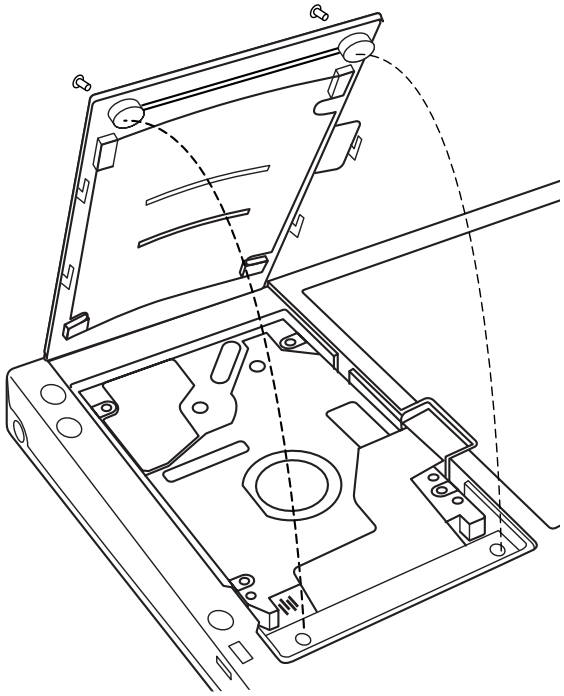


*Figure A-1 IDE Hard Disk Drive Cover Plate*

3. Slide the cover slightly towards the bottom of the system to disengage the cover. Remove the cover as shown in Figure A-1.

4. Carefully disconnect the small connector by pulling upwards (reference Figure A-2). Use care when disconnecting this connector; it is attached to a delicate flex cable.

**Caution**

- Do not pull the tab on the flex cable connector when lifting the drive. Doing so will damage the flex cable; it is fragile and has very little slack.
- Be careful not to damage the hard disk drive's printed circuit board when removing the drive. Handle the drive by the edges and avoid touching the printed circuit board with your hands or tools.

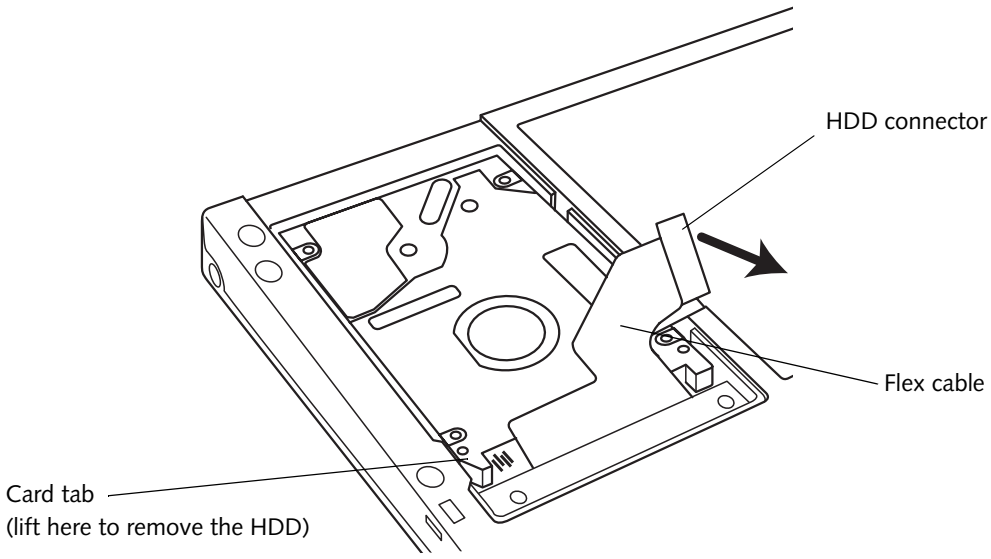



*Figure A-2 Unplugging the Hard Disk Drive Connector*

5. Remove the hard disk drive from the tray by carefully lifting it by the card tab adjacent to the flex cable (reference Figure A-2).

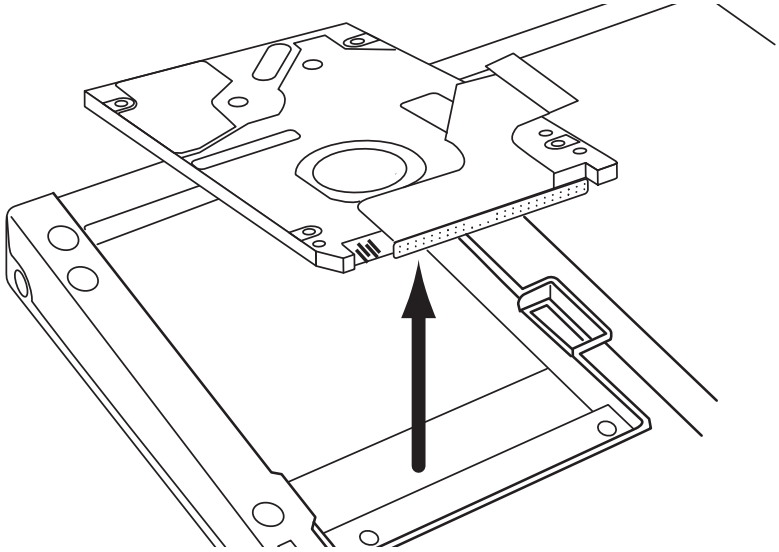


*Figure A-3 Removing the Hard Disk Drive*

6. Remove the hard drive from the tray, as illustrated in Figure A-3. Once the hard disk drive has been removed from the pen tablet, you can install a new hard disk drive. If you are returning the hard disk drive for repair, ensure that the packaging material will protect the drive sufficiently during shipment.

## Installing the Hard Disk Drive

To install the hard disk drive, refer to Figures A-1 through A-3, and perform the following steps:

1. Connect the flex cable to the hard disk drive. Note the orientation of the hard disk drive and note that four pins on the hard disk drive connector are not used. (The connector on the flex cable is keyed so it cannot be installed incorrectly.)

2. Ensure that the plastic liner tray is in place and insert the hard disk drive into the pen tablet. Note that the liner tray is installed between the hard disk drive and surrounding surfaces of the pen tablet to prevent the shock mount pads from sticking to the hard disk drive.

3. Follow the steps contained in the section entitled “Removing the Hard Disk Drive” in reverse order. Use care when installing the drive to prevent damage to the flex cable.

The hard disk drive is now installed in the pen tablet.

# Appendix B

# Glossary

## 16-bit / 32-bit

"16-bit" and "32-bit" refer to the architecture of an operating system and applications software that runs under that operating system. The 16-bit software processes data 16 bits at a time, and 32-bit software processes data 32 bits at a time. As a result, 32-bit programs and operating systems are generally faster and more advanced than their 16-bit counterparts.

## AC adapter

An adapter that provides external power (not battery power) to your Stylistic LT C-500.

## ACPI

**Advanced Configuration and Power Interface**
The ACPI standard allows system designers to determine how a particular system supports power management. ACPI supports power management through improved hardware and operating system coordination. The ACPI specification was developed by Intel, Microsoft, and Toshiba.

## API

**Application Programming Interface**
A predefined set of routines and tools that tells the computer the correct order in which to run procedures when building a particular application. Using an API allows a programmer to create a similar look-and-feel between different programs.

## baud rate

The number of transitions occurring per second on a transmission.

## BIOS

**Basic Input/Output System**
The BIOS is comprised of the instructions that the system needs in order to start up and allow the various input and output devices to communicate with each other and the system.

## calibrate

The process that determines how the stylus and touch screen interact. You can calibrate both the screen alignment and the stylus double-tap settings.

## CIC

**Communication Intelligence Corporation**
CIC produces the Handwriting Recognition System and PenX software used in the Stylistic LT C-500 pen tablet. CIC is headquartered in Redwood Shores, California. The company web site is <http://www.cic.com/>.

## COM port

See *communications port*.

## communications port

A serial communications port used to connect equipment, such as mobile devices, modems, and printers.

## connection

The ability to interact with another device, computer, or the Internet by means of a serial, infrared, Ethernet, or dial-up connection.

## CPU

**Central Processing Unit**
Also called the microprocessor, the CPU is the "brains" of the computer. The CPU performs most of the fetching, decoding, and execution of instructions performed by the computer.

## CRT

**Cathode Ray Tube**
The technology around which an external monitor is built. A CRT employs a vacuum tube and one or more electron guns.

## DAA

**Data Access Arrangement**

A type of circuit used in modems, fax machines, and PDAs for interfacing with a telephone system.

## DIMM

**Dual In-Line Memory Module**
A DIMM is a small circuit board that holds memory chips.

## DLL

**Dynamic Link Library**
A DLL is a Windows-based library of data or functions.

## DMA

**Direct Memory Access**
This is memory access that doesn't require processing by the CPU. DMA allows access from memory directly to a peripheral device.

## DMI

**Desktop Management Interface**
A specification developed for managing system configuration over a network.

## download

The process of transferring data from your desktop computer to your Stylistic LT C-500.

## DRAM

**Dynamic Random Access Memory**
Dynamic RAM is a common type of memory that is often preferable to static RAM despite being slower. DRAM can hold almost four times the amount of data that static RAM can. DRAM requires continuous refreshing due to the discharge of its capacitors.

## DSTN

**Double-Layer Supertwist Nematic**
A type of LCD technology that uses a passive matrix with two display layers. The arrangement of the layers helps to mitigate color shifting that occurs with other displays.

## ECP

**Extended Capabilities Port**
ECP is a standard developed by HP and Microsoft to support bidirectional parallel port communications between the system and peripherals.

## ESD

**Electrostatic Discharge**
A situation in which static electricity is transferred through human hands into sensitive electronic components, resulting in damage. ESD damage is usually caused by working on sensitive electronic equipment in an ungrounded environment.

## FCC

**Federal Communications Commission**
The FCC is the regulatory body that, "...develops and implements policy concerning interstate and international communications by radio, television, wire, satellite, and cable". The FCC web site is located at <http://www.fcc.gov/>.

## FIR

**Fast Infrared**
A method of transferring data between two unconnected devices using an infrared beam. FIR is usually limited to devices which are within one meter of each other and having clear sight of each other. FIR is capable of transferring data at up to 4Mbps. FIR is part of the IrDA 1.1 specification.

## FM

**Frequency Modulation**
A means of encoding information by modulating electrical signals around a certain frequency. The receiver decodes the modulated signal into usable information.

## FPC

**Fujitsu PC Corporation**
The manufacturer of the Stylistic LT C-500, along with several other pen tablet models. The FPC web site is <http://www.fujitsupc.com/>.

## GHz

**Gigahertz**
One billion hertz - or frequency cycles - per second.

## HDD

**Hard Disk Drive**
The most common secondary storage method used in computers today. The most common interface standards used in HDDs are IDE and SCSI.

## HRS

**Handwriting Recognition System**
HRS software (from CIC) allows the user to enter information into the pen tablet by writing on the tablet with a stylus. The software "recognizes" and interprets the individual letters as standard input, and manipulates and stores it as it would data received from a keyboard.

## IDE

**Integrated Device Electronics**
IDE is an interface for storage devices in which the device controller is actually an integrated part of the drive. Using IDE technology eliminates the need for a special adapter.

## I/O

**Input/Output**
The most common methods of computer input and output are a keyboard and a display. Pen tablets generally use a stylus to provide input (although a floppy drive, CD-ROM drive, modem, LAN, or keyboard can also be used.) The standard output for a pen tablet is typically displayed on the screen, although data can be stored on floppy or hard disk drives, sent over a modem or LAN, or output to a printer.

## Internet connection

A communications method used to establish a link between your Stylistic LT C-500 and a server that provides access to the Internet, typically, an ISP.

## Internet service provider (ISP)

A company that provides access to the Internet.

## intranet

A network designed for information sharing within a company or organization.

## IrDA

**Infrared Data Association**
The association which created the standards for transmission of data using infrared technology. The IrDA web site is located at <http://www.irda.org/>.

## IrDA connection

A connection between your Stylistic LT C-500 and another computer or device (such as a printer) by means of the infrared port on each device.

## IRQ

**Interrupt Request**
IRQs are signals sent to the computer's CPU by peripheral devices. Certain IRQs are reserved for certain devices, so the CPU "knows" which device it is responding to.

## L1

**Level One**
L1 refers to the small memory cache that is built into the CPU chip.

## L2

**Level Two**
L2 refers to the memory cache that is located on the motherboard.

## LAN

**Local Area Network**
A LAN is a small computer network that usually covers a discrete area, such as a large work area or building. LANs are employed to allow users to share the same resources, such as printers. The LAN is composed of a number of clients and a central server. Using a server takes some of the processing load off the individual clients. It also allows the clients to share data through the server.

## LBA

**Logical Block Addressing**
LBA is an efficient way of addressing hard drives by assigning sequential numbers to each logical block on the hard drive, rather than assigning each block a unique combination of cylinder, head, and sector numbers.

## MCM

**Multi-Chip Module**
A module that contains the CPU, the L2 cache, and half of the chipset on a small (1.6" x 1.4") daughter board. The MCM architecture significantly increases board density, while improving heat dissipation.

## MS-DOS

**Microsoft Disk Operating System**
A 16-bit operating system developed for IBM by Microsoft in 1981, MS-DOS was the most widely used platform throughout the 1980's for IBM-compatible PCs. The operating system is the "traffic cop" of the system, managing input/output, file maintenance, and execution of programs. Since MS-DOS is a 16-bit system, it does not support multitasking the way Windows 98 and Windows 2000 do.

## NDIS

**Network Device Interface Specification**

A software interface between driver software and protocol stacks, NDIS allows a single network interface card (NIC) to support multiple network protocols. Developed by Microsoft.

## NVRAM

**Non-volatile RAM**
Random access memory which retains its contents when power is removed from the system.

## ODI

**Open Data-link Interface**

A software interface between driver software and protocol stacks, ODI allows a single interface card to support multiple network protocols. Developed by Novell.

## OEM

Original equipment manufacturer. The OEM for the Stylistic LT C-500 is FPC.

## OS

**Operating System**
The operating system is the heart of a computer's software. The OS directs the system input/output operations, memory and file management, and CPU time allocation. *See* MS-DOS.

## PC Card

A removable card, such as modem, Ethernet, or storage card, that conforms to the PCMCIA specification.

## PCI Bus

**Peripheral Component Interconnect Bus**
The PCI bus is a specification introduced by Intel corporation that provides a processor-independent data path between the CPU and high-speed peripherals.

## PCMCIA

**Personal Computer Memory Card International Association**
PCMCIA cards - also known as PC Cards - are built to a standard established by a group of manufacturers and vendors in 1990. PCMCIA was developed to provide a common standard for designing PC Cards. A variety of peripherals can be added to computers via a PCMCIA slot, including modems, LAN radios, and GPS receivers. The web site for the PCMCIA is <http://www.pc-card.com/>.

## PenX

PenX is the pen support software provided by CIC for the Stylistic LT C-500 pen tablet. PenX is an OS extension that provides a common API for system and pen drivers. Using a common API allows accurate inking and handwriting recognition.

## PIO

**Programmed Input/Output**

PIO is a method of transferring data between two devices by passing through the computer's processor. PIO is a slower transfer method than DMA.

## PM

**Power Management**
Power management is a means of controlling the components within a computer (usually a portable computer) in order to maximize the use time of the system battery.

## port settings

The settings used to configure a communications port on a computer.

## Power Management

Power management is a means of controlling the components within a computer (usually a portable computer) in order to maximize the use time of the system battery.

## POST

**Power-On Self Test**
A series of tests that are run when the system is initially turned on to verify that all of the system peripherals and components are operating correctly. The POST routine is stored in the BIOS ROM.

## PS/2 Mouse/Keyboard Ports

A 6-pin type of port usually used for connecting a mouse or keyboard to a system. Using the PS/2 port for the mouse or keyboard frees up the serial port for use by a peripheral requiring more pins.

## RAM

**Random Access Memory**
A type of volatile memory that can be accessed by the processor in any order. Unlike ROM, which can only be read, RAM can be read or written to. When power is removed from the system, however, the contents of RAM is lost.

## ROM

**Read-Only Memory**
ROM is computer memory on which data has been pre-written. Data that has been written onto a ROM chip can only be read; you cannot remove the data from a ROM. ROM is non-volatile -- that is, its contents are retained even when power is not applied to the computer. Since ROM is non-volatile, it is used to store programs that the computer needs in order to start at power-up.

## RTC

**Real-Time Clock**
A CMOS battery-powered clock/calendar that keeps track of the date and time inside the computer. Since the RTC is battery-operated, it continues to work when the system is shut down.

## reset

Depending on the state of your Stylistic LT C-500, a process that either causes the system to reboot or erases all data stored in RAM.

## restore

To return your Stylistic LT C-500 to the state it was in when it was backed up. This involves copying your backup data to your Stylistic LT C-500.

## RxTx

**Receive/Transmit**
A serial port design that carries only three signals: receive, transmit, and logic ground. RxTx only supports software handshaking, not hardware.

## SCSI

**Small Computer System Interface**
This interface standard provides a parallel high-speed method of connecting computers with SCSI-compatible peripheral devices.

## SDRAM

**Synchronous Dynamic Random Access Memory**
A common form of DRAM which uses a clock to synchronize the timing of the memory chip with the CPU's system clock.

## SIR

**Serial Infrared (also known as Standard Infrared)**
A method of transferring data between two unconnected devices using an infrared beam. SIR is usually limited to devices which are within one meter of each other. SIR is capable of transferring data at up to 115Kbps. SIR is part of the IrDA 1.0 and 1.1 specifications.

## SMI

**System Management Interrupt**
A hardware interrupt that is used to perform system management tasks such as power management.

## stylus

A pointing device, similar to a pen, used to make selections (tap) and enter information on the touch screen.

## SVGA

**Super Video Graphics Array**
SVGA refers to a screen resolution of 800 x 600 pixels.

## touch screen

A touch-sensitive screen on your Stylistic LT C-500 that can recognize the location of a touch on its surface (typically done by using a stylus) and translate that touch into a desired action (such as making a selection or moving the cursor).

## UL

**Underwriters Laboratories**
Underwriters Laboratories Inc. provides global conformity assessment, product testing and certification services. Their web site is <http://www.ul.com/>.

## USB

**Universal Serial Bus**
The USB specification is a peripheral bus standard for connecting external devices. Some features of the USB standard include: support for up to 127 concurrent USB devices, dynamic insertion and removal of devices, self-identifying peripheral configuration, and transfer of multiple data message streams between host and devices. The USB standard specification can be obtained from the USB web site at <http://www.usb.org/>.

## V.90

A standard for 56-Kbps modems which resolves differences between X2 and K56flex.

## VAR

**Value-Added Reseller**
A reseller who purchases basic equipment from an original equipment manufacturer. The VAR modifies the original equipment to the needs of specific customers by adding custom software and/or peripherals.

## VESA

**Video Electronics Standards Association**
VESA is the organization that sets the standards for video devices. Among other standards, VESA developed the protocols for SVGA.

## VGA

**Video Graphics Adapter**
VGA is a popular display standard that supports a 640 x 480 resolution.

## XGA

**Extended Graphics Adapter**
The XGA standard supports a 1024 x 768 pixel resolution.

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## X