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Stylistic 2300

Technical Reference Guide

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Table of Contents

List of Figures

List of Tables

About This Guide

This guide provides technical information on the Fujitsu Stylistic 2300 pen tablet computer for technicians, hardware developers, and software developers.

Revision History

This manual is updated when possible to document changes to hardware and software products. The following revision history shows revisions of this manual and briefly describes the changes documented in the revision.

Revision	Changes
Revision A December 1998 Document part number: 58-0584-00A	Initial release.
Revision B March 1999 Document part number: 58-0584-00B	Minor typographical corrections. Corrupted fonts fixed.
Revision C April 1999 Document part number: 58-0584-00C	Appendix E added to supply more detailed information on the high-usage contacts for peripheral designers.

Organization

This guide is organized as follows:

- **Chapter 1 Pen Tablet 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 2300 pen tablet.
- **Chapter 3 Configuring the Stylistic 2300 Pen Tablet System**
  This chapter provides details on using BIOS Setup and other configuration utilities for the Stylistic 2300 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 PC Cards and DIMM cards. (For instructions on replacing the internal hard disk drive, see **"Replacing the IDE Hard Disk Drive" on page A-1**.)
- **Chapter 5 Hardware Specifications**
  This chapter gives hardware specifications on the pen tablet system. Industry standards supported by the Stylistic 2300 pen tablet are listed.
- **Chapter 6 Peripheral Interfaces**
  This chapter provides details on peripheral interfaces provided by the Stylistic 2300 pen tablet and the Stylistic 1200 port replicator. (The Stylistic 2300 pen tablet is compatible with the Stylistic 1200 port replicator.)

- **Chapter 7 System Power**
  This chapter gives details on the pen tablet's power system and power management implementation.
- **Chapter 8 BIOS Configuration Application Programming Interfaces**
  This chapter gives details on using DLLs which allow your application to configure the Stylistic 2300 BIOS.
- **Chapter 9 Programmable Hotpad Libraries for 16-Bit Windows Applications**
  This chapter provides information on using the programmable hotpad with 16-bit Windows applications.
- **Chapter 10 Programmable Hotpad Libraries for 32-Bit Windows Applications**
  This chapter provides information on using the programmable hotpad with 32-bit Windows applications.
- **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 Recovering the Disk Image**
  This appendix gives procedures for using the recovery CD to recover the disk image (including the operating system) on the pen tablet's internal hard disk.
- **Appendix C Enabling ACPI**
  This appendix provides information on enabling ACPI.
- **Appendix D Agency Notices**
  This appendix states notices required by regulatory agencies in the United States and Canada that apply to the Stylistic 2300.
- **Appendix E Designing Compatible Peripherals for the High-Usage Contacts**
  This appendix provides dimensions to indicate the position of the high-usage contacts on the Stylistic 2300 for designers of compatible peripherals. Electrical design guidelines are also given.

Related Documentation

Documentation relating to the Stylistic 2300 pen tablet system is listed below. Refer to these documents for details on topics not covered in this guide.

Stylistic 2300 User's Guide
This guide provides an introduction to the Stylistic 2300 pen tablet's basic functions for the end user.

Stylistic 1200 Port Replicator User's Guide
This guide gives instructions on using the Stylistic 1200 port replicator. Note that the Stylistic 1200 port replicator is compatible with, and is supported for use with, the Stylistic 2300 pen tablet. (Any details on using the Stylistic 1200 pen tablet with the port replicator given in this guide also apply to the Stylistic 2300 pen tablet.)

The following documents, available from retail book sellers, contain additional information about software preinstalled on the Stylistic 2300 pen tablet.

Inside the Registry for Microsoft Windows 95 (ISBN: 1-57231-424-9)
This manual provides information on the Windows 95 registry and is published by Microsoft Press, 1-800-MSPRESS in the U.S.

Windows 95 Registry Troubleshooting (ISBN: 1-56205-556-9)
This manual provides information on the Windows 95 registry and is published by New Riders Publishing.

Microsoft Windows 95 Resource Kit (ISBN: 1-55615-867-X)
This manual is a technical guide for installing, configuring, and supporting Windows 95 and is published by Microsoft Press, 1-800-MSPRESS in the U.S.

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.

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

Programmers Guide to Pen Services for Microsoft Windows 95
This manual is currently out of print, however the on-line version of this manual is included with the on-line documentation for Microsoft Visual C++ version 4. This manual provides details on pen support for Microsoft Windows 95. Note that Microsoft Windows 95 and Windows 98 use the same pen services API to provide pen support, so you can refer to this manual for details on application design for Windows 98 as well as Windows 95.

Microsoft Developer's Network
The Microsoft Developer's Network web site provides links to information on application programming interfaces (APIs) used with Microsoft Windows 95 and Windows 98. The site address is <http://MSDN.microsoft.com/developer/>.

The following documents provide information on industry standards supported by the Stylistic 2300 pen tablet system.

Advanced Power Management (APM) BIOS Interface Specification, Revision 1.2
The Stylistic 2300 pen tablet is an APM 1.2 compliant system as defined in this specification. Application developers should refer to this specification for details on designing APM compliant software. This specification is available as a free download from the Intel Corporation web site, <www.intel.com/IAL/powermgm/apmovr.htm/>.

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 2300 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 2300 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 2300 pen tablet and Stylistic 1200 port replicator 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 2300 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

The individual you contact for technical support on the Stylistic 2300 pen tablet system depends on whether you are a reseller or an end user/customer.

End users/customers: contact your Fujitsu reseller.

Fujitsu resellers (VARs): contact your assigned FPSI Systems Engineer or contact Fujitsu Personal Systems 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

Pen Tablet Features

This chapter provides an introduction to the Stylistic 2300 pen tablet system hardware and gives an overview on 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 2300 pen tablet computer is designed for the Windows 95, Windows 98, and Windows NT Workstation 4.0 operating systems using IBM-AT compatible architecture. The system uses an electromagnetic pen digitizer and is available with either a color thin-film-transistor (TFT) display or a color transflective (CTF) display.

The Stylistic 2300 pen tablet system has been tested by Windows Hardware Quality Labs (WHQL) at Microsoft corporation and is compliant with PC 98 system design guidelines.

PC Card Support

The Stylistic 2300 pen tablet is equipped with two stacked Type II PC Card slots that allow you to install two Type II PC Cards (using slots 1 and 2) or one Type III PC Card (using slot 1 only). The PC Card slots are compliant with PC Card Standard Release 3.0 and provide support for the following PC Card features:

- Zoomed Video Port (ZV Port) compliant I/O interface (slot 1 only)
- 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

Internal Modem

Stylistic 2300 pen tablet systems distributed in North America are equipped with an internal fax/modem; systems distributed to countries outside North America are not equipped with a built-in modem. For details on the built-in modem, see "Internal Modem Specifications" on page 5-8.

ACPI Support

The Stylistic 2300 pen tablet supports the *Advanced Configuration and Power Interface (ACPI) Specification,* revision 1.0. The Windows 98 operating system supports ACPI; however, due to limitations of the initial release of Windows 98, Advanced Power Management (APM) is the recommended setting and is the default setting for Windows 98 systems. Refer to "Enabling ACPI" on page C-1 for more information.

Note: *All Stylistic 2300 pen tablet systems are ACPI-compliant; however, the Windows 95 and Windows NT 4.0 operating systems do not utilize the ACPI design specification.*

Zoomed Video Support

The Zoomed Video (ZV) Port Standard is an adaptation of the PC Card Standard that defines a high-speed multimedia (video and audio) bus between a PC Card controller and other system components. Upon insertion of a Zoomed Video card, the PC Card controller reconfigures the PC Card socket to form the ZV bus.

In the Stylistic 2300 pen tablet, the ZV bus connects the system's PC Card socket to the system's audio and video controllers as shown in Figure 1-1. This allows a Zoomed Video card to send large amounts of video and audio data directly to the video frame buffer and audio controller. Since this all takes place over the ZV bus, the CPU and system bus do not need to process or carry video and audio data and are therefore, free to perform other tasks. The end result is that the system can play back full-screen, full-motion video and audio in real time while the system performs other tasks.

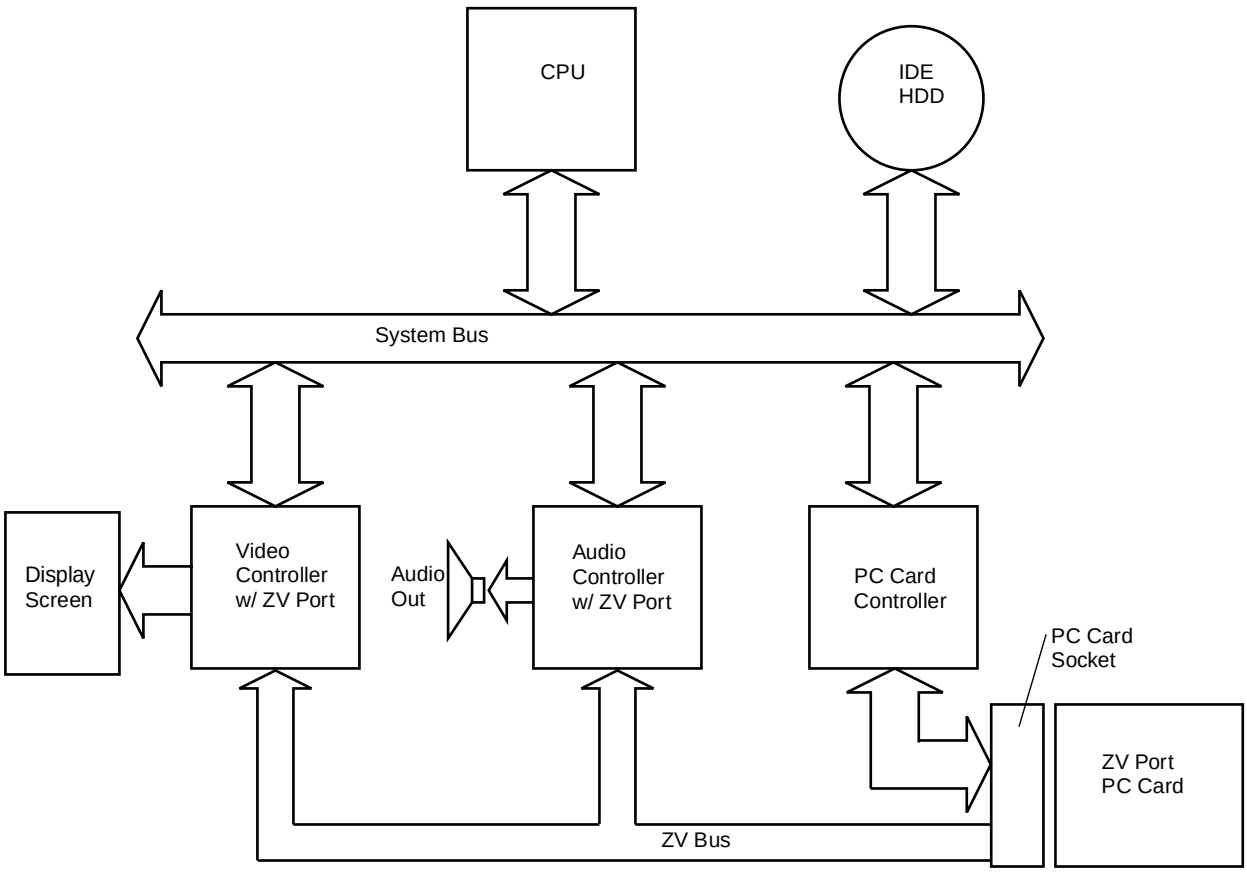


Figure 1-1 Zoomed Video Port

Note: *Figure 1-1 is intended to illustrate the concept of the ZV bus. This figure does not depict a complete system block diagram. Individual system busses, such as the ISA and PCI busses are not called out.*

In the case of Zoomed Video playback, MPEG compressed data is transferred from the hard disk to the Zoomed Video card (via the system bus and the PC Card controller). The MPEG data is then decompressed by the PC Card and sent to the display and audio controller via the ZV bus.

Note the following with respect to using Zoomed Video features on the Stylistic 2300 pen tablet:

- Video functions such as video capture and MPEG decompression/playback are performed by the Zoomed Video card. Your Zoomed Video card may not perform all of these video functions. Refer to the documentation for your PC Card to determine its video capabilities.
- All Stylistic 2300 pen tablets are equipped with ZV Port technology; however, full motion video is best viewed on a system with a TFT display. Color transflective displays will produce a “blurred” effect because the display cannot respond fast enough to display full-motion video.
- You can install two Type II PC Cards in slots 1 and 2, or one Type III PC Card in slot 1. (If your PC Card supports Zoomed Video (ZV), you must install it in slot 1; only slot 1 supports the ZV Bus.)

Also, note that performing MPEG decompression and playback without a Zoomed Video card is possible using software compression and decompression; however, doing so may produce uneven (unsteady) video playback.

Card and Socket Services software to support Zoomed Video is built into the Windows 95 and Windows 98 operating systems. (Windows NT 4.0 does not support Zoomed Video.)

Chapter 2

System Software

This chapter outlines system software supported on the Stylistic 2300 pen tablet including operating system software, and drivers and utilities developed specifically for the Stylistic 2300 pen tablet system.

Supported Operating Systems

The Stylistic 2300 pen tablet is distributed with one of the following operating systems preinstalled:

- Windows 95 (OSR 2.5)
- Windows 98
- Windows NT Workstation 4.0 (Build 1381, SP 4)

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 Manual section of this guide.

Note: *MS-DOS is not supported as an end-user operating environment. Support for MS-DOS is limited to the use of configuration and other support utilities designed for the Stylistic 2300 pen tablet system such as MFG2300.*

Pen Support

Pen support for the Stylistic 2300 pen tablet is provided by the following three pen subsystems:

- Microsoft Pen Services 2.0 with CIC HRS 5.05
- CIC PenX 1.51 with CIC HRS 6.x
- Mouse Emulation

You can select one of these subsystems "on the fly" using the pen configuration control panel applet. See "Pen Configuration" on page 3-1 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 Personal Systems) for the Stylistic 2300 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 2300 pen tablet fully supports the PC Card standard release 3.0. System resources for PC Cards are configured automatically by Windows 95 and Windows 98.

Phoenix/Softex Card Executive 2.0 for Windows NT is preinstalled on Windows NT systems to provide PC Card support. Refer to the on-line help provided with Phoenix/Softex Card Executive for details on supported PC Cards.

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.
- PM Setup
  A power management application that runs under Windows.
- 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.
- MFG2300
  A configuration utility that runs under MS-DOS and allows you to configure BIOS options.
- PHDISK
  A utility used to prepare your hard disk for using save-to-disk suspend mode.

Chapter 3

Configuring the Stylistic 2300 Pen Tablet System

This chapter provides instructions on how to use various configuration utilities to configure the Stylistic 2300 pen tablet BIOS.

Pen Configuration

Windows 95 and Windows 98 systems include 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 Tip and Pen Barrel buttons.
- Calibration
  Allows you to calibrate the pen digitizer system.
- Sampling
  Allows you to select the resolution of the pen (sampling rate in point per second).
- 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 2300 supports the following pen subsystems: Pen X, Pen Windows, or Emulate Mouse. You choose one of these subsystems using the Pen Configuration Control Panel applet, as described earlier.

Note: *Training utilities work only for the specific pen subsystem. Tutorials such as Handwriting Trainer for Pen Windows and Handwriter Tutorial for Pen X can only be used when the respective pen subsystem is selected.*

Audit Mode (Windows 95 and Windows 98 Only)

Windows 95 and Windows 98 (as preinstalled on the system) are preconfigured for the pen tablet. The first time the system is started, the User Information screen is displayed along with a series of "first-run" screens for the end user to perform such tasks as entering User/Company name, Certificate of Authenticity, and End User License Acceptance information. After this information is entered and the system is shut down, the User Information and first-run screens are not displayed when the system is started in subsequent sessions. Windows 95 and Windows 98 allow you to bypass the first-run screens and run the system in *audit mode*. In audit mode, you can change system configuration settings, perform additional system checks and tests, and install hardware and software without altering the license agreement and registration process (the "first-run" experience) for the end user.

To invoke audit mode, attach a keyboard to your system and perform the following steps:

1. Boot the system. When the User Information screen is displayed, press the key combination CTRL-SHIFT-F3 on the keyboard. This displays a License screen.

2. Read the License Agreement and choose Accept to continue. After you accept the license, a menu of auditing options appears. The following auditing modes are available:

   - Nonrestorative Auditing
     In this mode, any changes you make to Windows during your audit session are retained after you end your audit session. (Key system files such as the registry and AUTOEXEC.BAT are not restored to their pre-audit state.) This is the auditing mode that you will most commonly use to preconfigure the system before it reaches the end user.

   - Partial Restorative Auditing
     In this mode, key system files such as the registry and AUTOEXEC.BAT are restored to their pre-audit state after you end your audit session. New files that you copy to the system remain on the system after you end your audit session. This mode is useful for demonstration and test purposes.

     Note: *Your system must have an AUTOEXEC.BAT file in the* C:\ *(root) directory to use Partial Restorative auditing mode. If this file does not exist on your system, an error message indicating "The disk labeled root directory is now required..." will be displayed when you attempt to use Partial Restorative auditing mode. If this occurs, you can shut down and restart your system, perform this procedure again, and choose Nonrestorative Auditing. Once you are in nonrestorative auditing mode, you can create an AUTOEXEC.BAT file if desired to allow partial restorative auditing in your next audit session. (The AUTOEXEC.BAT file can be an empty file.)*

   - Simulate End User Experience (Full Restorative Auditing)
     In this mode, the entire system is fully restored to its pre-audit state after you end your audit session. Any changes that you make to system files and any new files copied to the system are not retained. This mode is most useful for performing extensive system checks including testing software and hardware installation procedures.

3. Choose the desired auditing mode and tap OK.

4. Press the Esc key on your keyboard when the Enter Windows Password screen is displayed. **Do not enter a password**.

5. The system is now in audit mode. You can now make any desired changes to the system configuration, preinstall hardware, software, or perform system tests.

6. Windows 98 only: If desired, choose Audit Boot to restart the system in audit mode. If you do so, go back to step 4 in this procedure to continue. (This allows you to restart the system if necessary when preinstalling software or testing the system.)

7. When you are finished auditing the system, tap the Shutdown button in the OEM Reset Reminder dialog box.

The system is now shut down and software licensing screens will appear in their first-run state when the system is started. Note that you can invoke audit mode as many times as desired, however, once the Certificate of Authenticity information is entered, you can no longer invoke audit mode.

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 code resides in the system's CMOS memory. When the system is powered on, BIOS code 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,

```
For BIOS Setup double-tap the pen anywhere on the screen or press F2
```

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.

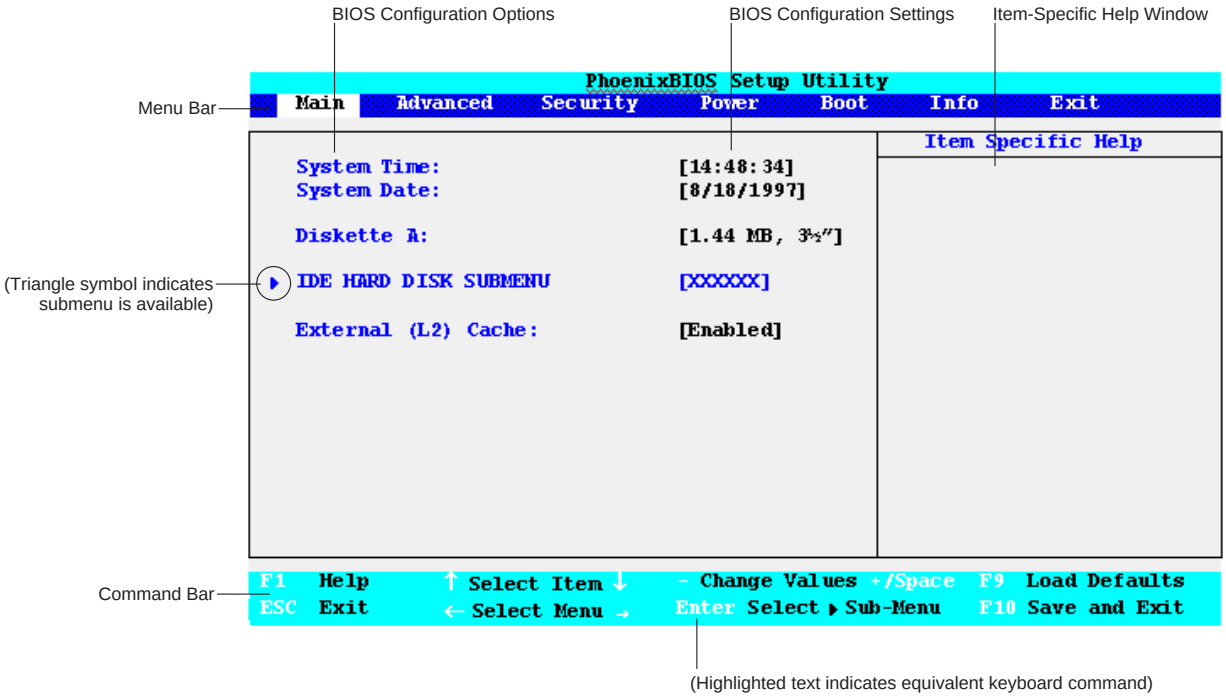


Figure 3-1 BIOS Setup Screen

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**, press and hold the barrel button while you tap on the setting (a right-mouse click operation). The pop-up menu appears. You can then tap directly on the desired setting in the pop-up menu to change the setting.
- **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, Power, and Boot menus contain submenus.)
- **To view Item-Specific Help** for a BIOS option, select the option. Item specific help is displayed.
- **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 3-5 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 3-21.

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.
Diskette A:	**1.44 MB, 3 1/2"** Not Installed	Floppy disk drive type for external floppy drive. Selecting *Not Installed* disables the floppy disk drive port.
IDE Hard Disk Submenu	(See "IDE Hard Disk Drive Options" later in this section.)	Select this field to access IDE hard disk drive submenu.
External Level 2 Cache	**Enabled** Disabled	Enable or disable external level 2 cache (external to CPU). Note that memory from 0 to 64 MB is cached when this option is enabled. Memory above 64 MB is not cached regardless of this setting. (This is a limitation of the Intel chip set.) Also note that level 1 cache (internal CPU cache) is always enabled.

IDE Hard Disk Drive Submenu Options

Options and settings for the IDE Hard Disk Drive Submenu are given in Table 3-2.

Table 3-2 BIOS Setup IDE Hard Disk Drive Configuration Options

Option	Settings	Description
HDD Configuration	**Auto Detect** User Defined Disable HDD	IDE hard disk drive configuration method. Select *Auto Detect* to load configuration parameters from the hard disk drive automatically. Selecting *User Defined* allows you to manually enter parameter values for the remaining options listed in this table.
Size	XXXX MB	Displays the size of the hard disk drive.
Cylinders*	0 to 65535	Number of cylinders.
Heads*	1 to 16	Number of read/write heads.
Sectors Per Track*	0 to 63	Number of sectors per track.
Multisector Transfers*	Disabled 2 Sectors 4 Sectors 8 Sectors 16 Sectors MAXnnn	Number of sectors used in multisector transfers. You can cycle through the settings for this option repeatedly to select values larger than 16 sectors up to the maximum (MAXnnn) allowable for the hard disk drive. (Selecting the maximum, or values larger than the default may degrade performance.)
LBA Mode Control*	Disabled Enabled	Logical Block Address (LBA) mode control. Selecting Enabled causes logical block addressing to be used instead of cylinder, head, and sector addressing.
Transfer Mode*	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 / DMA Fast PIO 4 / DMA	Determines the method for data transfers to and from the hard disk drive. (Choosing Auto Detect for the HDD Configuration option selects the optimum setting for this option.)
Ultra DMA Mode*	Disabled Mode 0 Mode 1 Mode 2	Determines the mode used for ultra-DMA transfers. (Choosing Auto Detect for the HDD Configuration option selects the optimum setting for this option.)

* These values can be changed when User Defined 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** No	Determines whether BIOS support for Plug and Play device configuration is enabled. 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 95 and Windows 98 support Plug and Play configuration.) 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.
Secured Setup Configurations	**No** 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.
INTEGRATED PERIPHERALS SUBMENU		Enter this submenu to configure peripheral interfaces. (See “Integrated Peripherals Submenu Options” on page 3-9 for details.)
AUDIO/VIDEO SUBMENU		Enter this submenu to configure system resources for the audio and video controllers. (See “Audio/ Video Submenu Options” on page 3-11 for details.)
IRQ RESERVATION SUBMENU		Enter this menu to configure system resources for PCI devices. (See “IRQ Reservation Submenu” on page 3-12 for details.)
DMI EVENT SUBMENU		Enter this menu to configure DMI event logging parameters. (See “DMI Event Logging Submenu” on page 3-12 for details.)
Hotpad	**Enable** Disable	This setting determines whether the following hotpads are enabled: Speaker Mute, Volume Up/ Down, and Display Select.

Integrated Peripherals Submenu Options

Configuration options for the Integrated Peripherals submenu are given in Table 3-4. Note that some peripheral interfaces are only available when using a device attached to the system interface port such as the Stylistic 1200 port replicator.

Table 3-4 BIOS Setup Integrated Peripherals Submenu Options

Option	Settings	Description
Serial Port A	Disabled **Enabled** Auto	Determines whether serial port A is active and the method used to configure serial port A. Select Auto to allow the BIOS or operating system to configure the port automatically. Select Enabled to configure the Base I/O Address and Interrupt options manually in BIOS setup. Select Disabled to turn serial port A off.
Base I/O Address	**3F8** 2F8 3E8 2E8	Determines the base I/O address used for serial port A. The Serial Port A option must be set to Enabled before this setting can be changed.
Interrupt	IRQ 3 **IRQ 4** IRQ 10 IRQ 11	Determines the interrupt request level used for serial port A. The Serial Port A option must be set to Enabled before this setting can be changed.
Serial Port B	**Disabled** Enabled Auto	Determines whether serial port B is active and the method used to configure serial port B. Select Auto to allow the BIOS or operating system to configure the port automatically. Select Enabled to configure the Base I/O Address and Interrupt options manually in BIOS setup. Select Disabled to turn serial port B off.
Device	IrDA **FIR** System Interface Port	Determines which physical interface serial port B 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). Select System Interface Port to assign serial port B to the serial port B connector on the port replicator.
Base I/O Address	3F8 2F8 3E8 **2E8**	Determines the base I/O address used for serial port B. The Serial Port B option must be set to Enabled before this setting can be changed.
Interrupt	**IRQ 3** IRQ 4 IRQ 10 IRQ 11	Determines the interrupt request level used for serial port B. The Serial Port B option must be set to Enabled before this setting can be changed.
2nd Base I/O Address	100 108 110 **118**	Determines the 2nd base I/O address for serial port B. This option is only selectable when the Serial Port B Device setting is FIR.
FIR DMA Channel	DMA 1 **DMA 3**	Determines the DMA channel assigned to serial port B when using Fast IR mode. This option is only selectable when the Serial Port B Device setting is FIR.

Table 3-4 BIOS Setup Integrated Peripherals Submenu Options (Continued)

Option	Settings	Description
Parallel Port	Disabled **Enabled** Auto	Determines how system resources for the parallel port are configured. 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. Select Disabled to disable the parallel port.
Mode	Output Only **Bidirectional** 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. This option is not displayed when the Parallel Port option is set to Disabled.
Base I/O Address	**378** 278 3BC	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 5 **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.
ECP DMA Channel	**DMA 1** DMA 3	Determines the DMA channel assigned to the parallel port when using ECP mode. This option is not displayed when the Parallel Port option is set to Disabled.
Keyboard/Mouse Hot Plug	Disabled **Enabled**	Determines whether hot plug capability is enabled for the keyboard/mouse port. When Enabled is selected, the system polls the keyboard and mouse ports periodically for the presence of a keyboard or mouse device. When a device is detected, the keyboard/ mouse interface is enabled. (Note that this option must be set to Disabled when using some scanner devices or bar code readers such as the RS 1 Ring Scanner from Symbol Technologies.)
Internal Modem	Disabled **Enabled**	Determines whether the system's internal modem is enabled or disabled. This option is only displayed on systems equipped with a built-in modem.

Audio/Video Submenu Options

Options for the Audio Features submenu are given in Table 3-5.

Table 3-5 BIOS Setup Audio Features Options

Option	Settings	Description
Audio	Disabled **Enabled** Auto	Determines whether the audio controller is enabled and how system resources for the audio controller are assigned. If Enabled is selected, you can select system resources for the Audio controller in BIOS setup. If Auto is selected, system resources for the audio controller are assigned by the BIOS or Plug and Play operating system. Note that setting this option to Disabled does not disable system "beep" functions.
I/O Address	**220 - 22F** 240 - 24F 260 - 26F 280 - 28F	Determines the I/O address range assigned to the audio controller.
FM I/O Address	**388 - 38B** 38C - 38F 390 - 393 394 - 397	Determines the I/O address for audio controller's FM synthesizer.
Interrupt	**IRQ 5** IRQ 7 IRQ 9 IRQ 10 IRQ 11	Determines the IRQ assigned to the audio controller.
DMA Channel 1	DMA 0 **DMA 1** DMA 3 DMA 5	Determines the DMA channel setting for the audio controller's first DMA channel.
DMA Channel 2	DMA 0 DMA 1 DMA 3 **DMA 5**	Determines the DMA channel setting for the audio controller's second DMA channel.
Speaker	**On** Mute	Determines whether the speaker, head phone, or line out audio outputs are on or off. Select *Mute* to turn these audio outputs off. (This setting reflects the current setting of the Speaker Mute hotpad.)
Display	**LCD** External Monitor LCD & External Monitor	Determines the default display device. Select the appropriate option to choose the LCD (pen tablet display screen), an external video monitor, or both as the default display device. Note that using the Display Select hotpad will change this setting.
Expand VGA Screen	**Disabled** Enabled	Determines whether the full screen area (800 x 600 pixels) is used by programs running in VGA (640 x 480) video mode. Select Disabled to use the center portion of the screen (640 x 480 pixels). Select Enabled to use the full screen area.

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 3-6 BIOS Setup IRQ Reservation Submenu Options

Option	Settings	Description
IRQ 3	**Available** Reserved	Select Reserved if the IRQ is needed for use by a legacy ISA device.
IRQ 4	**Available** Reserved	Select Reserved if the IRQ is needed for use by a legacy ISA device.
IRQ 5	**Available** Reserved	Select Reserved if the IRQ is needed for use by a legacy ISA device.
IRQ 7	**Available** Reserved	Select Reserved if the IRQ is needed for use by a legacy ISA device.
IRQ 9	**Available** Reserved	Select Reserved if the IRQ is needed for use by a legacy ISA device.
IRQ 10	**Available** Reserved	Select Reserved if the IRQ is needed for use by a legacy ISA device.
IRQ 11	**Available** Reserved	Select Reserved if the IRQ is needed for use by a legacy ISA device.

DMI Event Logging Submenu

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

Table 3-7 DMI Event Logging Submenu Options

Option	Settings	Description
Event Log Capacity		Capacity and status of the event log is displayed.
Event Log Validity		Indicates whether data in the event log is valid.
Clear all DMI event logs	**No** 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.)
Event Logging	Disabled **Enabled**	Determines whether DMI event logging is enabled.
System Boot Event	**Disabled** Enabled	Determines whether system boot events are logged. Note that this option can only be set when the Event Logging option is Enabled.

Security Menu Options

Security menu options for the Stylistic 2300 pen tablet are described in Table 3-8. Note that settings for some security menu options determine whether other options are available.

Table 3-8 BIOS Setup Security Menu Options

Option	Settings	Description
Set Supervisor Password	(Tap on the setting field for this option or press Enter 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, Diskette Access, and Fixed Disk Boot Sector. When Enabled, a supervisor password (or user password if used) is required to run BIOS Setup.
Supervisor Password Is	Enabled **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.)
Set User Password	(Press Enter 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. (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, Diskette Access, Fixed Disk Boot Sector.) When enabled, a user (or supervisor) password is required to run BIOS Setup. Note that a supervisor password must be enabled before a user password can be specified.
User Password Is	Enabled **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.)
Password On Boot	**Disabled** 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.
Password Protect HDD	**Disabled** Enabled	This option protects data on the hard disk with the password lock feature of the hard disk drive. Select Enabled to prevent access to data on the hard disk drive when it is used in another system. If the drive is used in another system, the data can only be accessed if the original password is used. (This setting does not affect access to the drive when used in the original pen tablet.) If Disabled is selected, a password is not required to read data from the hard disk when it is installed in another system.

Table 3-8 BIOS Setup Security Menu Options (Continued)

Option	Settings	Description
Diskette Access	Supervisor Only **All**	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. 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.
Fixed Disk Boot Sector	**Normal** Write Protect	This option write-protects the boot sector on the hard disk, to protect against viruses. Select Write Protect to grant read only access to the hard disk drive's boot sector. Select Normal to allow read and write access to the boot sector. **Caution** Selecting Write Protect is not advisable on systems running Windows 95 or Windows 98, since those operating systems must occasionally write to the boot sector. Select Normal if your system runs Windows 95 or Windows 98.

Power Savings Menu Options

Options for the Power Savings menu are described in Table 3-9. 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.

Windows 95 users: Note that activity generated by disk drive low power mode settings in Windows 95 Power Properties may be detected by the BIOS as system activity and prevent the Suspend Timeout option from working properly. To ensure proper operation, disable low power mode options in Power Properties. To do so, open Power in Control Panel, select the Disk Drives tab in the Power Properties window, and ensure that all disk drive low power mode options are disabled (unchecked).

Windows 98 users: Windows 98 can be configured to use ACPI. (ACPI is not enabled as a factory setting.) Systems with ACPI enabled will not use power management settings configured in BIOS Setup. To configure power management settings in Windows 98, open Power Management in Control Panel and select the desired settings in the Power Management Properties window.

Table 3-9 BIOS Setup Power Savings Options

Option	Settings	Description
APM Power Savings	**Max Performance** Max Battery Life Customize Off	Select Max Performance to configure the system to use a power management profile designed for maximum system performance. Select Max Battery Life to use a power management profile designed to maximize battery life. Select Customize to edit power management BIOS options directly and create a custom power management profile. Select Off to use no power management (all devices remain fully on).
HDD Spin-down Timeout	Off 5 Seconds 10 Seconds **30 Seconds** 1 Minute 2 Minutes 4 Minutes 6 Minutes 8 Minutes 10 Minutes 15 Minutes 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.
Video Timeout	Off **30 Seconds** 2 Minutes 4 Minutes 6 Minutes 8 Minutes 10 Minutes 15 Minutes 20 Minutes	Use this option to determine the amount of time the user input devices are inactive before the screen is turned off automatically. This setting affects any external video monitor as well as the pen tablet display screen. Select Off to keep the video system fully powered while the system is running.

Table 3-9 BIOS Setup Power Savings Options (Continued)

Option	Settings	Description
Idle Mode Timeout	**Off** 1/2 second	This setting determines the amount of time elapsed with no system activity before the CPU enters idle mode. Select Off to disable Idle mode. When in idle mode, the CPU speed drops to a speed selected from the Idle Mode CPU Speed settings. Idle Mode slows down the CPU (to the speed selected for the Idle Mode CPU Speed BIOS option) during periods when the system is not busy. (See "Idle Mode" on page 7-5 for more information on idle mode.)
Idle Mode CPU Speed	60 MHz 90 MHz 120 MHz **180 MHz**	Determines the CPU speed when the system is in Idle mode. Note that this setting does not determine the idle mode CPU speed when APM (Advanced Power Management) software is running. (See "APM CPU Idle Mode" on page 7-8 for more information.)
Standby Mode Timeout	**Off** 1 Minute 2 Minutes 4 Minutes 6 Minutes 8 Minutes 12 Minutes 16 Minutes	Standby Mode turns off various devices in the system, including the screen and the CPU until you start using the computer again. 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 7-6 for more information.)
Suspend Mode Timeout	Off 5 Minutes 10 Minutes 15 Minutes 20 Minutes **30 Minutes** 40 Minutes 60 Minutes	Determines the amount of time elapsed with no system activity before system operation is suspended automatically.
Low Battery CPU Speed	60 MHz 90 MHz **120 MHz**	Determines the CPU speed used when the low battery warning condition occurs.
POWER SAVINGS OPTIONS SUBMENU		Select this submenu to further refine power management BIOS options. See "Power Savings Options Submenu (Accessed Through The Power Savings Menu)" on page 3-17 for more information.

Power Savings Options Submenu (Accessed Through The Power Savings Menu)

Options for the Power Savings Options submenu are described in Table 3-10.

Table 3-10. BIOS Setup Power Savings Options Submenu

Option	Settings	Description
Suspend Mode	**Suspend To RAM** Suspend To Disk	Determines the suspend mode used when you press the Suspend/Resume button or when the Suspend Mode Timeout expires. Selecting Suspend To RAM also allows you to configure the Suspend-To-Disk Timeout option. Note: You must choose Suspend To Ram to use the Resume On Modem Ring and Resume On Time options.
Suspend-To-Disk Timeout	**Off** After 1 Hour	Determines whether the system automatically performs a suspend-to-disk operation after 1 hour in suspend-to-RAM mode. To use this feature, the Suspend Mode option must be set to Suspend To RAM.
Resume On Modem Ring	**Off** On	Select On to configure the system to resume operation when an incoming call is detected by your modem. This feature will detect a modem ring on the optional 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. To use this feature, the Suspend Mode option must be set to Suspend To RAM.
Resume On Time	**Off** On	Select On to configure your system to resume operation at the time of day specified in the Resume Time field. To use this feature, the Suspend Mode option must be set to Suspend To RAM.
Resume Time	XX:XX:XX	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 that the system uses a 24-hour clock.

Table 3-10. BIOS Setup Power Savings Options Submenu (Continued)

Option	Settings	Description
Suspend Button	**Normal** Resume Only Power On/Off	Determines how the Suspend/Resume button is configured. Select Normal to allow Suspend/Resume button to be used to suspend/resume system operation. Select Resume Only to allow Suspend/Resume button to be used only to resume operation from suspended mode. Select Power On/Off to configure the Suspend/ Resume button to act as an On/Off switch. **Caution** If the Power On/Off setting is selected, active data will be lost if the Suspend/Resume button is used to turn off the system.
APM CPU Idle Mode	**Normal** Diagnostic	Determines how clocks are managed in Idle mode when APM software is running. (See “APM CPU Idle Mode” on page 7-8 for more information.)
LCD Backlight Level	**Adjustable** Minimum Only	Determines whether the display backlight level can be changed using Brightness hotpads. Choose Adjustable to allow backlight level to be changed. Choose Minimum Only to disable Brightness hotpads and set the backlight level to minimum at all times.
Resume on Serial Activity	**Disabled** Enabled	Determines whether the video system resumes when activity is detected on Serial Port A. Select Enabled to resume video system operation when a device (such as a serial mouse) connected to Serial Port A is active.

Boot Menu Options

Boot menu options are described in Table 3-11.

Table 3-11 BIOS Setup Boot Menu Options

Option	Settings	Description
QuickBoot Mode	**Enabled** Disabled	Determines whether the full set of tests are run during the Power-On Self Test (POST). When Enabled is selected, the following occurs: • A less extensive memory test is performed and the size of installed memory is not displayed during the memory test. • The Real Time Clock (RTC) is not tested. When Disabled is selected, the full set of tests are run.
Boot-Time Diagnostic Messages	Enabled **Disabled**	Determines whether status messages are displayed as the Power On Self Test (POST) is performed. Select Enabled to display messages. 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.)
Setup Prompt	**Enabled** Disabled	Determines whether the BIOS Setup prompt message is displayed when you start the system. Select Enabled to display the message. If Disabled is selected, the message is not displayed, and you must attach an external keyboard and press F2 while the system is booting to enter BIOS Setup. (You cannot enter BIOS Setup by double-tapping with the pen when this option is disabled.)
BOOT SEQUENCE SUBMENU		Select this submenu to configure the order in which drives are searched for a bootable image.
Numlock	**Off** Auto On	Determines the initial state of the keyboard Numlock. Select Auto to turn on Numlock automatically if a keyboard is connected when you start the system.

Boot Sequence Submenu

Table 3-12 describes settings in the Boot Sequence submenu.

Table 3-12 BIOS Setup Boot Sequence Submenu

Setting	Description
1. [Diskette Drive] **2. [Hard Drive]**	Determines the order that the systems searches drives for a bootable image. Tap on item 2 to change the boot sequence.
1. [Hard Drive] 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 3-13.

Table 3-13 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).
On Board	Size of built-in memory.
DIMM	Size of memory installed in DIMM slot.
Asset Number	Asset number assigned to pen tablet. (Information is only displayed if an asset number has been programmed into the pen tablet using a special utility.)
System Temp	Indicates the internal temperature of the pen tablet. Possible indications are “Low” and “High”. If the System Temp is High, the CPU is “throttled”, reducing the effective CPU speed by roughly 50%.
Battery Temp	Indicates the internal temperature of battery pack. Possible indications are “Low” and “High”. If High is displayed in the Battery Temp field, battery pack charging is stopped to prevent heat damage to the battery pack. If Low is displayed in the Battery Temp field, battery charging is performed normally.

Exit Menu Options

Exit menu options are described in Table 3-14.

Table 3-14 BIOS Setup Exit Menu Options

Option	Description
Save Changes and Exit	Exit after writing all changed BIOS Setup settings to CMOS memory.
Discard Changes and Exit	Exit without saving changes to BIOS Setup settings to CMOS memory.
Load All Default Values	Load default settings for all BIOS Setup options.
Load All Previous Values	Read previous settings from CMOS memory and load in all BIOS Setup options.
Save Changes	Save BIOS changes to CMOS.

Using PM Setup

PM Setup is a power management application that runs under Windows. You use PM Setup to create power management "profiles" that the system will use under different power conditions. You can create a separate profile for each of the following power conditions:

- AC Mode
  The system is connected to an external power source such as the AC adapter or auto adapter.
- Normal Battery Mode
  The system is operating under battery power with greater than 10% battery charge remaining.
- Low Battery Mode
  The system is operating under battery power with 10% or lower battery charge remaining.

Note: • *If you create power management profiles using PM Setup, the profiles you create are used only while PM Setup is running.*

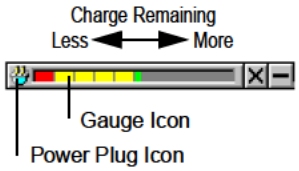
• *Windows 95 users: Activity generated by disk drive settings in Power Properties may be detected by the BIOS as system activity and prevent the Suspend Timeout from working properly. For this reason, disk drive timeout settings in Power Properties must be disabled (factory default setting). To confirm that this is the case, open Power in Control Panel, select the Disk Drives tab in the Power Properties window, and ensure that all disk drive low power mode options are disabled (unchecked). When Windows 95 is configured this way, disk drive timeout settings in the BIOS are used.*

• *The initialization file for PM Setup is* PMSETUP.INI. *This file contains the initialization strings for settings used in low battery mode and AC mode. (This file does not affect settings for normal mode since settings for normal mode are stored in CMOS.) See "Configuring PM Setup Buttons" on page 3-23 for details on editing the initialization file to change the behavior of PM Setup buttons.*

To use PM Setup,

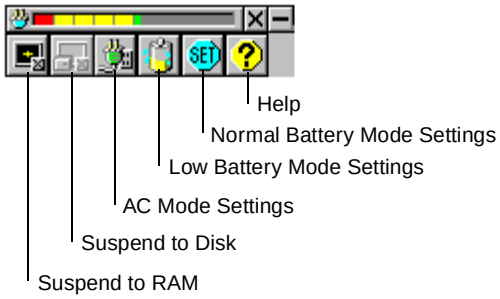
1. Start PM Setup. To do so, double-tap the Power Management icon (shown below) on your system desktop.

When PM Setup is running, the PM Setup program bar is displayed. The PM Setup program bar (shown here) is displayed as a Gauge icon that indicates the battery pack charge level remaining. A Power Plug icon is displayed in the program bar when the system is connected to AC power.



2. To see the percent of charge remaining displayed numerically, position the cursor over the Gauge icon.

3. Buttons that you can tap to perform various functions are hidden below the program bar. To see the buttons, position the cursor just below the program bar. The buttons appear as shown here.



From left to right, these buttons perform the following functions and commands.

- Suspend to RAM
  Tap on this button to suspend system operation using Suspend-to-RAM mode.

- Suspend to Disk
  Tap on this button to suspend system operation using Suspend-to-Disk mode. (Your system must be configured with a save-to-disk file or partition before this feature can be used. See "PHDISK Hard Disk Preparation Utility" on page 3-31 for more information.)

- AC Mode Settings
  Tap on this button to display the AC Power Savings window. This window allows you to define the power management profile used when an external power source is connected to the system. Note that PM Setup must be running (program bar displayed) for this profile to be used.

- Low Battery Mode Settings
  Tap on this button to display the Low Battery Power Savings window. This window allows you to define the power management profile used when the system is running on battery power (no external power is connected) and the battery charge is below 10%. Note that PM Setup must be running (program bar displayed) for this profile to be used.

- Normal Battery Mode Settings
  Tap on this button to display the Normal Battery Power Savings window. This window allows you to define the power management profile used when the system is running on battery power (no external power is connected) and the battery charge is 10% or higher. This window also allows you to configure other power management system settings including: suspend mode, automatic resume features, idle CPU speed, and the PM Setup auto hide feature. Note that this profile is used when the system is running on sufficient battery power even if PM Setup is not running.

- Help
  Opens the PM Setup Help window.

4. Tap on the appropriate PM Setup button to perform the desired function.

For more details on how to use these functions and commands, see the appropriate topic in the PM Setup Help window or tap the Help button in the PM Setup window that is currently displayed.

Configuring PM Setup Buttons

You can configure PM Setup to display the buttons below the battery gauge icon at all times after they are initially activated by moving the cursor over the battery gauge icon. To do so, edit the initialization file *PMSETUP.INI* and change the entry **Button=1** to **Button=0**.

Note: *If the PMSETUP.INI file is deleted, it is recreated the next time PM Setup is run. When this occurs, default settings for all entries in PMSETUP.INI are restored.*

Running MFG2300

MFG2300 is a command-line utility that allows you to configure BIOS Setup options and other options such as access to individual BIOS Setup menus. (Note that in addition to running MFG2300 at the command line as described here, you can run MFG2300 from a batch file to configure BIOS options to desired settings.)

To run MFG2300 attach a keyboard and floppy disk drive to your system and perform the following procedure. (An external keyboard must be used to type MFG2300 commands since pen support is not available for MFG2300.)

1. Start your system from a bootable diskette.

2. Type the command MFG2300 followed by the desired parameters using the following syntax,

   ```
   MFG2300 [option=setting]
   ```

   where *option* and *setting* are the mnemonic symbols for the desired MFG2300 parameters listed in Table 3-15. (Brackets indicate that the parameter is optional.) You can specify several parameters on the same command line. To do so, place a comma between each parameter. (Do not exceed the maximum MS-DOS command line length of 127 characters, including spaces.) For example, the following command sets the display device to LCD and turns the speaker off.

   ```
   MFG2300 DISP=LCD, SPK=N
   ```

3. When all desired options and settings are typed on the command line, press Enter to run MFG2300. When the MFG2300 command is complete, the following message is displayed.

   ```
   Configuration complete.
   ```

Table 3-15 lists MFG2300 parameters and the BIOS settings that they configure. These BIOS options are the same as those described earlier for BIOS Setup. Refer to "BIOS Setup" earlier in this chapter for detailed descriptions of corresponding BIOS options listed in this table.

Table 3-15 MFG2300 Parameters

Option Symbol	Setting Symbol	Setting Description	Option Description
QKBT	*N*	Disabled	QuickBoot Mode
	Y	Enabled	
DIAG	*N*	Disabled	Boot-time Diagnostic Messages
	Y	Enabled	
PRMT	*N*	Disabled	Setup Prompt
	Y	Enabled	
NLOK	*A*	Auto	Numlock
	Y	On	
	N	Off	
BOOT	*CA*	C: then A:	Boot Sequence
	AC	A: then C:	

Table 3-15 MFG2300 Parameters (Continued)

Option Symbol	Setting Symbol	Setting Description	Option Description
I3	*N*	No	Reserve IRQ 3
	Y	Yes	
I4	*N*	No	Reserve IRQ 4
	Y	Yes	
I5	*N*	No	Reserve IRQ 5
	Y	Yes	
I7	*N*	No	Reserve IRQ 7
	Y	Yes	
I9	*N*	No	Reserve IRQ 9
	Y	Yes	
I10	*N*	No	Reserve IRQ 10
	Y	Yes	
I11	*N*	No	Reserve IRQ 11
	Y	Yes	
MPA	*Y*	Lock	Main Page Lock:
	N	Allow Access	This option allows you to write protect (Lock) settings in the Main menu in BIOS Setup.
APA	*Y*	Lock	Advanced Page Lock:
	N	Allow Access	This option allows you to write protect (Lock) settings in the Advanced menu in BIOS Setup.
SPA	*Y*	Lock	Security Page Lock:
	N	Allow Access	This option allows you to write protect (Lock) settings in the Security menu in BIOS Setup.
PPA	*Y*	Lock	Power Page Lock:
	N	Allow Access	This option allows you to write protect (Lock) settings in the Power menu in BIOS Setup.

Table 3-15 MFG2300 Parameters (Continued)

Option Symbol	Setting Symbol	Setting Description	Option Description
BPA	*Y*	Lock	Boot Page Lock:
	N	Allow Access	This option allows you to write protect (Lock) settings in the Boot menu in BIOS Setup.
EPA	*Y*	Lock	Exit Page Lock:
	N	Allow Access	This option allows you to write protect (Lock) settings in the Exit menu in BIOS Setup.
EC	*N*	Disabled	External Level 2 Cache
	Y	Enabled	
SPK	*N*	Off (Mute)	Speaker
	Y	On	This option allows you to mute the speaker, line out, and headphone outputs.
MOD	*N*	Disable	Internal Modem
	Y	Enable	
DMC	*N*	No	Clear All DMI Event Logs
	Y	Yes	
DML	*N*	Disabled	DMI Event Logging
	Y	Enabled	
DMB	*N*	Disabled	DMI System Boot Event
	Y	Enabled	
LPTP	*OFF*	Disabled	Parallel Port
	ON	Enabled	
	AUTO	Auto	
LPTM	*O*	Output Only	Parallel Port Mode
	B	Bidirectional	
	E	Extended Capabilities	
LPTA	*378*	I/O Address 378	Parallel Port Address
	278	I/O Address 278	
	3BC	I/O Address 3BC	
LPTI	*5*	IRQ 5	Parallel Port IRQ
	7	IRQ 7	

Table 3-15 MFG2300 Parameters (Continued)

Option Symbol	Setting Symbol	Setting Description	Option Description
LPTD	*DMA1*	DMA Channel 1	Parallel Port ECP DMA Channel
	DMA3	DMA Channel 3	
DSKA	*OFF*	Disabled	Diskette A:
	144	1.44MB, 3.5” disk drive enabled	
DISP	*LCD*	LCD	Display Select
	BOTH	Both	
BLL	*ADJ*	Adjustable	LCD Backlight Level
	MIN	Minimum Only	
PNP	*N*	Disabled	Plug and Play
	Y	Enabled	
SECU	*N*	Disabled	Secure Configuration This option locks all BIOS settings. When this option is enabled, BIOS settings cannot be changed in BIOS Setup.
	Y	Enabled	
KBM	*N*	Disabled	Keyboard/Mouse Hot Plug
	Y	Enabled	
VEXP	*N*	Disabled	Expand VGA Screen
	Y	Enabled	
HPAD	*N*	Disabled	Hotpad
	Y	Enabled	
WPRT	*N*	Normal	Fixed Disk Boot Sector
	W	Write Protect	
SUSM	*R*	Suspend-to-RAM	Suspend Mode
	D	Suspend-to-Disk	
STD	*N*	Off	Suspend-To-Disk Timeout
	Y	After 1 Hour	
RMRI	*N*	Off	Resume On Modem Ring
	Y	On	
SUSB	*RO*	Resume Only	Suspend Button
	N	Normal	
	PWR	Power On/Off	

Table 3-15 MFG2300 Parameters (Continued)

Option Symbol	Setting Symbol	Setting Description	Option Description
IDLM	*D*	Diagnostic	APM CPU Idle Mode
	N	Normal	
SERA	*OFF*	Disabled	Serial Port A
	ON	Enabled	
	AUTO	Auto	
SEAA	*3F8*	I/O Address 3F8	Serial Port A Base I/O Address
	2F8	I/O Address 2F8	
	3E8	I/O Address 3E8	
	2E8	I/O Address 2E8	
SEAI	*3*	IRQ 3	Serial Port A Interrupt Request
	4	IRQ 4	
	10	IRQ 10	
	11	IRQ 11	
SERB	*OFF*	Disabled	Serial Port B
	ON	Enabled	
	AUTO	Auto	
SEBA	*3F8*	I/O Address 3F8	Serial Port B Base I/O Address
	2F8	I/O Address 2F8	
	3E8	I/O Address 3E8	
	2E8	I/O Address 2E8	
SEBP	*I*	IrDA	Serial Port B Device
	F	FIR	
	S	System Interface Port	
SEBI	*3*	IRQ 3	Serial Port B Interrupt Request
	4	IRQ 4	
	10	IRQ 10	
	11	IRQ 11	
SEBD	*DMA1*	DMA Channel 1	Serial Port B FIR DMA Channel
	DMA3	DMA Channel 3	
SEB2	*100*	I/O Address 100	Serial Port B 2nd Base I/O Address
	108	I/O Address 108	
	110	I/O Address 110	
	118	I/O Address 118	
AUD	*OFF*	Disabled	Audio
	ON	Enabled	
	AUTO	Auto	

Table 3-15 MFG2300 Parameters (Continued)

Option Symbol	Setting Symbol	Setting Description	Option Description
ABA	*220*	I/O Address 220	Audio I/O Address
	240	I/O Address 240	
	260	I/O Address 260	
	280	I/O Address 280	
AFMA	*388*	I/O Address 388	Audio FM I/O Address
	38C	I/O Address 38C	
	390	I/O Address 390	
	394	I/O Address 394	
AIRQ	*5*	IRQ 5	Audio Interrupt Request
	7	IRQ 7	
	9	IRQ 9	
	10	IRQ 10	
	11	IRQ 11	
ADM1	*0*	DMA Channel 0	Audio DMA Channel 1
	1	DMA Channel 1	
	3	DMA Channel 3	
	5	DMA Channel 5	
ADM2	*0*	DMA Channel 0	Audio DMA Channel 1
	1	DMA Channel 1	
	3	DMA Channel 3	
	5	DMA Channel 5	
RVS	*N*	Disabled	Resume Video On Serial Activity
	Y	Enabled	
TIME	*OFF*	Resume On Time Off	Resume Time
	HH:MM:SS	Resume On Time On [Hours:Minutes:Seconds]	
PSM	*OFF*	Off	Power Savings Mode
	C	Customize	
	P	Max Performance	
	B	Max Battery Life	
IDLE	*N*	Off	Idle Timeout
	Y	1/2 Second	
LBS	*60*	60 MHz	Low Battery CPU Speed
	90	90 MHz	
	120	120 MHz	

Table 3-15 MFG2300 Parameters (Continued)

Option Symbol	Setting Symbol	Setting Description	Option Description
VDT	*N*	Off	Video Display Timeout
	30S	30 Seconds	
	2	2 Minutes	
	4	4 Minutes	
	6	6 Minutes	
	8	8 Minutes	
	10	10 Minutes	
	15	15 Minutes	
	20	20 Minutes	
HDT	*N*	Off	Hard Disk Drive Timeout
	5S	5 Seconds	
	10S	10 Seconds	
	30S	30 Seconds	
	1	1 Minute	
	2	2 Minutes	
	4	4 Minutes	
	6	6 Minutes	
	8	8 Minutes	
	10	10 Minutes	
	15	15 Minutes	
	20	20 Minutes	
ICS	*60*	60 MHz	Idle Mode CPU Speed
	90	90 MHz	
	120	120 MHz	
	180	180 MHz	
SDY	*N*	Off	Standby Mode Timeout
	1	1 Minute	
	2	2 Minutes	
	4	4 Minutes	
	6	6 Minutes	
	8	8 Minutes	
	12	12 Minutes	
	16	16 Minutes	
SUST	*N*	Off	Suspend Mode Timeout
	5	5 Minutes	
	10	10 Minutes	
	15	15 Minutes	
	20	20 Minutes	
	30	30 Minutes	
	40	40 Minutes	
	60	60 Minutes	

PHDISK Hard Disk Preparation Utility

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 suspend-to-disk or "save-to-disk" operation.

Note: *PHDISK version 3.2.10 is supported for use with the Stylistic 2300 pen tablet. PHDISK is not supported for use with a hard disk drive formatted with the FAT32 file system. (The pen tablet's built-in hard disk ships from the factory formatted with the FAT16 file system which is compatible with PHDISK.) If you are using an aftermarket hard disk drive for your suspend-to-disk partition or file, ensure that it is formatted with the FAT16 file system.*

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 3-16 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 3-16 PHDISK Command Line Options

Option	Parameters	Description
None		Displays the PHDISK Opening Screen.
/CREATE	/PARTITION	Creates a save-to-disk partition. (Entire hard disk is reformatted.) **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.
	/FILE	If no save-to-disk partition exists, PHDISK creates a save-to-disk file large enough for the current system configuration. 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.)

Table 3-16 PHDISK Command Line Options (Continued)

Option	Parameters	Description
/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 2.2 -- 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.

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 3-17 lists valid examples of the PHDISK /CREATE option.

Table 3-17 PHDISK /CREATE Option

Command	Description
PHDISK /CREATE /FILE (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. 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 (or PHDISK /C /P)	Creates a save-to-disk partition using the amount of memory required as calculated by PHDISK. **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.
PHDISK /CREATE 10240 /FILE (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 3-18 lists an example of the PHDISK /REFORMAT option.

Table 3-18 PHDISK /REFORMAT Option

Command	Description
PHDISK /REFORMAT /PARTITION (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 3-19 lists valid examples of the PHDISK /DELETE option.

Table 3-19 PHDISK /DELETE Option

Command	Description
PHDISK /DELETE /FILE (or PHDISK /D /F)	Delete save-to-disk file.
PHDISK /DELETE /PARTITION (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 3-20 lists valid examples of the PHDISK /INFO option.

Table 3-20 PHDISK /INFO Option

Command	Description
PHDISK /INFO /FILE (or PHDISK /I /F)	Displays the size (in kilobytes) of the save-to-disk file size.
PHDISK /INFO /PARTITION (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 2.2 -- Phoenix NoteBIOS 4.0 (TM) Save to Disk Preparation Utility
Copyright (c) Phoenix Technologies Ltd. 1995.  All rights Reserved.

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 and DIMM cards. (For details on replacing the pen tablet's internal IDE hard disk drive, refer to "Removing the Hard Disk Drive" on page A-1.)

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. Choose one of the following:
   - If your PC Card has external connectors, cables, or antennas, close the PC Card door and insert the PC card into the desired slot by inserting it through the shutters in the PC Card door.
   - If your PC Card does not have any external attachments, open the PC Card door and insert the PC Card into the desired slot as shown in Figure 4-1.

Note: *You can install two Type II PC Cards in slots 1 and 2, or one Type III PC Card in slot 1. (If your PC Card supports Zoomed Video (ZV), you must install it in slot 1; only slot 1 supports the ZV Bus.)*

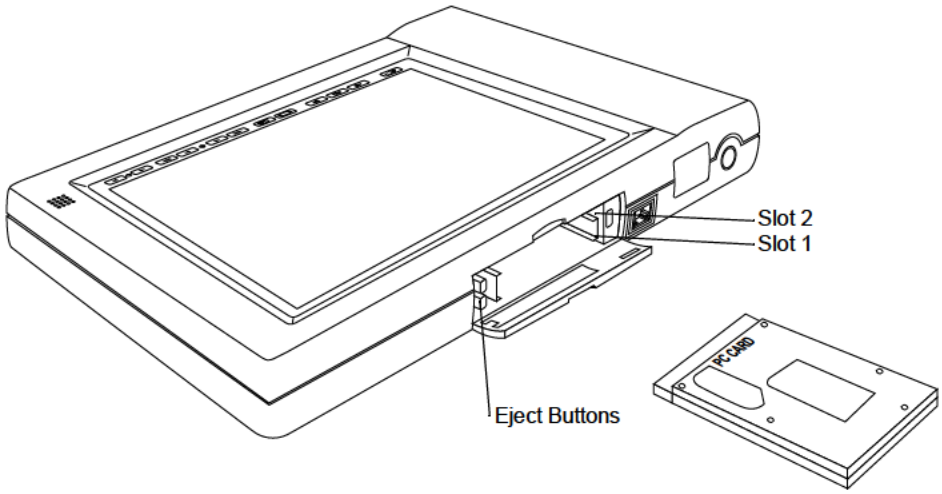


Figure 4-1 Installing a PC Card

2. Push the PC Card into the slot until it is seated. The PC Card Slot Access icon for the slot you are using will appear briefly in the Status display when the PC Card is recognized by the system if (or when) the system is running.
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.

Removing a PC Card

To remove a PC Card,

1. Stop the PC Card using the appropriate features of your operating system.
2. Ensure that the system is either running or has been shut down.
3. Choose one of the following:
    - If your PC Card has external attachments such as connectors, cables, or antennas which prevent you from opening the PC Card door, remove the PC Card by pulling the card out by whatever external attachment is available.
    - If your PC Card does not have any external attachments (or such attachments can be removed), open the PC Card door and press the Eject button for the PC Card slot.
4. Pull the PC Card all the way out of the slot.

Installing a DIMM Card

One of the following DIMM cards can be installed in the Stylistic 2300 pen tablet:

- FMW28EM32 32MB SDRAM
- FMW28EM64 64MB SDRAM

Only one DIMM socket is available on the pen tablet. You will need to remove any DIMM card currently installed in the system before you can install a new DIMM card. See "Removing a DIMM Card" on page 4-4 for details.

To install a DIMM card 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 card when the system is in Suspend mode or running.)
2. Remove the screw from the cover plate on the back of the pen tablet and remove the cover plate as shown in Figure 4-2.

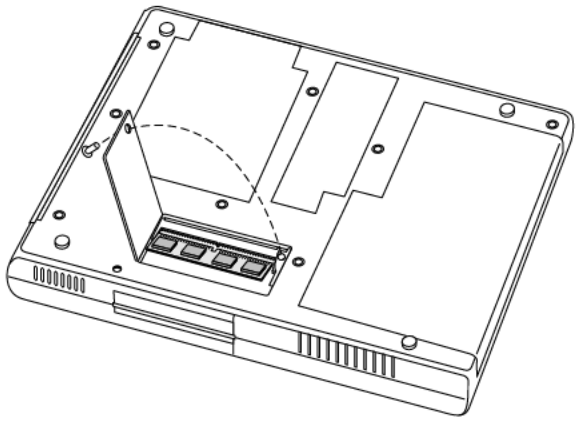


Figure 4-2 Installing a DIMM Card

3. Insert the DIMM card in the socket at an angle and push it down until it locks into place. Note that the DIMM card is keyed to prevent it from being inserted backwards.
4. Reinstall the cover and screw that you removed in step 2.
5. Confirm that the DIMM card is recognized by the system. To do so, run BIOS Setup. The size of the DIMM card should be displayed in the Info menu in BIOS Setup.

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

Removing a DIMM Card

To remove a DIMM card,

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 card when the system is in Suspend mode or running.)
2. Remove the screw from the cover plate on the back of the pen tablet and remove the cover plate as shown in Figure 4-2.
3. Spread the fingers on the socket that lock the DIMM card in place until the DIMM card is loose.
4. Remove the DIMM card from the socket.
5. Reinstall the cover plate if you are not installing a new DIMM card.

The DIMM card is now removed from the pen tablet. Refer to “Installing a DIMM Card” on page 4-3 if you are installing a new DIMM card.

Chapter 5

Hardware Specifications

Specifications for the Stylistic 2300 pen tablet and port replicator 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 233 MHz Mobile Pentium processor	MMX technology
Cache	Level 1 (L1) cache: 32 KB Level 2 (L2) cache: 512 KB	L1 cache (internal CPU) is always enabled. L2 cache can be enabled/disabled in BIOS Setup.
ROM	512 KB	Flash ROM
RAM (built-in)	32 MB 3.3-Volt SDRAM	On system board
RAM (expansion)	One 144-pin DIMM slot. Supports up to 64 MB additional memory.	Total allowable RAM is 96 MB including built-in memory on system board. (Use only FMW28EM32 or FMW28EM64 expansion modules. Memory from third-party vendors is not supported for use with the Stylistic 2300 pen tablet.)
Video Controller	NM2160 (MagicGraph128XD) NeoMagic Corporation	VESA-compatible VGA controller with SVGA enhancements and Zoomed Video Port.
Video Memory	2.0 MB VRAM	High speed VRAM integrated in video controller.
I/O Controller	FDC37C769 Standard Microsystems Corporation	Controller for: serial ports, parallel port, IrDA port, and floppy disk drive.
PC Card Controller	PCI1221 Texas Instruments	Controller is on PCI bus. Supports CardBus (PCI bridge) and PCIC protocols.
Audio Controller	ESS1879S ESS Technology, Inc.	Full duplex 16-bit stereo digital audio. Full Plug and Play (PnP) capability. Zoomed Video Port (for audio channel processing of Zoomed Video). Sound Blaster Pro compatible. Windows Sound System compatible.

Display Specifications

Specifications for the Stylistic 2300 pen tablet display are given in Table 5-2. The Stylistic 2300 pen tablet is available with one of two different displays. Note the display type for your system when referring to this table. Comments indicate which displays are best suited to particular environments and applications.

Table 5-2 Display Specifications

Feature	Specification	Comments
TFT Color LCD	8.4" diagonal 0.213 mm dot pitch 800 x 600 dot composition 256 K colors Brightness: Approximately 80 cd/m^2 (minimum) Approximately 100 cd/m^2 (typical) Backlit (adjustable, 8 brightness levels)	Best display choice for video playback and Zoomed Video applications. Good for text or graphics applications. Best choice for indoor lighting environments.
Color Transflective (CTF) LCD	8.4" diagonal 0.213 mm dot pitch 800 x 600 dot composition 4 K colors Brightness: Approximately 30 cd/m^2 (minimum) Approximately 40 cd/m^2 (typical) Backlit (adjustable, 8 brightness levels and Off)	Best suited for outdoor lighting environments. (Display is designed to reflect ambient light back at the user. Display will appear darker indoors.) Best choice when pen tablet must be used both indoors and outdoors. When used indoors, the LCD backlight provides adequate display brightness. When used outdoors, the LCD can be used with reflected light only (the backlight may be needed in the shade).

External Video Capabilities

The Stylistic 2300 pen tablet can drive an external video monitor. 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 6-4.

Table 5-3 Supported Video Modes for External Monitors

Resolution	Colors
640x480 (VGA)	Up to 16 M
800x600 (SVGA)	Up to 16 M
1024x768* (XVGA)	Up to 64 K

* The pen tablet display pans when using an external monitor at 1024x768 as the pen tablet display panel supports 640x480 and 800x600 resolutions only.

Also 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 2300 pen tablet digitizer consists of the pen, an electromagnetic sensor grid, and supporting controller circuitry. The sensor grid is built into the pen tablet behind the display screen and receives an electromagnetic signal from the pen. The signal indicates the pen location relative to the sensor grid. The pen signal is received by the sensor grid when the pen is within a minimum proximity of approximately 10 mm from the screen surface. (This allows the pen to control the cursor position without touching the screen surface.) Switch information on the pen is determined by the characteristics of the signal transmitted from the pen. Digitizer specifications are given in Table 5-4.

Note: *The pen tip switch must be pressed to turn the pen on (pen transmitting). The pen turns off automatically after a period of time (between 1.5 to 4.5 minutes) with no activity.*

Table 5-4 Digitizer Specifications

Feature	Specification	Comments
Proximity	10 mm (approximately) (0.375 in)	Minimum distance from pen tip to screen surface.
Active Area	172.4 mm x 129.8 mm	Area of display screen that reacts with the pen.
Resolution	0.025 mm	
Maximum Sampling Rate	133 points per second	
Interface	Serial interface	Assigned to IRQ 15
Pen Switches	Tip switch Barrel button	Tips are replaceable. Replacement tip order number: FMWPNT2 (quantity 25)
Pen Battery	1.5 volt, alkaline, AAAA size Voltage range: 1.1 to 1.6 volts	Suggested battery: Eveready model E96. Continuous running time: 1190 hours.
Pen Power Consumption	Normal (operational) mode: 400 uA max (270 uA typical) Idle mode: 3.5 uA max (1.5 uA typical)	Pen is in idle mode unless tip switch is pressed. (Pressing the side switch alone will not initiate normal operation.) Pen will enter idle mode when 1.5 to 4.5 minutes elapse with no tip switch activity. Pen circuitry is protected against battery reverse polarity.

Peripheral Interface Specifications

Specifications for peripheral interfaces on the Stylistic 2300 pen tablet are given in Table 5-5. For specifications on peripheral interfaces provided by the port replicator, see "Port Replicator Specifications" later in this chapter. Also note that pin assignments and other details for peripheral interfaces on the Stylistic 2300 pen tablet are given in Chapter 6 of this manual.

Table 5-5 Peripheral Interface Specifications

Feature	Specification	Comments
PC Card Slots	Two stacked PC Card slots Compliant with PC Card Standard Rev. 3.0 Supports: CardBus Zoomed Video Port (slot 1 only) PCIC (PC Card I/O Cards)	System accepts: Two Type I or Type II PC Cards, or one Type III PC Card
IDE Interface	Supports one IDE hard disk drive (2.5 inch)	IDE hard disk drive is preinstalled at factory.
Modem Port	RJ-11 connector for internal modem	Internal modem available only in North America. See "Internal Modem Specifications" on page 5-8 for more information.
Keyboard/Mouse Port	6-pin PS/2-style	Supports Fujitsu low-power keyboards and most PS/2-style keyboards and mouse devices. (Hotkey functions on older Fujitsu keyboards are not supported.)
Parallel Port	25-pin D connector, female	Operational modes: output only, bidirectional, ECP
Video Port	Standard 15-pin video connector with Display Data Channel (DDC) display support.	External monitor only or simultaneous with LCD.
Serial Port A	Male 9-pin D connector. NS 16C550 compatible, fully functional RS-232C serial port.	Port replicator provides a second fully functional serial port (serial port B).
Universal Serial Bus	One USB Series A receptacle on pen tablet.	The USB port on pen tablet is disabled when port replicator is connected and the two USB ports on the port replicator are enabled.
IrDA Port	Infrared transceiver built into pen tablet. Compliant with IrDA Standard Revision 1.1 Supports: FIR (4 Mbps max), SIR (115 Kbps max) Range: approximately 1 M, 15 degrees from center	Serial port B can be assigned to either the IrDA port on pen tablet or the 9-pin RS-232C serial port B connector on the port replicator. IrDA port is disabled when 9-pin connector is selected for the serial port B device.
DC Power Input	16 VDC ±10%, 2.7 A Connector vendor: Hosiden (Hosiden part number HEC3900-01-010) This connector is a EIAJ-RC5320A standard connector.	For use with FMWAC4A, FMWAC4B, and FMWAC4C AC adapters (AC adapter module CA01007-0520) or FMWCB2 auto adapter (CA01007-0360). External power can be connected to DC input connector on the pen tablet, port replicator, or high-usage contacts. See "DC Power Inputs" on page 7-2 for more details.
Audio Jacks	Monaural microphone input mini jack Stereo headphone output mini jack	Standard 3.5 mm mini jacks. See "Audio Jacks" on page 6-13 for details on audio inputs and outputs.

Table 5-5 Peripheral Interface Specifications (Continued)

Feature	Specification	Comments
System Interface Port	120-pin connector Connector Vendor: I-PEX Co. Ltd., (part number CT-30001-120T-IPEX - connector on pen tablet, CT-30002-120T-IPEX - connector on port replicator)	For use with Stylistic 1200 port replicator.
High-Usage Contacts	8-position external contact connector provides connections for: DC power input, keyboard port, and mouse port.	See “High Usage Contacts” on page 6-3 for signal assignments of the high-usage contacts.
Floppy Disk Drive Port	26-pin floppy disk drive connector	For use with Fujitsu FMWFD2 floppy disk drive. (The battery pack must be removed to access the floppy disk drive port.)

Power System Specifications

Specifications for the Stylistic 2300 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 Specification Supported	APM Specification Revision 1.2 ACPI Specification Revision 1.0	ACPI and APM support can be configured in BIOS Setup. Chapter 7 of this manual describes system power management in detail.
Battery Pack	Rechargeable 9-cell lithium ion battery pack Capacity: 4500 mAh Nominal operating voltage: 10.8 V Maximum current output: 6 A Charge time (in suspend or off mode): ≈ 175 minutes (70-90% charge) ≈ 195 minutes (90-99% charge) ≈ 230 minutes (99-100% charge) Charge time (system running): ≈ 590 minutes (70-90% charge) ≈ 635 minutes (90-99% charge) ≈ 720 minutes (99-100% charge) Battery life: ≈ Up to 5 hours when running (application and display dependent) ≈ Up to 10 days in Suspend-to-RAM mode ≈ Up to 45 days when Fully Off mode	Charge times are for a 0% charged battery pack charging in pen tablet (not in and external battery charger). 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. Battery life values are approximate.
Bridge Battery	Nickel metal hydride 6 cells Capacity: 7.2 V, 35 mAH (210 mWh) Charge time: Approx 11 hours	Bridge battery supplies power to RAM in suspend mode for about 5 minutes while battery pack is removed. (Note: bridge battery cannot power system in fully on mode.) Bridge battery is charged: • In all modes when external DC power is connected. • In Fully On, Idle, or Standby modes (when system is running) when external power is not connected.
Sub Battery	Lithium battery (built in) 3.0 V, 210 mAh	Provides real time clock power backup. Approximate battery life is 5 years. (Not field replaceable.)
AC Adapter	FMWAC4A, FMWAC4B, and FMWAC4C: • Input: 100-240 VAC, 50/60 Hz • Output: 16 VDC ±10%, 2.7 A	AC adapters approved for use with Stylistic 2300 include: FMWAC4A, FMWAC4B, FMWAC4C

Environmental Specifications

Environmental specifications for the Stylistic 2300 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) Nonoperating: -20° to 60°C (-4° to 140°F)
Humidity	Operating: 20% to 85% RH noncondensing Nonoperating: 8% to 95% RH noncondensing
Altitude	Operating: -200 ft. to 10,000 ft. (-61 m to 3,047 m) Nonoperating: 40,000 ft. maximum (12,189 m)

Physical Specifications

Physical specifications for the Stylistic 2300 pen tablet are given in Table 5-8.

Table 5-8 Stylistic 2300 Pen Tablet Specifications

Feature	Specification	Comments
Pen Tablet Dimensions	11.1 x 7.4 x 1.6 in (283 x 188 x 41 mm)	
Pen Tablet Weight (with battery pack)	3.9 lbs. (1.8 Kg)	Weight may vary slightly between models.

Agency Approval Specifications

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

Table 5-9 Agency Approval Specifications

Feature	Specification
Emissions	FCC Part 15 Subpart J Class B CISPR 22 Class B (EN5502 Class B) DOC Class B
Immunity	CE (IEC801-2, IEC801-3, IEC801-4)
Safety	UL 1950, CSA 950, TUV IEC950

See "Internal Modem Specifications" on page 5-8 for communications agency approvals for systems equipped with an internal modem. See also Appendix D for more information on agency notices.

Internal Modem Specifications

The internal modem connects to the system's PCI bus. Specifications for the internal modem are given in Table 5-10. The internal modem is built in and is not field replaceable. The internal modem is only included 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 K56Flex ITU-T V.34 ITU-T V.32bis ITU-T V.32 ITU-T V.22bis
	Standards	Hayes AT command set ITU-T V.42 ITU-T V.42bis
	Compression method	V.42bis data compression MNP CLASS 5 data compression
	Error correction	V.42 automatic correction MNP CLASS 4
Fax	Data rate	14.4 Kbps
	Standard	EIA/TIA 578 (Class 1)
	Protocol	G3 facsimile standard: ITU-T T.30
	Capability	ITU-T V.17 ITU-T V.29 ITU-T V.27ter ITU-T V.21 ch2
Agency compliance	United States	Complies with Part 68 of the FCC rules.
	Canada	Meets Canadian Department of Communications (DOC) telecommunications network protective, operational, and safety requirements.

* Current FCC restrictions, line conditions, and other external factors will reduce actual data transmission rates.

Port Replicator Specifications

The Stylistic 1200 port replicator is supported for use with the Stylistic 2300 pen tablet. Specifications for interfaces on the Stylistic 1200 port replicator 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 port replicator. For details on peripheral interfaces provided by the port replicator, refer to Chapter 6 of this manual.

Table 5-11 Stylistic 1200 Port Replicator Specifications

Feature	Specification	Comments
DC power input	+ tip / - sleeve 16 VDC ±10%, 2.7 A	
Keyboard Port	6-pin PS/2-style	Supports Fujitsu low-power keyboards and most PS/2-style keyboards and mouse devices. (Hotkey functions on older Fujitsu keyboards are not supported by the Stylistic 2300 pen tablet.)
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 A	Male 9-pin D connector. NS 16C550 compatible, fully functional RS-232C serial port.	Duplicates serial port on pen tablet.
Serial Port B	RS-232C, male 9-pin D connector. NS 16C550 compatible, fully functional RS-232C serial port.	Serial port B is disabled when IrDA is selected as Serial Port B Device in BIOS Setup.
Floppy Disk Drive Port	26-pin connector for use with Fujitsu FMWFD2 floppy disk drive.	
Headphone Jack	3.5 mm mini stereo jack	Speaker on pen tablet is disabled when headphones are connected. (Do not use the headphone jack on the pen tablet when using the headphone jack on the port replicator.)
Microphone Input Jack	3.5 mm mini stereo jack	Microphone on pen tablet is disabled when an external microphone is connected.
Line Output Jack	3.5 mm mini stereo jack	Using the line output jack does not disable any other audio features on the pen tablet or port replicator. (The line output jack is not disabled when other audio jacks are used.)
Line Input Jack	3.5 mm mini stereo jack	Using the line input jack does not disable any other audio features on the pen tablet or port replicator. (The line input jack is not disabled when other audio jacks are used.)
Universal Serial Bus Ports	Two stacked USB Series A receptacles Powered USB hub	The USB port on pen tablet is disabled when the port replicator is connected.
Parallel Port	25-pin D connector, female	Output only, bidirectional, and ECP operational modes are supported.

Chapter 6

Peripheral Interfaces

Details on peripheral interfaces on the Stylistic 2300 pen tablet are described in this chapter. The Stylistic 2300 pen tablet provides the following peripheral interfaces:

- DC input connector
- Video port
- IrDA port
- Universal Serial Bus (USB)
- RJ-11 jack for internal modem (systems distributed in North America only)
- Serial port (A)
- Parallel port
- Stereo headphone jack
- Stereo microphone jack
- PS/2-style keyboard port
- System interface port*
- High-usage contacts
- Two PC Card sockets

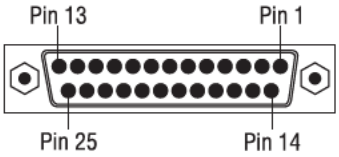
* Note that the system interface port (also referred to as the port replicator connector in some documentation) allows you to connect the Stylistic 1200 port replicator.

Pin assignments for peripheral interfaces on the Stylistic 2300 pen tablet are given in the following sections.

Parallel Port

The parallel port connector is a 25-pin female D connector. This connector provides a fully functional, ECP-compatible parallel port. Pin assignments and signal names are shown in Table 6-1.

Table 6-1 Parallel Port Connector Pin Assignments

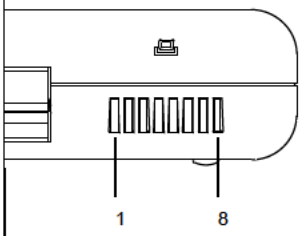
Connector Pin Locations	Pin	Signal
	1	Strobe#
	2 – 9	Data bits 0 – 7, respectively
	10	Acknowledge#
	11	Busy
	12	Paper out
	13	Select
	14	Auto feed#
	15	Error#
	16	Initialize#
	17	Select input#
	18 – 25	Ground

# Indicates active-low signal.

High Usage Contacts

The high usage contacts on the Stylistic 2300 pen tablet provide signals for the keyboard, mouse, and DC power inputs. Signal assignments for the metal contacts are shown in Table 6-2.

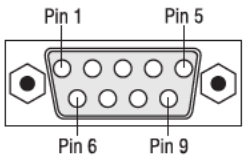
Table 6-2 Metal Contacts

Connector Position Locations	Position	Signal
	1	Ground
	2	Detect When grounded, this signal indicates (to the pen tablet) that a peripheral device is connected to the metal contacts. This line should be tied to ground by peripherals that connect to the metal contacts.
	3	DC Power Input 16 VDC ±10%, 2.7 A
	4	+5 V DC Output Power supply for external keyboard and mouse.
	5	Keyboard Clock
	6	Keyboard Data
	7	Mouse Clock
	8	Mouse Data

Serial Ports

The Stylistic 2300 pen tablet 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 6-3.

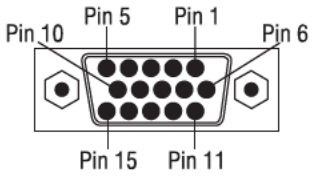
Table 6-3 Serial Port Connector Pin Assignments

Connector Pin Locations	Pin	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 6-4.

Table 6-4 Video Port Connector Pin Assignments

Connector Pin Locations	Pin	Signal
	1	Red analog video output
	2	Green analog video output
	3	Blue analog video output
	4	Not used
	5 – 8	Ground
	9	DDC Vcc
	10	Ground
	11	Not used
	12	DDC data
	13	Horizontal sync
	14	Vertical sync
	15	DDC clock

Keyboard/Mouse Port

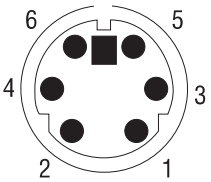
The keyboard/mouse port on the pen tablet can be used with Fujitsu low-power keyboards and most PS/2-style keyboard and mouse devices. The system determines whether a keyboard or mouse is connected automatically and activates the appropriate signals on the port as shown in Table 6-5.

Note: *This port is supported for use with Fujitsu low-power keyboards; however, the "Fn" function keys -- keys that duplicate hotpad functions -- on older Fujitsu keyboards are not supported.*

This port is compatible with most PS/2-style keyboards. Note that pin 6 provides 3.3 volts to power Fujitsu low-power keyboards. Pin 6 is not used by standard 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 6-5.

Table 6-5 Keyboard/Mouse Port Connector Pin Assignments

Connector Pin Locations	Pin	Signal (Keyboard)	Signal (Mouse)
	1	Keyboard data	Mouse data
	2	No connection	No connection
	3	Ground	Ground
	4	+5-Volt power	+5-Volt power
	5	Keyboard Clock	Clock
	6	+3.3-Volt power	+3.3-Volt power
	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 6-6.

Table 6-6 DC Power Input Connector Pin Assignments

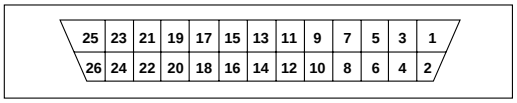
Conductor	Description	Comments
Center Pin	16 Volts DC ±10%, 2.7 A	This connector is a EIAJ-RC5320A standard connector. See "DC Power Inputs" on page 7-2 for more details.
Sleeve	Ground	

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 pen tablet is compatible with the Fujitsu FMWFD2 floppy disk drive. Pin assignments for the floppy disk drive connector are given in Table 6-7.

Table 6-7 Floppy Disk Drive Connector Pin Assignments

Connector Pin Locations	Pin	Signal Name
	1	Ground
	2	Ground
	3	Head select (FSIDE#)
	4	Read disk data (FRDDT#)
	5	Floppy disk drive attached (FDATCH#)
	6	Write data (FWD#)
	7	Mode select (FMODE#)
	8	No connection
	9	Drive select (FDSEL#)
	10	5-Volt power (5VMAIN)
	11	5-Volt power (5VMAIN)
	12	5-Volt power (5VMAIN)
	13	Index (FINDEX#)
	14	Write protected (FWP#)
	15	Track 00 (FTRK0#)
	16	Ground
	17	Write gate (FWG#)
	18	Ground
	19	No connection
	20	Step pulse (FSTEP#)
	21	Direction control (FDIRC)
	22	Motor on (FMOTOR#)
	23	No connection
	24	Disk change (FDCHG#)
	25	GND
	26	No connection

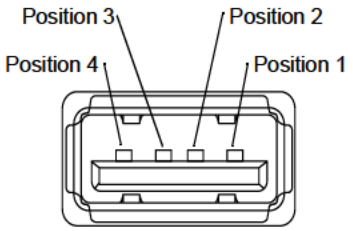
# Indicates active-low signal.

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 2300 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, no software configuration is necessary; however, it may be necessary to install drivers and application software to support your USB device.

The Stylistic 1200 port replicator provides two USB ports. The USB port on the Stylistic 2300 pen tablet is disabled when the port replicator is connected. 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 each USB connector (for a total of 1,000 mA using both USB connectors on the port replicator). 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 6-8.

Table 6-8 Universal Serial Bus Port Contact Pin Assignments

Contact Pin Locations	Contact Number	Signal Name	Comments
	1	VBUS	Cable power (+ 5 volts DC)
	2	D -	Data
	3	D +	Data
	4	Ground	Cable ground

System Interface Port

The system interface port on the Stylistic 2300 pen tablet allows you to attach the Stylistic 1200 port replicator. The connector used for the system interface port is manufactured by:

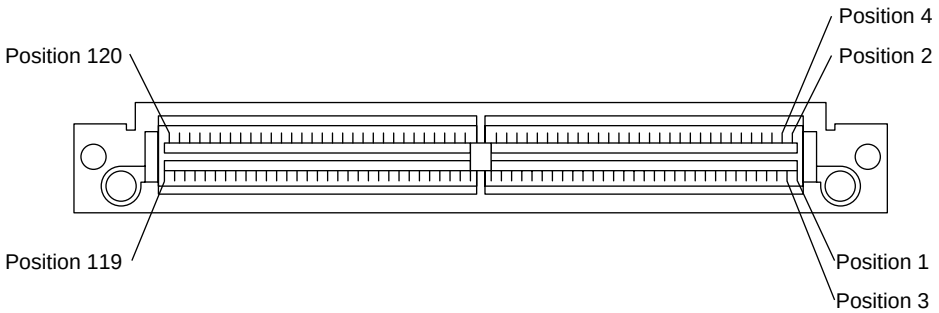
I-PEX Co. Ltd.
4-7-10, Haramachida
Machida City, Tokyo, Japan
Phone 0427-29-1670, Fax 0427-29-1671

The following are vendor part numbers for the connectors on the system interface port:

- CT-30001-120T-IPEX (connector on pen tablet)
- CT-30002-120T-IPEX (connector on port replicator)

The system interface port is a 120-pin connector. Figure 6-1 shows the pin locations for the system interface port connector on the pen tablet.

Figure 6-1 System Interface Port Connector (On Pen Tablet)



The pin assignments for the system interface port connector on the pen tablet are given in Table 6-9. 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 system 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 system interface port.*

• *When the port replicator is connected, the USB port on the pen tablet is disabled.*

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

Table 6-9 System Interface Port Connector Pin Assignments

Pin	Signal Name	Level	Description	Port or Connector
1	GNDPR	GND	Ground	Port Replicator
2	GNDPR	GND	Ground	Port Replicator
3	LOUTLG	GND	Ground Left	Line Output Audio Jack
4	GNDPR	GND	Ground	Port Replicator
5	LOUTL	Analog	Signal Left	Line Output Audio Jack
6	GNDPR	GND	Ground	Port Replicator
7	LOUTRG	GND	Ground Right	Line Output Audio Jack
8	5VMAIN	+5 V	+5 Volt Power Output	Port Replicator
9	LOUTR	Analog	Signal Right	Line Output Audio Jack
10	5VMAIN	+5 V	+5 Volt Power Output	Port Replicator
11	LINLG	GND	Ground Left	Line Input Audio Jack
12	5VMAIN	+5 V	+5 Volt Power Output	Keyboard Port
13	LINL	Analog	Signal Left	Line Input Audio Jack
14	5VMAIN	+5 V	+5 Volt Power Output	Mouse Port
15	LINRG	GND	Ground Right	Line Input Audio Jack
16	PRHPLG	GND	Ground Left	Headphone Audio Jack
17	LINR	Analog	Signal Right	Line Input Audio Jack
18	PRHPL	Analog	Signal Left	Headphone Audio Jack
19	MICAMPRG	GND	Ground Right	Mic Input Audio Jack
20	PRHPRG	GND	Ground Right	Headphone Audio Jack
21	MICAMPR	GND	Signal Right	Mic Input Audio Jack
22	PRHPR	GND	Signal Right	Headphone Audio Jack
23	MICAMPLG	GND	Ground Left	Mic Input Audio Jack
24	GND AUD	GND	Ground	Port Replicator (Audio Amp)
25	MICAMPL	GND	Signal Left	Mic Input Audio Jack
26	PSTB#	+5 V	Strobe	Parallel Port
27	PAFD#	+5 V	Auto Feed	Parallel Port
28	PRD0	+5 V	Data Bit 0	Parallel Port
29	PPERR#	+5 V	Error	Parallel Port
30	PRD1	+5 V	Data Bit 1	Parallel Port

Table 6-9 System Interface Port Connector Pin Assignments (Continued)

Pin	Signal Name	Level	Description	Port or Connector
31	PINIT#	+5 V	Initialize	Parallel Port
32	PRD2	+5 V	Data Bit 2	Parallel Port
33	PSLIN#	+5 V	Select Input	Parallel Port
34	PRD3	+5 V	Data Bit 3	Parallel Port
35	PRD4	+5 V	Data Bit 4	Parallel Port
36	PRD5	+5 V	Data Bit 5	Parallel Port
37	PRD6	+5 V	Data Bit 6	Parallel Port
38	PRD7	+5 V	Data Bit 7	Parallel Port
39	PRSMI#	+5 V	Port Replicator Detect†	Port Replicator
40	PRACK#	+5 V	Acknowledge	Parallel Port
41	USBVCC0	+5 V	Power (Connector A)	USB Port
42	PBUSY	+5 V	Busy	Parallel Port
43	USB0+	+5 V	+ Data Signal (Connector A)	USB Port
44	PPE	+5 V	Paper Out	Parallel Port
45	USB0-	+5 V	- Data Signal (Connector A)	USB Port
46	PSLCT	+5 V	Select	Parallel Port
47	USBG	+5 V	Ground	USB Port
48	FWP#	+5 V	Write Protected	Floppy Port
49	USBVCC1	+5 V	Power (Connector B)	USB Port
50	FTRK0#	+5 V	Track 00	Floppy Port
51	USB1+	+5 V	+ Data Signal (Connector B)	USB Port
52	FSIDE#	+5 V	Head Select	Floppy Port
53	USB1+	+5 V	+ Data Signal (Connector B)	USB Port
54	FRDDT#	+5 V	Read Disk Data	Floppy Port
55	USBG	+5 V	Ground	USB Port
56	PRHP/IN	+5 V	Headphone Detect (goes high when headphone is plugged into port replicator)	Audio Control
57	PRMICIN	+5 V	Microphone Detect (goes high when mic is plugged into port replicator)	Audio Control
58	GNDPR	GND	Ground	Port Replicator
59	GNDPR	GND	Ground	Port Replicator
60	GNDPR	GND	Ground	Port Replicator
61	GNDPR	GND	Ground	Port Replicator
62	GNDPR	GND	Ground	Port Replicator

Table 6-9 System Interface Port Connector Pin Assignments (Continued)

Pin	Signal Name	Level	Description	Port or Connector
63	GNDPR	GND	Ground	Port Replicator
64	GNDPR	GND	Ground	Port Replicator
65	GNDPR	GND	Ground	Port Replicator
66	GNDPR	GND	Ground	Port Replicator
67	FWG#	+5 V	Write Gate	Floppy Port
68	FDATCH#	+5 V	Floppy Disk Drive Attach	Floppy Port
69	FWD#	+5 V	Write Data	Floppy Port
70	FMODE#	+5 V	Mode Select	Floppy Port
71	FSTEP#	+5 V	Step Pulse	Floppy Port
72	FDIR#	+5 V	Direction Control	Floppy Port
73	FDSEL#	+5 V	Drive Select	Floppy Port
74	FMOTOR#	+5 V	Motor On	Floppy Port
75	FDCHG#	+5 V	Disk Change	Floppy Port
76	FINDEX#	+5 V	Index	Floppy Port
77	DCDA	(V.28)	Carrier Detect	Serial Port A
78	SINA#	(V.28)	Receive Data	Serial Port A
79	DSRA	(V.28)	Data Set Ready	Serial Port A
80	RTSA	(V.28)	Request To Send	Serial Port A
81	SOUTA#	(V.28)	Transmit Data	Serial Port A
82	DTRA	(V.28)	Data Terminal Ready	Serial Port A
83	CTSA	(V.28)	Clear To Send	Serial Port A
84	RIA	(V.28)	Ring Indicator	Serial Port A
85	DCDB	(V.28)	Carrier Detect	Serial Port B
86	SINB#	(V.28)	Receive Data	Serial Port B
87	DSRB	(V.28)	Data Set Ready	Serial Port B
88	RTSB	(V.28)	Request To Send	Serial Port B
89	SOUTB#	(V.28)	Transmit Data	Serial Port B
90	DTRB	(V.28)	Data Terminal Ready	Serial Port B
91	CTSB	(V.28)	Clear To Send	Serial Port B
92	RIB	(V.28)	Ring Indicator	Serial Port B
93	LMUTE	+5 V	Line Input Detect (goes high when line input jack is plugged into port replicator)	Audio Control
94	VGAR	Analog	Red	Video Port

Table 6-9 System Interface Port Connector Pin Assignments (Continued)

Pin	Signal Name	Level	Description	Port or Connector
95	GNDV	GND	Ground	Video Port
96	VGAG	Analog	Green	Video Port
97	GNDV	GND	Ground	Video Port
98	VGAB	Analog	Blue	Video Port
99	DDCDATA	Analog	DDC Data Signal (Plug and Play)	Video Port
100	DDCCLK	Analog	DDC Clock Signal (Plug and Play)	Video Port
101	VGAHS	Analog	Horizontal Synch	Video Port
102	VGAVS	Analog	Vertical Synch	Video Port
103	KDATA	+3.3/+5 V	Serial Data	Keyboard Port
104	MDATA	+5 V	Serial Data	Mouse Port
105	KCLOCK	+3.3/+5 V	Clock	Keyboard Port
106	MCLOCK	+5 V	Clock	Mouse Port
107	KBSMI	+3.3/+5 V	SMI Request	Keyboard Port
108	3VMAIN	+3.3 V	+3.3 Volt Power Output (10 mA max current draw)	Keyboard Port
109	5VMAIN	+5 V	+5 Volt Power Output*	Port Replicator
110	DC-PR	+16 V	+16 Volt Power Input	DC Input
111	DC-PR	+16 V	+16 Volt Power Input	DC Input
112	DC-PR	+16 V	+16 Volt Power Input	DC Input
113	DC-PR	+16 V	+16 Volt Power Input	DC Input
114	DC-PR	+16 V	+16 Volt Power Input	DC Input
115	GNDPR	GND	Ground	Port Replicator
116	GND1	GND	Ground	DC Input
117	GND1	GND	Ground	DC Input
118	GND1	GND	Ground	DC Input
119	GND1	GND	Ground	DC Input
120	GND1	GND	Ground	DC Input

† The Port Replicator Detect signal is grounded when the port replicator is attached. (Note that this is not a System Management Interrupt signal line on the microprocessor.)

IrDA Port

The IrDA port on the Stylistic 2300 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 6-10. Before you can use the IrDA port, the Serial Port B Device BIOS option must be set to IrDA or FIR. See "Integrated Peripherals Submenu Options" on page 3-9 for details on BIOS options for the IrDA port.

Table 6-10 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 / Receive data
Modulation/Data Rate	IrDA SIR: 9.6 - 115.2 Kbps IrDA FIR: 4,000.0 Kbps
Angle	0° to 15° from center of beam (30° viewing angle)

Audio Jacks

All audio jacks on the Stylistic 2300 pen tablet and Stylistic 1200 port replicator are stereo mini jacks. Some audio functions on the pen tablet are disabled when audio jacks are used. Table 6-11 shows which audio inputs are disabled when inputs on the pen tablet and port replicator are used (enabled). Table 6-12 shows which audio outputs are disabled when outputs on the pen tablet and port replicator are used.

Table 6-11 Active Audio Inputs

Input Activity	Pen Tablet		Port Replicator	
	Microphone (built-in)	Microphone Input Jack	Microphone Input Jack	Line Input Jack
Microphone On (microphone built into pen tablet)	Enabled	Plug not inserted	Plug not inserted	NA
Pen tablet Microphone jack used (external microphone connected)	Disabled	Enabled	Plug not inserted	NA
Port replicator Microphone jack used (external microphone connected)	Disabled	Disabled	Enabled	NA
Port replicator Line In jack used	NA	NA	NA	Enabled

NA indicates that the condition does not apply. (The condition has no effect on the given input.)

Table 6-12 Active Audio Outputs

Output Activity	Pen Tablet		Port Replicator	
	Speaker (built-in)	**Headphone Jack**	**Headphone Jack**	**Line Output Jack**
Speaker On (speaker built into pen tablet)	Enabled	Plug not inserted	Plug not inserted	NA
Pen tablet Headphone jack used (external headphone connected)	Disabled	Enabled	Enabled	NA
Port replicator Headphone jack used (external headphone connected)	Disabled	Enabled*	Enabled	NA
Port replicator Line Output jack used	NA	NA	NA	Enabled

* Using the headphone jacks on the pen tablet and port replicator at the same time is not recommended.

"NA" indicates that the condition does not apply. (The condition has no effect on the given output.)

Chapter 7

System Power

This chapter covers the Stylistic 2300 pen tablet's system power hardware, power management states, and state transitions.

System Power Hardware

The Stylistic 2300 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 also be removed from the pen tablet and charged in an external charger. A bridge battery built into the pen tablet powers the system in suspend mode for approximately 5 minutes while the battery pack is removed.

Note: *Do not remove the battery pack while the system is running. Suspend system operation or shut down the system before removing the battery pack. The bridge battery will not power the system in the Fully On state.*

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, controls the battery gauge icon in the status display, 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 Battery Gauge 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 or the bridge battery (whichever has the highest voltage). 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 7-10 for details on system activity for different battery charge levels.

DC Power Inputs

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

- DC power connector on the pen tablet
- system interface connector
- DC input positions of the high-usage contacts

A DC power source connected to any of these inputs must provide 2.7 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% 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 2300 pen tablet BIOS and system hardware are compliant with the following power specifications:

- Advanced Power Management (APM) BIOS Interface Specification Revision 1.2
- 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 APM and ACPI specifications allow for additional control over power management features such as state transitions and device timeouts. Refer to the APM and ACPI specifications and the documentation for your operating system regarding power management for details on APM and 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 7-5.

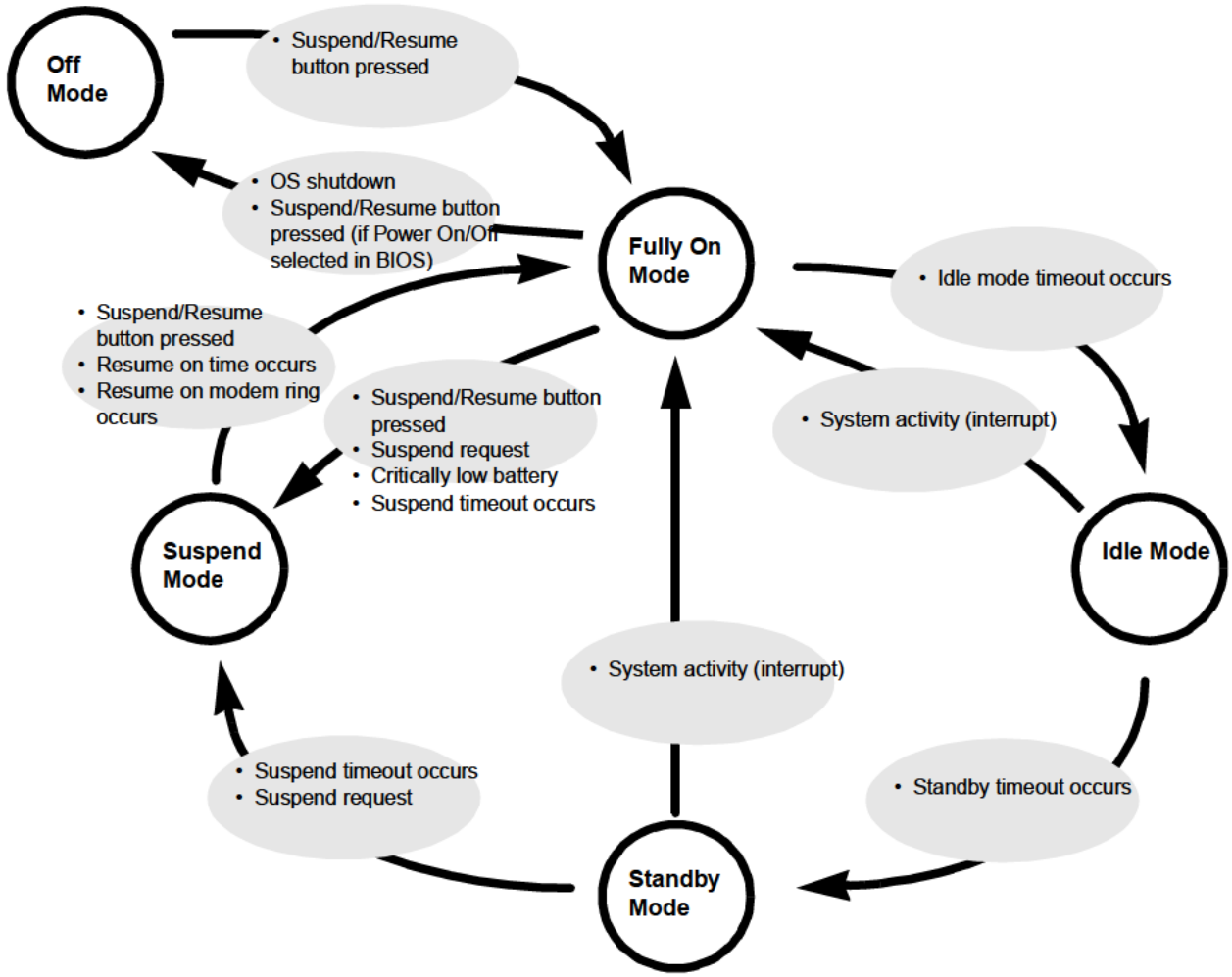


Figure 7-1 Power Management State Transitions

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 7-5. 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 APM or 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. From Off mode: system started. 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. See "Idle Mode" on page 7-5 and "APM CPU Idle Mode" on page 7-8 for more details on Idle mode.	Idle mode timeout occurs. (No system activity for 1/2 second.) 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). Hard disk drive enters standby state (spun down). 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. All other devices are powered off.	Suspend timeout occurs. Suspend request (issued by software or Suspend/Resume button pressed). 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.) System is fully powered off except for logic components required for Suspend/Resume button operation.	Suspend timeout occurs. Suspend request (issued by software or Suspend/Resume button pressed).
Off Mode	System is fully powered off except for logic components required for Suspend/Resume button and real-time clock operation.	System shutdown. 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 page 3-15 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 3-31 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 APM or 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:

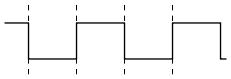
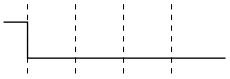
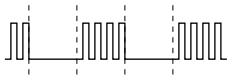
- When operating on battery power under the Low Battery or Very Low Battery conditions. (This conserves battery power.)
- When the system temperature is High. (This reduces the internal temperature of the system.)

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

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 3-31 for details. (Note that PHDISK may not be supported for use with your operating system.)
- 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

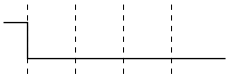
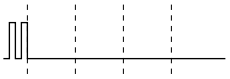
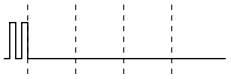
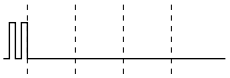
In the Off state, the system is fully powered off. Note, however, that some circuits connected to the battery will continue to draw a very small amount of current when the system is off. For this reason, the pen tablet should be stored with a fully charged battery pack if the system will not be in use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

APM CPU Idle Mode

If Advanced Power Management (APM) is enabled in Windows (which is the default setting), power management timeouts for most power-managed devices are controlled by Windows. (Power-managed devices that are not controlled by Windows are controlled by the BIOS.)

When APM is enabled, CPU activity in Idle mode differs from that described earlier in this section. The APM CPU Idle Mode BIOS setting determines whether the external clock signal is generated in Idle mode. As shown in Table 7-4, the external clock signal is not generated if Normal is selected for the APM CPU Idle Mode BIOS option; if Diagnostic is selected in BIOS Setup, external clock signals are generated.

Table 7-4 System Activity in Idle Mode with APM Enabled

System Activity	Idle Mode (APM CPU Idle Mode: Normal)	Idle Mode (APM CPU Idle Mode: Diagnostic)
Stop Grant (STPCLK#)		
Internal CPU Clock Signals		
External Clock Signals		

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.

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 7-5 describes system operation for different battery charge levels.

Table 7-5 Low Battery Modes

Mode	Description
Normal mode: Battery charge 12% to 100% or system connected to external power.	Power management features operate normally.
Low battery mode: Battery charge below 12%	CPU speed is reduced to the speed selected for Low Battery CPU Speed BIOS option. Only one “cell” is displayed (flashing) in the Battery Gauge icon. The low battery alarm (periodic audible “beep”) is sounded if the Audio BIOS option is enabled.
Critically low battery mode: 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. The power icon flashes indicating that the system is in Suspend mode and no “cells” are displayed in the battery gauge icon. Note: • 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. • 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.

Chapter 8

BIOS Configuration Application Programming Interfaces

This chapter describes application programming interfaces (APIs) that allow Windows applications to configure BIOS settings. These APIs include functions in the following dynamic-link libraries (DLLs):

- *SET3223.DLL*
  32-bit DLL
- *SET1623.DLL*
  16-bit "helper" DLL
- *SETUP23.DLL*
  16-bit DLL

These DLLs include functions that can be called from 16-bit and 32-bit Windows applications to configure BIOS parameters for the Stylistic 2300 pen tablet.

Functions, as described in this chapter, are the same for both 16-bit and 32-bit DLLs. To use these functions with your *16-bit application*:

- Include the header file *SETUP23.H* in your program source code.
- Ensure that the file *SETUP23.DLL* is in the *C:\WINDOWS\SYSTEM* directory on your system at run time.

To use these functions with your *32-bit application*:

- Include the header file *SET3223.H* in your program source code.
- Ensure that the files *SET3223.DLL*, *SET1623.DLL*, and *SETUP23.DLL* are in the *C:\WINDOWS\SYSTEM* directory on your system at run time.

The DLL files are preinstalled on the system. Header files for this API are distributed on the pen tablet's hard disk in the *C:\FPSI2300\DEV* directory.

Function prototypes for these APIs are written in the C programming language and are described in this guide using C syntax. Although ideally suited for program development using a compiler that supports the ANSI C or C++ standard, these functions can be called from applications developed in other programming languages, such as Microsoft Visual Basic, which allow you to use DLLs. Refer to the documentation for your programming language for details on calling functions in DLLs.

Version Information

Version information for both *SETUP23.DLL* and *SET3223.DLL* can be obtained by calling the GetFileVersionInfo and GetFileVersionInfoSize functions supplied in the Microsoft Visual C++ development library.

Note: *Version information can also be viewed by selecting the file and carrying out the* Properties *command in Windows.*

Summary of Functions

A summary of functions you should be familiar with to use this API is given below:

- BiosSetupStart
  This function initializes the API. This function must be called before any other functions in this API can be called.
- BiosSetupEnd
  Applications which use this API must call this function to close the API before the application exits.
- BiosSetupGet
  This function retrieves BIOS settings for a BIOS option that you specify.
- BiosSetupSet
  This function sets the BIOS setting that you specify.
- BiosSetupSetResumeTime
  This function sets the resume time for the Resume On Time BIOS option.
- BiosSetupGetResumeTime
  This function returns the resume time for the Resume On Time BIOS option.
- BiosSetupGetLCDType
  This function determines what type of LCD the pen tablet has. (It may be desirable to determine the LCD type before using the BiosSetupSet function to change the contrast setting as the contrast is not adjustable on the TFT display type.)

Note: *Parameter names given in this manual in prototypes for some of these functions may differ from parameter names given in the prototypes that appear in the header files. This is done to provide consistent terminology throughout this manual.*

BiosSetupStart

This function initializes the API. This function must be called before any other functions in this API can be called. This function,

- Opens the API.
- Connects to the APM BIOS.

A prototype of this function is shown below:

```
int WINAPI BiosSetupStart ( )
```

This function accepts no parameters and returns the value SETUP_SUCCESS when it completes successfully. If an error occurs, this function returns an error value as defined in Table 8-1.

BiosSetupEnd

Applications that initialize this API using *BiosSetupStart* must call this function before the application exits. This function performs the following tasks:

- Updates the CMOS checksum and CRC values.
- Disconnects from the APM BIOS.

A prototype of this function is shown below:

```
int WINAPI BiosSetupEnd ( )
```

This function accepts no arguments and returns the value SETUP_SUCCESS when it completes successfully. If an error occurs, this function returns an error value as defined in Table 8-1.

BiosSetupGet

This function retrieves the setting for a given BIOS option. You define the BIOS option to be retrieved by passing the appropriate parameters for the desired option. A prototype is shown below:

```
int WINAPI BiosSetupGet ( WORD Option, BYTE Permanent_or_Current )
```

The *Option* parameter defines the BIOS option you want to retrieve. Definitions for the *Option* parameter are listed in Table 8-2 later in this section.

The *Permanent_or_Current* parameter determines whether the permanent or current BIOS option is retrieved:

Permanent_or_Current **Value**	**Description**
0	Permanent setting retrieved.
1	Current setting retrieved.

On success, this function returns the *Setting* for the requested BIOS option. See Table 8-2 for a listing of settings for each BIOS option. Possible error codes returned by this function are listed in Table 8-1.

BiosSetupSet

This function sets the BIOS option you specify. A prototype of the function is shown below:

```
int WINAPI BiosSetupSet ( WORD Option, WORD Setting, BYTE Permanent_or_Current )
```

This function can be used to set all BIOS settings except the Resume Time setting. (To set the resume time using this API, see "BiosSetupSetResumeTime" later in this chapter.)

The *Option* parameter defines the BIOS option you want to set. The *Setting* parameter defines the setting for the given option. Definitions for the *Option* parameter are listed in Table 8-2 on page 8-6.

The *Permanent_or_Current* parameter determines whether the permanent or current BIOS option is set:

Permanent_or_Current **Value**	**Description**
0	Sets permanent setting.
1	Sets current setting.

On success, this function returns the label SETUP_SUCCESS. In the event of an error, this function returns one of the error codes listed in Table 8-1.

BiosSetupGetResumeTime

This function retrieves the resume time for the Resume On Time BIOS option. A prototype of this function is shown below.

```
long int BiosSetupGetResumeTime ( BYTE Permanent_or_Current )
```

The *Permanent_or_Current* parameter defines whether the permanent or current BIOS option is retrieved:

Permanent_or_Current **Value**	**Description**
0	Permanent setting retrieved.
1	Current setting retrieved.

On success, this function returns a long int value which specifies the resume time setting as follows:

Return Value	**Description**
Byte 0 (bits 7-0)	Seconds setting in BCD format.
Byte 1 (bits 15-8)	Minutes setting in BCD format.
Byte 2 (bits 23-16)	Hour setting in BCD format.
Byte 3 (bits 31-24)	Resume On Time Enable status:
	00H = Resume On Time option disabled
	01H = Resume On Time option enabled

In the event of an error, this function returns a negative value as defined in Table 8-1 on page 8-6.

BiosSetupSetResumeTime

This function sets the resume time for the Resume On Time BIOS option. A prototype of this function is given below:

```
int WINAPI BiosSetupSetResumeTime (BYTE cBCDHour,
                                   BYTE cBCDMin,
                                   BYTE cBCDSec,
                                   BYTE Enable,
                                   BYTE Permanent_or_Current )
```

This function accepts three byte values that determine the resume time in hours, minutes, and seconds and two byte values which specify whether the Resume On Time option is enabled and whether the permanent or current setting is to be set. Details on these parameters are given in the following:

Parameter	Description
cBCDHour	Byte value that specifies hour setting in BCD format. Acceptable values: 0 to 23 (must be in BCD format)
cBCDMin	Byte value that specifies minutes setting in BCD format. Acceptable values: 0 to 59 (must be in BCD format)
cBCDSec	Byte value that specifies seconds setting in BCD format. Acceptable values: 0 to 59 (must be in BCD format)
Enable	SETUP_RESUMEONTIME_OFF = Disable Resume On Time option.
	SETUP_RESUMEONTIME_ON = Enable Resume On Time option.
Permanent_or_Current	0 = Permanent setting
	1 = Current setting

Note that you must specify *all* parameters when calling this function. You cannot use this function to enable or disable the Resume On Time option without passing all of the parameters this function accepts.

On success, this function returns SETUP_SUCCESS. In the event of an error, this function returns one of the error codes listed in Table 8-1.

BiosSetupGetLCDType

This function allows you to determine what type of LCD the pen tablet has. A prototype of the function is shown below:

```
char BiosSetupGetLCDType ( )
```

This function returns one of the following values indicating the LCD type.

Parameter	Description
SETUP_LCD_TFT	TFT Color
SETUP_LCD_TFC	Transflective Color

Error Codes

Error codes returned by functions in this API are given in Table 8-1. These values are defined in the header file *SETUP23.H*.

Table 8-1 BIOS Configuration API Error Codes

Return Value	Description
SETUP_NOT_STARTED	The API has not been started. The *BiosSetupStart* function must be called before any other functions in this API can be called.
SETUP_INVALID_PARAMETER	The *Option* parameter is out of range. The value passed does not specify a valid BIOS option.
SETUP_INVALID_OPTION	Invalid value passed for *Current* parameter. The BIOS option specified is not a valid permanent or current option (whichever was specified).
SETUP_INVALID_VALUE	The *Setting* parameter is not valid. The setting specified is not a valid value for the specified BIOS option.
SETUP_INTERNAL_ERROR	Windows system call failure.
SETUP_INVALID_BIOS	BIOS signature not found. The BIOS is not compatible with this API.
SETUP_APM_ERROR	Returned if APM function call failed.

Option and *Setting* Parameters

Option and *Setting* parameters accepted by the functions described in this chapter are defined in the header file for the DLL. Table 8-2 lists the *Option* parameter and corresponding *Setting* parameters for each BIOS option. (These *Setting* parameters are also the values returned by the *BiosSetupGet* function on success.) Some of these parameters can only be used to change or retrieve permanent settings as noted in the first column of this table.

Table 8-2 Option and Setting Parameters and Return Values

Option Parameter ***Option Description***	**Setting Parameter**	**Setting Description**
BIOS_EXTCACHE	SETUP_EXTCACHE_DISABLE	Disabled
External Level 2 Cache (permanent only)	SETUP_EXTCACHE_ENABLE	Enabled
BIOS_SERIAL_A_PORT	SETUP_SERIAL_A_DISABLE	Disabled
Serial Port A (permanent only)	SETUP_SERIAL_A_ENABLE	Enabled
	SETUP_SERIAL_A_AUTO	Auto
BIOS_SERIAL_A_ADDRESS	SETUP_SERIAL_A_3F8	I/O Address 3F8
Serial Port A Address (permanent only)	SETUP_SERIAL_A_2F8	I/O Address 2F8
	SETUP_SERIAL_A_3E8	I/O Address 3E8
	SETUP_SERIAL_A_2E8	I/O Address 2E8
BIOS_SERIAL_A_IRQ	SETUP_SERIAL_A_IRQ3	IRQ 3
Serial Port A IRQ (permanent only)	SETUP_SERIAL_A_IRQ4	IRQ 4
	SETUP_SERIAL_A_IRQ10	IRQ 10
	SETUP_SERIAL_A_IRQ11	IRQ 11
BIOS_SERIAL_B_PORT	SETUP_SERIAL_B_DISABLE	Disabled
Serial Port B (permanent only)	SETUP_SERIAL_B_ENABLE	Enabled
	SETUP_SERIAL_B_AUTO	Auto

Table 8-2 Option and Setting Parameters and Return Values (Continued)

Option Parameter ***Option Description***	**Setting Parameter**	**Setting Description**
BIOS_SERIAL_B_ADDRESS_1 *Serial Port B Primary Address* (permanent only)	SETUP_SERIAL_B_3F8 SETUP_SERIAL_B_2F8 SETUP_SERIAL_B_3E8 SETUP_SERIAL_B_2E8	I/O Address 3F8 I/O Address 2F8 I/O Address 3E8 I/O Address 2E8
BIOS_SERIAL_B_IRQ *Serial Port B IRQ* (permanent only)	SETUP_SERIAL_B_IRQ3 SETUP_SERIAL_B_IRQ4 SETUP_SERIAL_B_IRQ10 SETUP_SERIAL_B_IRQ11	IRQ 3 IRQ 4 IRQ 10 IRQ 11
BIOS_SERIAL_B_DEVICE *Serial Port B Device* (permanent only)	SETUP_SERIAL_B_IRDA SETUP_SERIAL_B_FIR SETUP_SERIAL_B_PORT	IrDA (SIR mode) FIR System Interface Port
BIOS_SERIAL_B_ADDRESS_2 *Serial Port B Secondary Address* (permanent only)	SETUP_SERIAL_B_100 SETUP_SERIAL_B_108 SETUP_SERIAL_B_110 SETUP_SERIAL_B_118	I/O Address 100 I/O Address 108 I/O Address 110 I/O Address 118
BIOS_SERIAL_B_DMA *Serial Port B DMA Channel* (permanent only)	SETUP_SERIAL_B_DMA1 SETUP_SERIAL_B_DMA3	DMA Channel 1 DMA Channel 3
BIOS_LPT_PORT *Parallel Port* (permanent only)	SETUP_LPT_DISABLE SETUP_LPT_ENABLE SETUP_LPT_AUTO	Disabled Enabled Auto
BIOS_LPT_ADDRESS *Parallel Port Address* (permanent only)	SETUP_LPT_378 SETUP_LPT_278 SETUP_LPT_3BC	I/O Address 378 I/O Address 278 I/O Address 3BC
BIOS_LPT_IRQ *Parallel Port IRQ* (permanent only)	SETUP_LPT_IRQ5 SETUP_LPT_IRQ7	IRQ 5 IRQ 7
BIOS_LPT_MODE *Parallel Port Mode* (permanent only)	SETUP_LPT_OUTPUT SETUP_LPT_BIDIRECTIONAL SETUP_LPT_ECP	Output Only Bidirectional Extended Capabilities Port
BIOS_LPT_DMA *Parallel Port ECP DMA Channel* (permanent only)	SETUP_LPT_DMA1 SETUP_LPT_DMA3	DMA Channel 1 DMA Channel 3

Table 8-2 Option and Setting Parameters and Return Values (Continued)

Option Parameter ***Option Description***	**Setting Parameter**	**Setting Description**
BIOS_KEYMOUSE *Keyboard/Mouse Hot Plug* (permanent only)	SETUP_KEYMOUSE_DISABLE SETUP_KEYMOUSE_ENABLE	Disabled Enabled
BIOS_MODEM *Internal Modem* (permanent only)	SETUP_MODEM_DISABLE SETUP_MODEM_ENABLE	Disabled Enabled
BIOS_AUDIO *Audio* (permanent only)	SETUP_AUDIO_DISABLE SETUP_AUDIO_ENABLE SETUP_AUDIO_AUTO	Disabled Enabled Auto
BIOS_AUDIO_ADDRESS *Audio I/O Address* (permanent only)	SETUP_AUDIO_220 SETUP_AUDIO_240 SETUP_AUDIO_260 SETUP_AUDIO_280	I/O Address 220 I/O Address 240 I/O Address 260 I/O Address 280
BIOS_AUDIO_FM_ADDRESS *Audio FM I/O Address* (permanent only)	SETUP_AUDIO_FM_388 SETUP_AUDIO_FM_38C SETUP_AUDIO_FM_390 SETUP_AUDIO_FM_394	I/O Address 388 I/O Address 38C I/O Address 390 I/O Address 394
BIOS_AUDIO_IRQ *Audio IRQ* (permanent only)	SETUP_AUDIO_IRQ5 SETUP_AUDIO_IRQ7 SETUP_AUDIO_IRQ9 SETUP_AUDIO_IRQ10 SETUP_AUDIO_IRQ11	IRQ 5 IRQ 7 IRQ 9 IRQ 10 IRQ 11
BIOS_AUDIO_DMA_1 *Audio DMA Channel 1* (permanent only)	SETUP_AUDIO_DMA0 SETUP_AUDIO_DMA1 SETUP_AUDIO_DMA3 SETUP_AUDIO_DMA5	DMA Channel 0 DMA Channel 1 DMA Channel 3 DMA Channel 5
BIOS_AUDIO_DMA_2 *Audio DMA Channel 2* (permanent only)	SETUP_AUDIO_DMA0 SETUP_AUDIO_DMA1 SETUP_AUDIO_DMA3 SETUP_AUDIO_DMA5	DMA Channel 0 DMA Channel 1 DMA Channel 3 DMA Channel 5
BIOS_SPEAKER *Speaker* (permanent only)	SETUP_SPEAKER_MUTE SETUP_SPEAKER_ON	
BIOS_VIDEO_DISPLAY *Display* (permanent or current)	SETUP_VIDEO_LCD SETUP_VIDEO_MONITOR SETUP_VIDEO_BOTH	LCD External Monitor Both

Table 8-2 Option and Setting Parameters and Return Values (Continued)

Option Parameter ***Option Description***	**Setting Parameter**	**Setting Description**
BIOS_VIDEO_EXPAND *Expand VGA Screen* (permanent only)	SETUP_VIDEO_NORMAL SETUP_VIDEO_EXPAND	Disabled Enabled
BIOS_HOTPAD *Hotpad* (permanent only)	SETUP_HOTPAD_ENABLE SETUP_HOTPAD_DISABLE	Enabled Disabled
BIOS_FDISK *Fixed Disk Boot Sector* (permanent only)	SETUP_FDISK_NORMAL SETUP_FDISK_WPROTECT	Normal Write Protect
BIOS_BOOT *Boot Sequence* (permanent only)	SETUP_BOOT_A_THEN_C SETUP_BOOT_C_THEN_A	Boot sequence: 1. Diskette Drive 2. Hard Drive Boot sequence: 1. Hard Drive 2. Diskette Drive
BIOS_QUICKBOOT *QuickBoot Mode* (permanent only)	SETUP_QUICKBOOT_DISABLE SETUP_QUICKBOOT_ENABLE	Disabled Enabled
BIOS_DIAG *Boot-time Diagnostic Messages* (permanent only)	SETUP_DIAG_DISABLE SETUP_DIAG_ENABLE	Disabled Enabled
BIOS_PROMPT *Setup Prompt* (permanent only)	SETUP_PROMPT_DISABLE SETUP_PROMPT_ENABLE	Disabled Enabled
BIOS_NUMLOCK *Numlock* (permanent only)	SETUP_NUMLOCK_AUTO SETUP_NUMLOCK_ON SETUP_NUMLOCK_OFF	Auto On Off
BIOS_DMI_CLEAR *Clear All DMI Event Logs* (permanent only)	SETUP_DMI_CLEAR_DISABLE SETUP_DMI_CLEAR_ENABLE	No Yes
BIOS_DMI_LOG *DMI Event Logging* (permanent only)	SETUP_DMI_LOG_DISABLE SETUP_DMI_LOG_ENABLE	Disabled Enabled
BIOS_DMI_BOOT *DMI System Boot Event* (permanent only)	SETUP_DMI_BOOT_DISABLE SETUP_DMI_BOOT_ENABLE	Disabled Enabled

Table 8-2 Option and Setting Parameters and Return Values (Continued)

Option Parameter ***Option Description***	**Setting Parameter**	**Setting Description**
BIOS_LOWBAT_SPEED	SETUP_LOWBAT_SPEED_60MHZ	60 MHz
Low Battery CPU Speed	SETUP_LOWBAT_SPEED_90MHZ	90 MHz
(permanent only)	SETUP_LOWBAT_SPEED_120MHZ	120 MHz
BIOS_RESUME_SERIAL	SETUP_RESUME_DISABLE	Disabled
Resume On Serial Activity	SETUP_RESUME_ENABLE	Enabled
(permanent only)		
BIOS_POWER_MODE	SETUP_POWER_OFF	Off
APM Power Savings	SETUP_POWER_CUSTOMIZE	Customize
(permanent or current)	SETUP_POWER_MAXPERFORM	Maximum Performance
	SETUP_POWER_MAXBATTERY	Maximum Battery Life
BIOS_HDD_TIMEOUT	SETUP_HDDTIME_OFF	Off
HDD Spin-down Timeout	SETUP_HDDTIME_05_SEC	5 Seconds
(permanent or current)	SETUP_HDDTIME_10_SEC	10 Seconds
	SETUP_HDDTIME_30_SEC	30 Seconds
	SETUP_HDDTIME_01_MIN	1 Minute
	SETUP_HDDTIME_02_MIN	2 Minutes
	SETUP_HDDTIME_04_MIN	4 Minutes
	SETUP_HDDTIME_06_MIN	6 Minutes
	SETUP_HDDTIME_08_MIN	8 Minutes
	SETUP_HDDTIME_10_MIN	10 Minutes
	SETUP_HDDTIME_15_MIN	15 Minutes
	SETUP_HDDTIME_20_MIN	20 Minutes
BIOS_VIDEO_TIMEOUT	SETUP_VIDEOTIME_OFF	Off
Video Timeout	SETUP_VIDEOTIME_30_SEC	30 Seconds
(permanent or current)	SETUP_VIDEOTIME_02_MIN	2 Minutes
	SETUP_VIDEOTIME_04_MIN	4 Minutes
	SETUP_VIDEOTIME_06_MIN	6 Minutes
	SETUP_VIDEOTIME_08_MIN	8 Minutes
	SETUP_VIDEOTIME_10_MIN	10 Minutes
	SETUP_VIDEOTIME_15_MIN	15 Minutes
	SETUP_VIDEOTIME_20_MIN	20 Minutes
BIOS_IDLE_TIMEOUT	SETUP_IDLETIME_OFF	Off
Idle Mode Timeout	SETUP_IDLETIME_HALFSEC	1/2 Second
(permanent or current)		
BIOS_IDLE_CPUSPEED	SETUP_IDLECPUSPEED_60MHZ	60 MHz
Idle Mode CPU Speed	SETUP_IDLECPUSPEED_90MHZ	90 MHz
(permanent only)	SETUP_IDLECPUSPEED_120MHZ	120 MHz
	SETUP_IDLECPUSPEED_180MHZ	180 MHz

Table 8-2 Option and Setting Parameters and Return Values (Continued)

Option Parameter ***Option Description***	**Setting Parameter**	**Setting Description**
BIOS_STANDBY_TIMEOUT	SETUP_STANDBYTIME_OFF	Off
Standby Mode Timeout	SETUP_STANDBYTIME_01_MIN	1 Minute
(permanent or current)	SETUP_STANDBYTIME_02_MIN	2 Minutes
	SETUP_STANDBYTIME_04_MIN	4 Minutes
	SETUP_STANDBYTIME_06_MIN	6 Minutes
	SETUP_STANDBYTIME_08_MIN	8 Minutes
	SETUP_STANDBYTIME_12_MIN	12 Minutes
	SETUP_STANDBYTIME_16_MIN	16 Minutes
BIOS_SUSPEND_TIMEOUT	SETUP_SUSPENDTIME_OFF	Off
Suspend Mode Timeout	SETUP_SUSPENDTIME_05_MIN	5 Minutes
(permanent or current)	SETUP_SUSPENDTIME_10_MIN	10 Minutes
	SETUP_SUSPENDTIME_15_MIN	15 Minutes
	SETUP_SUSPENDTIME_20_MIN	20 Minutes
	SETUP_SUSPENDTIME_30_MIN	30 Minutes
	SETUP_SUSPENDTIME_40_MIN	40 Minutes
	SETUP_SUSPENDTIME_60_MIN	60 Minutes
BIOS_SUSPEND_MODE	SETUP_SUSPEND_TO_RAM	Suspend to RAM
Suspend Mode	SETUP_SUSPEND_TO_DISK	Suspend to Disk
(permanent or current)		
BIOS_SUSPENDTODISK_TIME	SETUP_SUSPENDTODISK_OFF	Off
Suspend-to-Disk Timeout	SETUP_SUSPENDTODISK_1_HOUR	After 1 Hour
(permanent or current)		
BIOS_RESUME_MODEMRING	SETUP_MODEMRING_RESUME_OFF	Off
Resume On Modem Ring	SETUP_MODEMRING_RESUME_ON	On
(permanent or current)		
BIOS_SUSPEND_BUTTON	SETUP_SUSPENDBUTTON_NORMAL	Normal
Suspend Button	SETUP_SUSPENDBUTTON_RESUME	Resume Only
(permanent or current)	SETUP_SUSPENDBUTTON_ON_OFF	Power On/Off
BIOS_IDLEMODE_CPU	SETUP_CPUIDLE_STANDARD	Normal
APM CPU Idle Mode	SETUP_CPUIDLE_LOWPOWER	Diagnostic
(permanent or current)		
BIOS_BACKLIGHT_MODE	SETUP_BACKLIGHT_STANDARD	Adjustable
LCD Backlight Level	SETUP_BACKLIGHT_LOWPOWER	Minimum Only
(permanent or current)		

Advanced Settings

The following options can be set using the BiosSetupSet function. Values for the *Setting* parameter that must be passed to BiosSetupSet are not defined for these options, so an int value must be passed as defined in Table 8-3.

Table 8-3 Discrete BIOS Settings

Option Parameter ***Description***	**Setting Parameter Value**	**Description**
BIOS_SPEAKER_VOLUME *Speaker Volume* (current only)	0 to 3FH	Pass a value within the range specified to change the speaker volume setting. The greater the value, the louder the volume setting. (Note that the setting you specify is not retained after the system is shut down.)
BIOS_VIDEO_BRIGHTNESS *Video Display Brightness* (current only)	0 to 8H (for Color Transflective LCD type) 1 to 8H (for TFT LCD type)	Pass a value within this range to specify the brightness for the current setting. The greater the value, the higher the brightness setting. The setting you specify is not retained after the system is shut down. Specifying a value of 0 turns the backlight off on a color transflective (CTF) display.
BIOS_VIDEO_CONTRAST Video Display Contrast Note: This option is supported only for systems with a color transflective LCD type. (current only)	0 to 7FH	Pass a value within this range to specify the contrast for the current setting. The greater the value, the higher the contrast setting. (Note that the setting you specify is not retained after the system is shut down.)

Chapter 9

Programmable Hotpad Libraries for 16-bit Windows Applications

This chapter provides details on using libraries that allow 16-bit Windows applications to use the programmable hotpad on the pen tablet. (Refer to "Programmable Hotpad Libraries for 32-Bit Windows Applications" on page 10-1 if you are developing a 32-bit application that will use the programmable hotpad.)

These library files are preinstalled in the *C:\WINDOWS\SYSTEM* directory. Copies of these files are also stored in the *C:\FPSI2300\DEV\HOTPAD*directory. The following two libraries allow you to use the programmable hotpad with 16-bit applications:

- *HOTPAD.DLL*
  A dynamic-link library.
- *HOTPAD.LIB*
  A static library which allows your application to link to *HOTPAD.DLL*.

Functions described in this chapter are the same for both of these libraries. Use one of these libraries depending on whether you want to use dynamic or static linking in your application.

To use dynamic linking:

- Include the header file *HOTPAD.H* in the program code for your application.
- The file *HOTPAD.DLL* must be in the *C:\WINDOWS\SYSTEM* directory at run time.

To use static linking:

- Include the file *HOTPAD.LIB* in your program code.
- The file *HOTPAD.DLL* must be in the *C:\WINDOWS\SYSTEM* directory at run time.

Note: *The DLL is still used at run time when you use static linking. Using static linking simply resolves calls to the DLL when your program is compiled.*

Hotpad Notification

Applications that use the programmable hotpad are notified when a hotpad event occurs (when the programmable hotpad is tapped).

Hotpad notification is enabled and disabled using the following functions:

- *SetHotpadNotification*
  This function enables hotpad notification for the calling application.
- *KillHotpadNotification*
  This function disables hotpad notification for the calling application.

Hotpad notification is performed using one of the following methods. The parameters passed to the *SetHotpadNotification* function determine which notification method is used.

- A notification message sent to the window procedure of the application.
- A call-back function.

SetHotpadNotification

The *SetHotpadNotification* function enables hotpad notification. Applications which are to receive notification of hotpad events must call this function once to enable hotpad notification. A prototype of this function is shown below:

```
int SetHotpadNotification ( HWND WindowHandle, UINT MessageID, FARPROC CallbackPointer )
```

If a hotpad event is to generate a notification message, the *WindowHandle* and *MessageID* parameters are required. If a hotpad event is to generate a call-back function call, the *CallbackPointer* parameter is required. Details on these parameters are as follows:

Parameter	Description
WindowHandle	Handle to the application window which will receive hotpad notification messages. If this parameter is NULL, the *CallbackPointer* parameter must be a valid call-back function address.
MessageID	Message ID of the notification message that will be sent to the application window when a hotpad event occurs. If this parameter is NULL, the *CallbackPointer* parameter must be a valid call-back function address.
CallbackPointer	Pointer to the call-back function in the application that will receive hotpad notification. See “Call-Back Function” on page 9-3 for information on how to declare the callback function. If the *WindowHandle* parameter is not NULL, this parameter is ignored and hotpad notification is sent via a notification message. If this parameter is NULL, the *WindowHandle* and *MessageID* parameters must be valid.

Return values for this function are as follows:

Return Value	Description
Positive nonzero integer	Hotpad notification ID. Returned on success. The library assigns a unique hotpad notification ID number for each occurrence of the *SetHotpadNotification* function. Your application must pass this ID number when hotpad notification is disabled using the *KillHotpadNotification* function.
0	Memory allocation failure.
-1	*WindowHandle* parameter not valid.
-2	Could not allocate system timer.
-3	*CallbackPointer* parameter not valid.

Call-Back Function

When hotpad notification is performed via a call-back function, the application's call-back function is called by the DLL using the value of the *CallbackPointer* parameter (passed to the *SetHotpadNotification* function) as the call-back function address. The call-back function in your application must be declared in the following manner:

```
void CALLBACK _export YourCallbackFunctionName ( )
```

KillHotpadNotification

This function disables hotpad notification for your application. Programs which have enabled hotpad notification using *SetHotpadNotification* should call this function before exiting or when hotpad notification is no longer desired. A prototype of this function is shown below:

```
BOOL KillHotpadNotification ( int NotificationID )
```

You must pass the hotpad notification ID number that was returned by *SetHotpadNotification* as the *NotificationID* parameter. Note that this function disables hotpad notification for the calling application only. Other applications which have enabled hotpad notification will continue to receive hotpad notification. Return values for this function are as follows:

Return Value	Description
TRUE	Returned if the function is successful. Hotpad notification is disabled.
FALSE	Returned if the function fails. This function will fail if the *NotificationID* parameter is not a valid hotpad notification ID.

Chapter 10

Programmable Hotpad Libraries for 32-Bit Windows Applications

This chapter provides details on using libraries that allow 32-bit Windows applications to use the programmable hotpad on the pen tablet. (Refer to "Programmable Hotpad Libraries for 16-bit Windows Applications" on page 9-1 if you are developing a 16-bit application that will use the programmable hotpad.)

These library files are preinstalled in the *C:\WINDOWS\SYSTEM* directory. Copies of these files are also stored in the *C:\FPSI2300\DEV\HOTPAD*directory. The following two libraries allow you to use the programmable hotpad with 32-bit applications:

- *HOTPAD32.DLL*
  A dynamic-link library.
- *HOTPAD32.LIB*
  A static library which allows your application to link to *HOTPAD.DLL*.

Functions described in this chapter are the same for both of these libraries. Use one of these libraries depending on whether you want to use dynamic or static linking in your application.

To use dynamic linking:

- Include the header file *HOTPAD32.H* in the program code for your application.
- The file *HOTPAD32.DLL* must be in the *C:\WINDOWS\SYSTEM* directory at run time.

To use static linking:

- Include the file *HOTPAD32.LIB* in your program code.
- The file *HOTPAD32.DLL* must be in the *C:\WINDOWS\SYSTEM* directory at run time.

Note: *The DLL is still used at run time when you use static linking. Using static linking resolves calls to the DLL when your program is compiled.*

Hotpad Notification

Applications using this DLL are notified when a hotpad event occurs (when the programmable hotpad is tapped) using a notification message sent to the window procedure of the application.

Hotpad notification is enabled and disabled using the following functions:

- *SetHotpadNotification*
  This function enables hotpad notification for the calling application.
- *KillHotpadNotification*
  This function disables hotpad notification for the calling application.

These functions are described in the following sections.

Note: *Hotpad notification using a call-back function is not supported by* HOTPAD32.DLL.

SetHotpadNotification

This function enables hotpad notification. Applications which are to receive notification of hotpad events must call this function once to enable hotpad notification. A prototype of this function is shown below:

```
int SetHotpadNotification ( HWND WindowHandle, UINT MessageID )
```

Parameters this function accepts are described below:

Parameter	Description
WindowHandle	Handle to the application window that will receive hotpad notification messages.
MessageID	Message ID of the notification message that will be sent to the calling application window when a hotpad event occurs.

Return values for *SetHotpadNotification* are as follows:

Return Value	Description
Positive nonzero integer	Hotpad notification ID. Returned on success. The library assigns a unique hotpad notification ID number for each occurrence of the *SetHotpadNotification* function. Your application must pass this ID number when hotpad notification is disabled using the *KillHotpadNotification* function.
0	Memory allocation failure.
-1	*WindowHandle* parameter not valid.
-2	Could not allocate system timer.

KillHotpadNotification

This function disables hotpad notification for your application. Programs which have enabled hotpad notification should call this function before exiting or when hotpad notification is no longer desired. A prototype of this function is shown below:

```
BOOL KillHotpadNotification ( int NotificationID )
```

You must pass the hotpad notification ID number that was returned by *SetHotpadNotification* as the *NotificationID* parameter. Note that this function disables hotpad notification for the calling application only. Other applications which have enabled hotpad notification will continue to receive hotpad notification. Return values for this function are as follows:

Return Value	Description
TRUE	Returned if the function is successful. Hotpad notification is disabled.
FALSE	Returned if the function fails. This function will fail if the *NotificationID* parameter is not a valid hotpad notification ID.

Appendix A

Replacing the IDE Hard Disk Drive

The internal IDE hard disk drive in the Stylistic 2300 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.
- Handle the hard disk drive only by the sides.
- 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 and remove it as shown in Figure A-1.

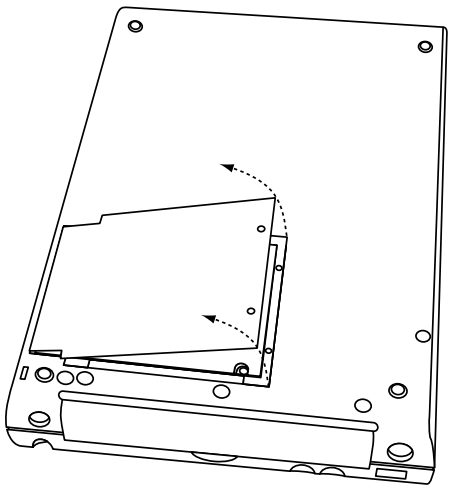


Figure A-1 IDE Hard Disk Drive Cover Plate

3. Pull up on the tab as indicated in Figure A-2 to lift one end of the hard disk drive partially out of the pen tablet. This tab is part of a liner tray for the hard disk drive. When the drive is accessible, you can hold the drive by the sides and lift it out enough to access the flex cable.

Caution

- Do not pull the tab on the flex cable connector when lifting the drive. Doing so will damage the flex cable as it has very little slack.
- Do not 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.

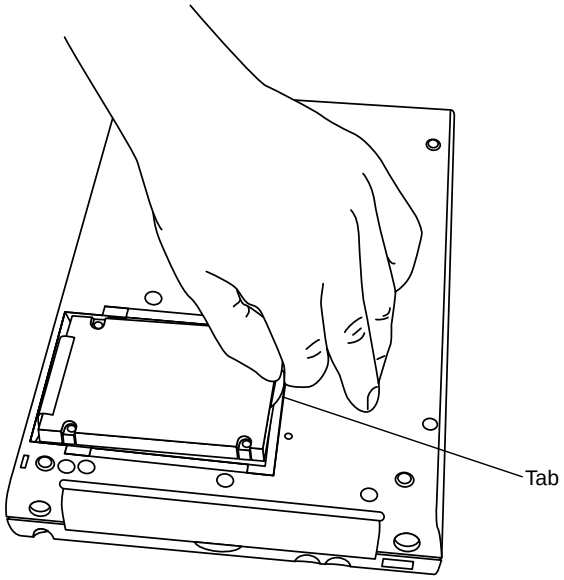


Figure A-2 IDE Hard Disk Drive Liner Tray Tab

4. To disconnect the flex cable, hold the large tab (on the flex cable connector) and pull the hard disk drive away from the connector as shown in Figure A-3.

Note: *The flex cable is not field replaceable and cannot be disconnected from the pen tablet. If the flex cable is damaged, you must send the system back to the factory for repair.*

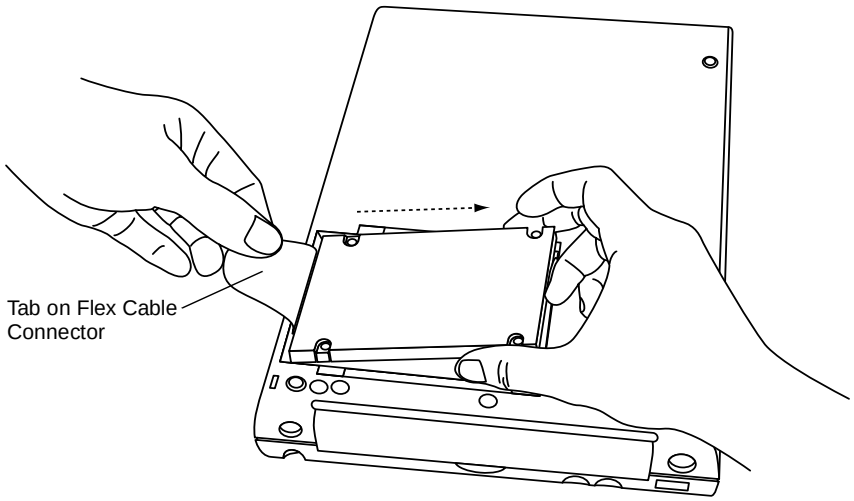


Figure A-3 IDE Hard Disk Drive Flex Cable

Once the hard disk drive is removed from the pen tablet, you can install a new hard disk drive. If you are returning the hard disk drive, ensure that the packaging material will protect the drive sufficiently during shipment.

Installing the Hard Disk Drive

To install the hard disk drive,

1. Connect the flex cable to the hard disk drive and fold the tab on the flex cable down under the flex cable as shown in Figure A-4. 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 can't be installed incorrectly.)

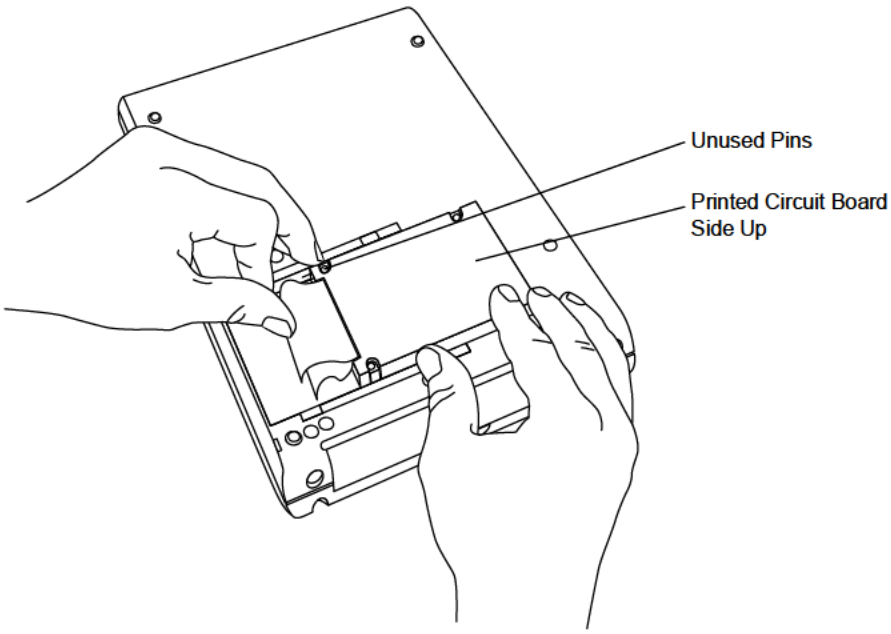


Figure A-4 Connecting the IDE Hard Disk Drive Flex Cable

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. Reinstall the hard disk drive cover plate using the screws that you removed from the cover plate earlier.

The hard disk drive is now installed in the pen tablet. Refer to "Recovering the Disk Image" on page B-1 if you need to install the original operating system onto the hard disk drive.

Appendix B

Recovering the Disk Image

A recovery utility for the Stylistic 2300 pen tablet allows you to reinstall the disk image, including the operating system on the pen tablet's internal hard disk. You can use this utility to restore the image on the internal hard disk drive from the product recovery CD. This is necessary when the internal hard disk is replaced with a blank hard disk or when system software on the hard disk becomes so corrupt as to render the system unusable.

Note: *Recovering the disk image from the product recovery CD will erase the entire hard disk drive. Any application software that has been installed on the system since it was shipped from the factory must be reinstalled after performing this procedure. If possible, back up any valuable data on the hard disk drive before recovering the disk image.*

The recovery utility, Dsk2300 is distributed on the *Fujitsu Recovery CD Utility 2300* floppy diskette shipped with each pen tablet system along with the product recovery CD which contains the disk image for the system's hard disk drive.

The following software and hardware is required before you can use Dsk2300 to recover the operating system on your pen tablet:

- The appropriate product recovery CD for the pen tablet.
  There are different product recovery CDs for the Stylistic 2300 pen tablet depending on the operating system, the size of the pen tablet's hard disk, and the language version of the operating system. The product recovery CD shipped with the pen tablet is the US English version with a disk image file that matches the original operating system and the size of the original hard disk. Product recovery CDs for other languages (French, German, Italian, and Spanish) must be ordered separately.
- The *Fujitsu Recovery CD Utility 2300* floppy diskette.
- An external floppy disk drive (Fujitsu model FMWFD2).
- An external CD-ROM drive.
- Drivers for your CD-ROM drive for MS-DOS are required if your CD-ROM drive does not use a PC Card interface. If required, add your CD-ROM drivers to the *Fujitsu Recovery CD Utility 2300* floppy diskette and modify the CONFIG.SYS and/or AUTOEXEC.BAT files on the diskette to load your CD-ROM drivers.

  Note that Phoenix Card Manager Plus (PCM Plus) drivers are preinstalled on the *Fujitsu Recovery CD Utility 2300* floppy diskette to provide socket services for CD-ROM drives that use a PC Card interface.

To run Dsk2300,

1. Connect your floppy disk drive and CD-ROM drive to the pen tablet.
2. Boot the pen tablet from the *Fujitsu Recovery CD Utility 2300* floppy diskette.
3. Load the device drivers necessary to use your CD-ROM drive under MS-DOS.
4. Insert the product recovery CD in the CD-ROM drive and look at the disk image file name on the CD. You will need to know the file name later in this procedure. (There is only one file on the CD.)

5. Type the command **dsk2300** using the following syntax:

```
dsk2300 option [path]filename
```

> **Caution**
>
> This command will completely erase your hard disk drive. Ensure that any valuable files on your hard disk (if recoverable) are backed up.

The *path* and *filename* specify the path and file name of the disk image file on the CD. The *option* determines whether the file is downloaded and/or verified as follows:

option	
download	Write image to C: drive and verify.
fastload	Write image to C: drive without verifying.
verify	Verify image on C: drive matches image file on CD. (This option performs a read-only comparison of the image file on the CD and the hard disk image.)

To load the image onto your hard disk, use either the *download* or *fastload* option.

Note that this command will take a relatively long time to run as every sector on the hard disk drive is written to and/or read from the hard disk. (It takes about 1 hour 40 minutes to write and verify the image on a 4 GB hard disk drive.)

When Dsk2300 is complete, the operating system is restored to its first-run state.

Appendix C

Enabling ACPI

The Stylistic 2300 pen tablet BIOS supports ACPI (under Windows 98 only); however, the system is shipped with APM enabled as the factory default power management interface. Due to limitations with the implementation of ACPI in the current release of Windows 98, APM is the recommended setting. These instructions are primarily provided for testing purposes.

Note: *Suspend-to-Disk operation is not supported by the current release of Windows 98 using ACPI mode. Microsoft intends to support Suspend-to-Disk operation in ServicePack 1 for Windows 98 which is not available at the time of this writing.*

To use ACPI, you must edit the registry and enable ACPI detection on the pen tablet as described in the following procedure:

1. Attach a mouse to your system. You must perform this procedure using a mouse. (A keyboard is also helpful, but is not required.)
2. From the start menu, choose Run, type Regedit, and choose OK to open the Registry Editor.
3. In the Registry Editor, open the directory: *HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Detect*.
4. From the Edit menu, choose New, DWORD Value. A new value appears in the registry.
5. Select the new value and choose Modify from the Edit menu. Name the new value *ACPIOption* and set the value to 1H.
6. In the Registry Editor, open the directory: *HKEY_LOCAL_MACHINE\Enum\USB\ROOT_HUB\ PCI&VEN_8086...,* and change the value of *ConfigFlags* from 00 00 00 00 to 00 00 01 00. (This is necessary to ensure proper operation when using Suspend-to-RAM mode.)
7. Close the Registry Editor.
8. Open Control Panel and choose Add New Hardware. Choose Yes when prompted to allow Windows 98 to detect new hardware.
9. When prompted, choose Yes to restart your system.

When your system restarts, Windows 98 will detect and enable the ACPI in the BIOS and will run using ACPI. To disable ACPI and enable APM, follow the procedure above and set the *ACPIOption* value to 2H (instead of 1H) when you perform step 5.

Appendix D

Agency Notices

FCC Notices

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. Changes or modifications not expressly approved by Fujitsu Personal Systems, Inc., could void the user's authority to operate the equipment.

Notice to Users of Radios and Television

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet that is on a different circuit than the receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interconnect cables must be employed with this equipment to ensure compliance with the pertinent RF emissions limits governing this device.

Notice to Users of the US Telephone Network

Note: *Stylistic 2300 pen tablets shipped outside of North America do not have an internal modem. The following information applies only to those systems with an internal modem.*

The Stylistic 2300 pen tablet is supplied with an internal modem which complies with Part 68 of the FCC rules. On the pen tablet is a label that contains the FCC Registration Number and Ringer Equivalence Number (REN) of this system, along with other information. If requested, users must provide their telephone company with the following information:

- The telephone number to which the pen tablet is connected
- The Ringer Equivalence Number (REN) for this equipment
- The information that the system requires a standard modular jack type USOC RJ-11C which is FCC Part 68-compliant
- The FCC Registration Number

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

The REN is used to determine the number of devices you may connect to your telephone line and still have all those devices ring when your number is called.Too many devices on one line may result in

failure to ring in response to an incoming call. In most, but not all, areas, the sum of all of the devices should not exceed five (5). To be certain of the number of devices you may connect to your line, as determined by the RENs, contact your local telephone company.

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

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

If you experience trouble with this equipment, please contact your support representative.

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

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

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

- All public or semipublic coin-operated or credit card telephones.
- Elevators, highways, tunnels, (automobile, subway, railroad, or pedestrian) where a person with impaired hearing might be isolated in an emergency.
- Places where telephones are specifically installed to alert emergency authorities such as fire, police, or medical assistance personnel.
- Hospital rooms, residential health care facilities, convalescent homes, and prisons.
- Workstations for the hearing impaired.
- Hotel, motel, or apartment lobbies.
- Stores where telephones are used by patrons to order merchandise.
- Public transportation terminals where telephones are used to call taxis or to reserve lodging or rental cars.
- In hotel and motel rooms at least ten percent of the rooms must contain hearing aid compatible telephones which will be provided to hearing impaired customers on request.

DOC (Industry Canada) Compliance Notices

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set forth in the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de classe B prescrites dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada.

Notice to Users of Radios and Television

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du règlement sur le matériel brouilleur du Canada.

Notice to Users of the Canadian Telephone Network

The Canadian Industry Canada label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational, and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Repairs to telecommunication equipment should be made by a Canadian authorized maintenance facility. Any repairs or alterations not expressly approved by Fujitsu Personal Systems, Inc. or any equipment failures may give the telecommunications company cause to request the user to disconnect the equipment from the telephone line.

The connecting arrangement code for this equipment is CA11A.

The Load Number is 0.2.

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

Caution

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

Avis Aux Utilisateurs Du Réseau Téléphonique Canadien

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

Le Stylistic 2300 possede un modem interne conforme aux normes de certification d'Industrie Canada pour protéger les réseaux de télécommunications et satisfaire aux normes de sécurité. Avant de connecter cet équipement à une ligne téléphonique, l'utilisateur doit vérifier s'il est permis de connecter cet équipement aux installations de télécommunications locales. L'utilisateur est averti que même la conformité aux normes de certification ne peut dans certains cas empêcher la dégradation du service.

Les réparations de l'équipement de télécommunications doivent être effectuées par un service de maintenance agréé au Canada. Toute réparation ou modification, qui n'est pas expressement approuvée par Fujitsu Personal Systems, Inc., ou toute défaillance de l'équipement peut entrainer la compagnie de télécommunications à exiger que l'utlilisateur déconnecte l'équipement de la ligne téléphonique.

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

Le numéro de charge est 0.2.

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

Avertissement

Pour assurer la sécurité, les utilisateurs doivent vérifier que la prise de terre du service d'électricité, les lignes téléphoniques et les conduites d'eau métalliques sont connectées ensemble. Les utilisateurs NE doivent PAS tenter d'établir ces connexions eux-mêmes, mais doivent contacter les services d'inspection d'installations électriques appropriés ou un électricien. Ceci peut être particulièrement important en régions rurales.

Appendix E

Designing Compatible Peripherals for the High-Usage Contacts

This addendum provides supplemental information to the *Stylistic 2300 Technical Reference Guide* for engineers designing peripherals for the Stylistic 2300 pen tablet which connect to the pen tablet using the high-usage contacts.

Disclaimer

Design issues discussed in this addendum are general design guidelines and considerations for engineers. Designing compatible peripherals requires thorough engineering and testing by the designer.

Fujitsu Personal Systems does not warranty, and claims no liability for, damage to peripherals or damage to the pen tablet resulting from using peripherals not made by Fujitsu Personal Systems.

High-Usage Contact Signal Assignments

Signal position assignments for the high-usage contacts on the pen tablet are given in Table E-1. The keyboard and mouse signals are compatible with PS/2-style devices.

Table E-1 High-Usage Contact Position Assignments

Position	Input/Output	Signal
1	Gnd	Ground
2	In	Detect When grounded, this signal indicates (to the pen tablet) that a peripheral device is connected to the high-usage contacts. This enables the keyboard and mouse signals of the high-usage contacts. This signal should be connected to ground by peripherals that connect to the high-usage contacts.
3	In	DC Power Input +16 VDC ±10%, 2.7 A
4	Out	+5 VDC Output ±5%, 180 mA Power supply for external keyboard and mouse.
5	In/Out	Keyboard Clock
6	In/Out	Keyboard Data
7	In/Out	Mouse Clock
8	In/Out	Mouse Data

Figure E-1 provides measurements for the location of the high-usage contacts on the Stylistic 2300 pen tablet. Note that the location of the DC input contacts on the Stylistic 1200 pen tablet is also shown. The DC input contacts on the Stylistic 2300 pen tablet are in the same relative location as those on the Stylistic 1200 to allow the Stylistic 2300 pen tablet to be backward compatible with peripherals designed to use the DC contacts on the Stylistic 1200. See Figure E-2 for dimensions of the DC contacts on the Stylistic 1200 pen tablet.

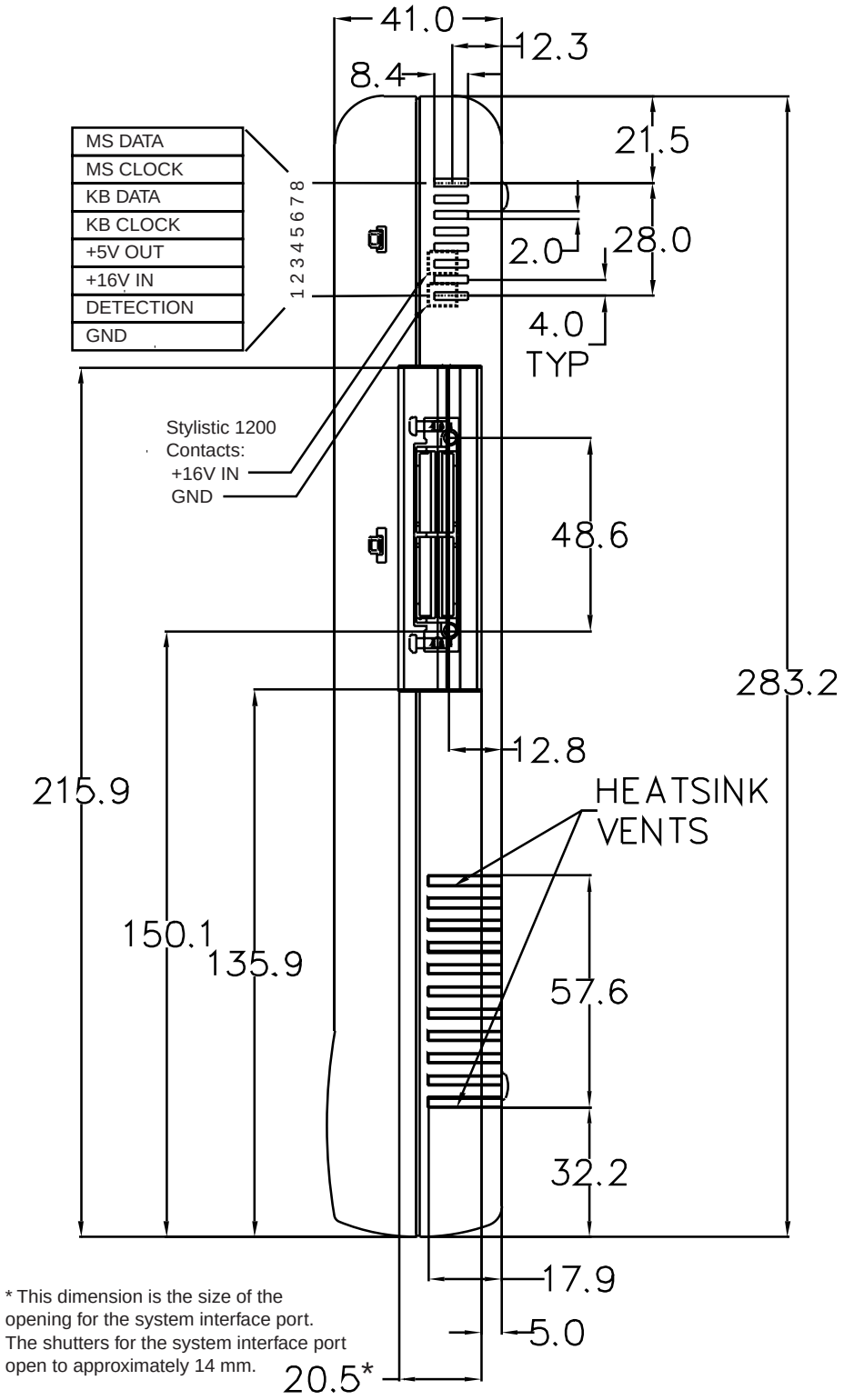


Figure E-1 Stylistic 2300 High-Usage Contact Locations

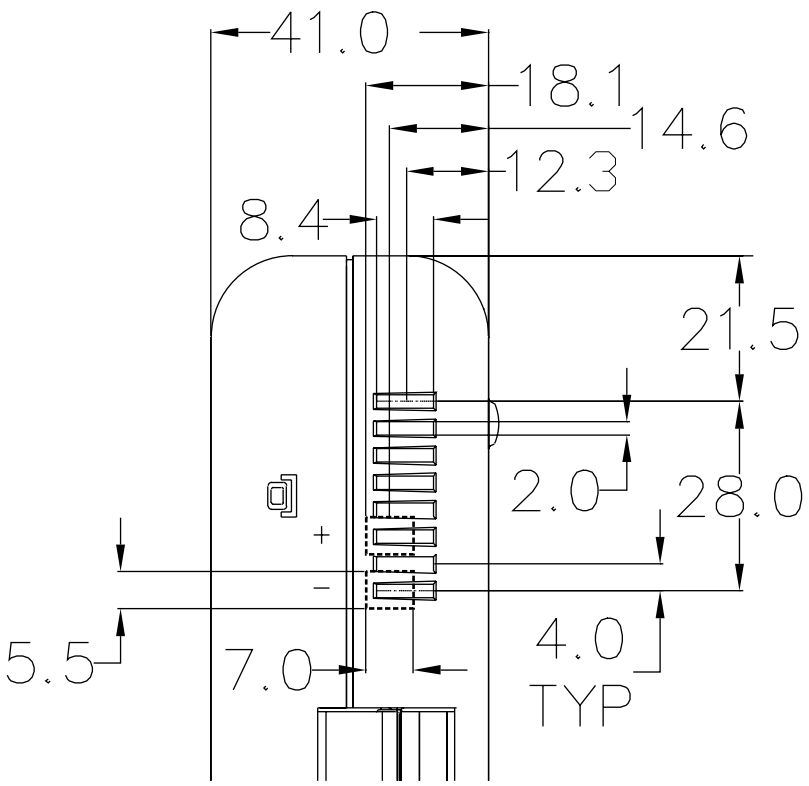


Figure E-2 Stylistic 1200 Pen Tablet DC Contact Dimensions

Detecting the Peripheral

Since the 16-volt DC power input and 5-volt DC output positions are relatively close to each other, a potential over-voltage hazard exists (i.e. 16 volts could be inadvertently applied to the 5-volt output if the 16-volt pin on a cradle device touches the 5-volt contact on the pen tablet) which could damage peripherals connected to the high-usage contacts. So, peripherals which provide power to the pen tablet should **detect the presence of the pen tablet before turning on the 16-volt line**. Also, consider implementing over-voltage protection on the 5-volt line to protect peripherals connected to the 5-volt line down stream.

The pen tablet detects the presence of a peripheral device connected to the high-usage contacts when position 2 (the Detect signal) is grounded by the peripheral. Unfortunately, the pen tablet does not provide such a detect signal to allow the *peripheral* to detect the presence of the *pen tablet*, so the peripheral must detect the presence of the pen tablet by some other means.

One way for a peripheral to detect the pen tablet (and confirm that it is properly connected) is to monitor position 4 for the presence of either +5 volts DC (pen tablet on) or zero volts (pen tablet off or suspended). When either of these conditions exist, the 16-volt line can safely be turned on.

Note: *Other methods (such as microswitches or other mechanical designs) could be used to detect the presence of the pen tablet.*

High-Usage Contacts

The high-usage contacts on the pen tablet are designed to be used with a spring-loaded "pogo-pin" style probe. The suggested probes for use in peripherals are as follows:

- Interconnect Devices part number RFQ-5657
  "Bias-ball" type spring probe, recommended for use with 5-volt, 16-volt, and ground positions. This probe has an internal ball bearing which prevents excessive current from flowing through the spring in the probe.
- Interconnect Devices part number SR-3-J-4.3-G
  Regular type spring probe, recommended for use with data and clock signal positions only. (Do not use in power or ground positions.)

These probes are available from Interconnect Devices, Inc. (IDI), 5101 Richland Avenue, Kansas City, Kansas 66106, <www.idinet.com>.

Other General Design Guidelines

Note the following guidelines and suggestions when designing your peripheral.

- Ensure that your design provides sufficient air ventilation around the heat sink on the pen tablet by not blocking the area around the heat sink. Also, note that heat is dissipated from all surfaces of the pen tablet (not just the heat sink). Providing ventilation at the heat sink is especially important if your design encases the pen tablet in any way.
- Consider whether your design allows clearance for accessories such as hand straps attached to the pen tablet.
- Ensure that your design is in compliance with the necessary regulatory agencies such as FCC, UL, TUV, etc.
- Consider providing over-voltage protection in circuitry that connects to the pen tablet's 5-volt output to prevent damage as explained in "Detecting the Peripheral" on page E-3.
- Ensure that your design meets the shock and vibration requirements for your application.
- Consider ergonomic factors in your peripheral design and installation.
- Ensure that your design maintains access to required areas of the pen tablet such as the Suspend/Resume button or connectors. (Note, however, that the keyboard/mouse port connector on the pen tablet should not be used at the same time as the keyboard and mouse signals of the high-usage contacts.)

Index

A

B

C

D

E

F

H

I

K

L

M

N

O

P

Q

R

S

T

U

V

W

X

Z