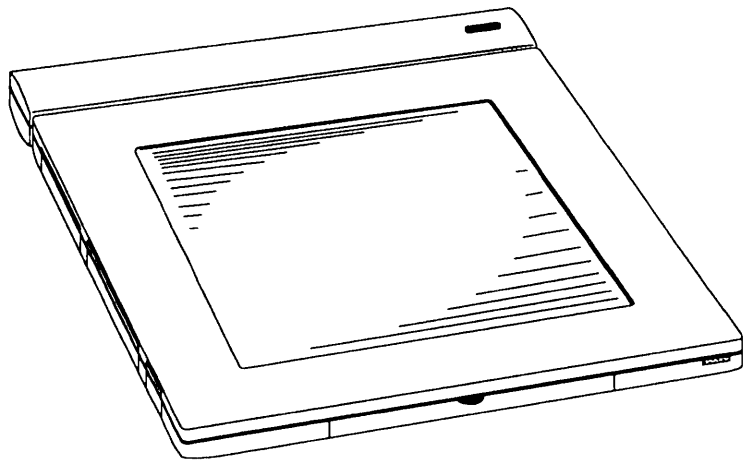# System 3125

NCR

User's Manual

NCR

System 3125

User's Manual

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October 1991

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Federal Communications Commission (FCC) Radio Frequency Interference Statement

Information to User

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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 communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Caution

NCR Corporation (NCR) is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by NCR. Such unauthorized modifications, substitutions, or attachments may void the user's authority to operate the equipment. The correction of interferences caused by such unauthorized modifications, substitutions, or attachments will be the responsibility of the user.

Use only shielded data cables with this system.

Use only the keyboard NCR 3125-K440 as external keyboard for this system.

Canadian Radio Interference Regulations

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out 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 la classe B prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

System 3125 User's Manual

IMPORTANT SAFETY INSTRUCTIONS

1   Read all of these instructions.

2   Save these instructions for later use.

3   Follow all warnings and instructions marked on the product.

4   Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

5   Do not use this product near water.

6   Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.

7   Slots and openings in the cabinet and the back or bottom are provided for ventilation: to ensure reliable operation of the product and to protect it from overheating, these opening must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

8   This product should be operated from the type of power source indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

9   This product is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the purpose of the grounding-type plug.

10 Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.

11 If an extension cord is used with this product, make sure that the total of the ampere ratings on the products plugged into the extension cord do not exceed the extension cord ampere rating. Also, make sure that the total of all products plugged into the wall outlet does not exceed 15 amperes.

12 Never push objects of any kind into this product through the cabinet slots, as they may touch dangerous voltage points or short out parts; that could result in a risk of fire or electric shock. Never spill liquid of any kind on the product.

13 Except as explained elsewhere in this manual, do not attempt to service this product yourself. Opening or removing those covers that are marked "Do Not Remove" may expose you to dangerous voltage points or other risks. Refer all servicing in those compartments to service personnel.

14 Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

• When the power cord or plug is damaged or frayed.

• If liquid has been spilled into the product.

• If the product has been exposed to rain or water.

• If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions, since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.

• If the product has been dropped or the cabinet has been damaged.

• If the product exhibits a distinct change in performance, indicating a need for service.

Contents

Contents

Contents

Identifying the System Components

I/O connector adapter

battery

display and
sensor tablet

basic computer

stylus (pen)

███████████████████

Display and
Sensor Tablet

Passive reflective liquid crystal display (LCD)

Resolution 640 x 480 dots

VGA standard, black on white, 16 gray shades

Sensor tablet to recognize input from the stylus by electromagnetic resonance

███████████████████

Stylus

Standard input device for handwriting with electronic ink

Tip switch and side button to edit handwritten input

███████████████████

Basic Computer

80386sl/20 MHz main processor board

Storage media

Fixed disk drive (Drive C) or
IC card interface with on-board memory (flash disk) plus removable IC cards with non-volatile memory

Slots for option board, RAM upgrade, IC cards

Connector for extension unit or I/O connector adapter

Compartment to store the stylus

Battery

NiCd cells provide power for the system. A factory-delivered battery for the computer, or as spare, requires the initial charge before you can use it. Refer to "Using the ac/dc Adapter" and "Using the Battery" in the chapter "Using the System" for more information on charging batteries and using the ac/dc adapter.

I/O Connector Adapter

Adapter providing connectors for an external VGA display, an external keyboard, a serial (RS232C) device, and a parallel (Centronics) device.

Connectors and Controls

Use the illustrations on the following page to identify the following connectors and controls.

Start/Suspend switch

Intensity control to adjust the display

Power connector for the external ac/dc adapter

Reset button to start the computer again and reload the operating system

Stylus compartment

6-pin, female, connector for an external keyboard

9-pin, D-shell, male, serial (RS-232) connector for a printer, modem, or similar device

25-pin, D-shell, female, parallel (Centronics) connector for a printer, communication adapter, or similar device

15-pin Video Graphics Array (VGA) connector for an external display

start/suspend switch

I/O connector adapter

power connector

reset button

stylus compartment

intensity control

VGA display connector

parallel connector

keyboard connector

serial connector
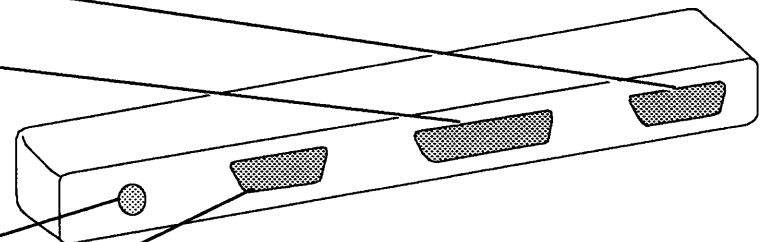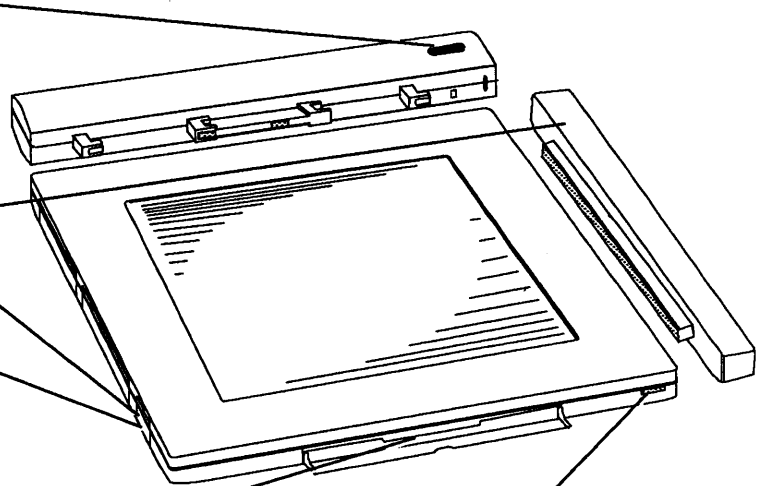
Using the Stylus

The input device for your computer is the
stylus (pen). It allows you to write directly on the
glass surface of the display screen. On the screen,
electronic ink produces an image of what you are
writing. Depending on your operating system, the
electronic ink may be available only in a special part
of the screen, the writing window. So you may not
always see what you are writing.

Caution   Use only the original type of stylus for this computer.
You may loose data or damage the computer when
using any other type of stylus.

In general, instead of typing on a keyboard, you
write the instructions that you want the computer to
carry out. For special entries like **Enter**, **Control**, or
Delete you use special gestures. Normal stylus
operations include marking, selecting, encircling,
and crossing out displayed characters as well as
writing characters and gestures. Handwriting
recognition software comes with the system.

For example, to display the contents of your fixed disk, with the stylus write

$$\lfloor D I R C \; \rangle \rfloor$$

command

gesture for **Enter**
press side button while writing

anywhere on the display screen. (MS-DOS 5.0/PenOS operating system)

When an application displays a menu, just touch your selection with the tip of the stylus to carry out the desired command.

Note: For operating some applications, for example, MS-DOS-Shell, you have to follow the instructions for mouse operation. Use the stylus like you would use a mouse. For example, when you are instructed to "double-click" the name of a command to execute it, double-tap the name with the tip of the stylus.

The operating system may also allow to display a virtual keyboard where you can tap your entries with the stylus.

Store the stylus in the stylus compartment when you don't use it.

Sets with spare stylus tips are available to replace a worn-out stylus tip. Perform the following steps to change the stylus tip.

- Pull out the worn-out tip with the tool that is provided with the spare stylus tips.
- Insert a new stylus tip.

Consider to have an optionally available spare stylus on hand to be prepared if the first stylus gets lost or damaged.

When first using the stylus, tune the stylus so that the system is compensated for the way in which you normally hold the stylus. For instructions on how to perform stylus tuning, and for more detailed information on using the stylus, refer to the documentation supplied with your operating system. Consider also the general hints given in "Writing With the Stylus" on the following pages.

side button

tip switch
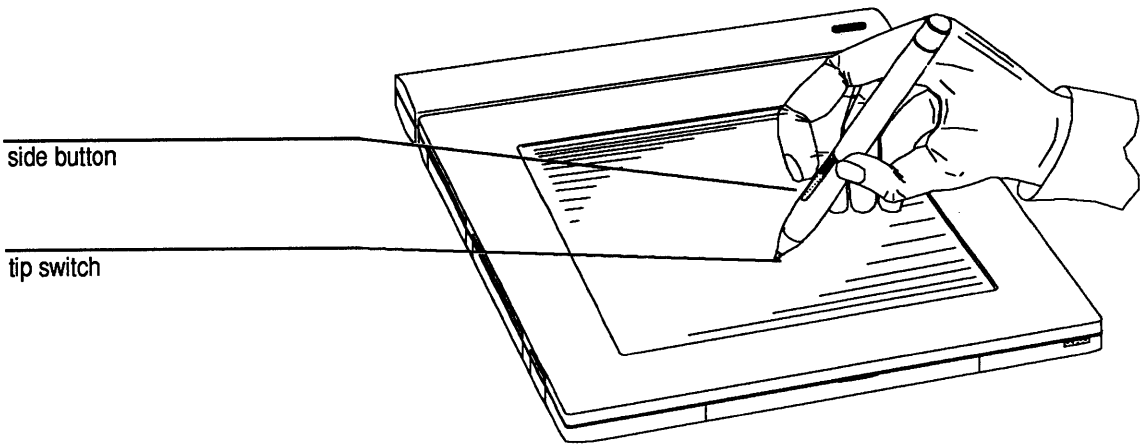
Writing With the Stylus

Writing on the screen with the stylus is similar to writing on paper. However, since the surface of the screen is made of glass, consider spending a few minutes practicing writing.

The operating system manual(s) gives the details on gestures and hand-writing recognition software.

The tip of the stylus is a switch that is activated when it touches the screen. Don't press too hard on the screen. A button on the side of the stylus operates a second switch, which is used to differentiate between different writing modes.

Write neatly and at a normal speed.

As you complete a character, lift the stylus slightly from the screen, don't drag it across the screen. Some operating system software environments may require to lift the stylus as you complete each stroke of a character.

Try to keep the size of the characters consistent.

Use both upper and lower-case characters, just as you do when writing on paper.

Make a clear distinction between the size of upper-case characters and lower case characters.

Make a clear distinction between tall characters (such as l, t, h, k) and short characters (such as e, c, a, s).

Make sure that characters with descenders (such as j, g, y) extend below the baseline of normal characters.

Leave space between characters, don't join them together. Leave a bigger space between words.

Try to avoid slanted hand-writing. In extreme cases the tops of some characters could appear over the next character.

Starting the System

To ensure long term reliable operation of your
computer, please observe carefully the
"Environment" data that are set out in the appendix
"Technical Data."

1   Install the battery. If the battery is not fully
    charged, also connect the ac/dc adapter.

    For more information refer to "Using the ac/dc
    Adapter" and "Using the Battery" in the chapter
    "Using the System."

start/suspend switch
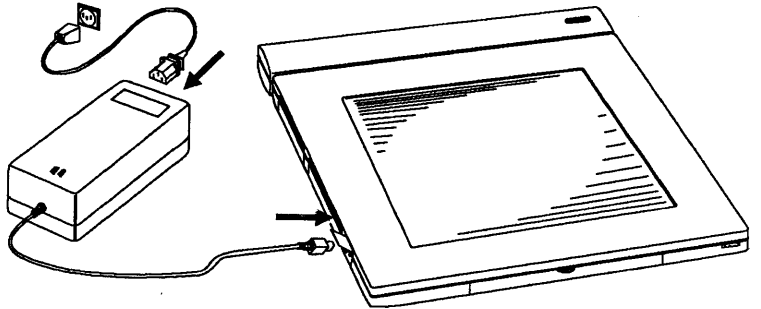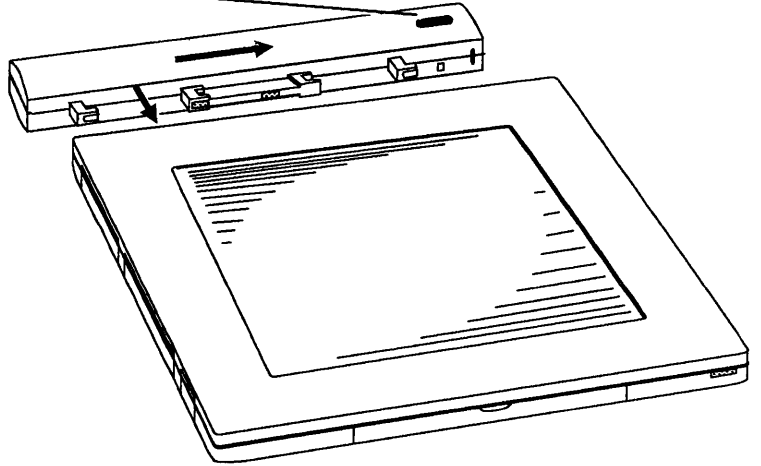
2   Turn on the computer.

Take the stylus from the stylus compartment.

Turn on the computer by pressing down the start/suspend switch. It takes a few seconds before the display indicates system activity.

The power-on self-test checks that basic system components are working properly. Then the system loads the installed operating system.

Adjust the intensity of the display until you can see the text on the screen clearly.

Note: When you switch on the system for the very first time, the screen displays the SETUP menu. Select **Automatic SETUP** if you want to boot the system with the factory-default system configuration and power management data. Refer to the chapter "Running SETUP" for details on the other menu options.

If there is an error during the power-on self-test, the system sounds a series of beeps and tries to display the following message.

```
Notice!
The CMOS checksum is invalid
Default values will be loaded
Press < any key >
```

Tap the **< any key >** field with the tip of the stylus to display the SETUP menu.

```
Setup
VGA Setup
Power Control
System Information
Automatic Setup
↑↓ Move [Enter Select] [Esc Exit]
```

Now tap the **Automatic Setup** field and then tap **[Enter Select]** to start the system again with the default system configuration data.

If the system still doesn't work, refer to the troubleshooting information in chapter 5.

Switching Off

Perform the following steps to switch the computer completely off,

1 Press the start/suspend switch. The display shows a menu with the following options.

   Suspend Mode

   Power Control

   Auto Save

   Power Off

   ↑↓ **Move Cursor**

2 Tap the **Power Off** field to switch off.

Caution All data that you did not save previously will be lost when you select **Power Off**.

What Next ?

Run SETUP

Refer to "Running SETUP" when you turn on your computer for the first time. Run the SETUP program to define how your computer is set up.
You can also define and change the power management settings with the SETUP program.

Using the System

Refer to "Using the System" to make the best out of your system by using effective power and memory management, and password protection.

Load Applications

Load the application programs you are going to use. Refer to "Using the System" for information on how to load applications. Refer also to the documentation supplied with the software for installation instructions.

Chapter 2

Running SETUP

Running the SETUP Program

Use this procedure to store data about the configuration of your system. The following description provides information on how to make changes to SETUP when required. Run SETUP if

- you want to check the system configuration or date and time setting of the system
- you have changed the features of the system
- you want to adjust the power management timer settings according to your requirements

When you turn on your computer for the first time, run the SETUP program to define how your computer is set up.

How to run SETUP

How to invoke SETUP depends on the operating system of your system.

Check the documentation supplied with your operating system for information on how you can access SETUP.

"How to Access SETUP" at the end of this chapter briefly describes for several operating systems how to invoke the SETUP routine.

If you have a keyboard connected to your system, press **Ctrl-Alt-S** to invoke the SETUP routine.

The SETUP main menu displays the following options.

Extended BIOS Software copyright statement
Setup
VGA Setup
Power Control
System Information
Automatic SETUP
↑ ↓ Move   [Enter   Select]   [Esc   Exit]

With **Setup** you can define the system configuration.

With **VGA Setup** you can set the display configuration of the built-in display and of an external display.

With **Power Control** you can specify the power management settings.

System Information displays the current system configuration. This information is displayed for reference only. Use the other SETUP submenus to set the parameters according to your requirements.

Automatic Setup sets all SETUP parameters to the factory-defined default values and starts the system with this configuration setting.

Tap the menu line with your selected SETUP option, for example, **Power Control** if you want to set the power management, and then tap **[Enter Select]** to display the desired SETUP submenu.
If you cannot get any screen display, turn to the chapter "Troubleshooting."

Note: When you have defined and enabled the passwords, you need the master password to access **Setup**, **VGA Setup**, and **Power Control**.
On the password prompt enter the master password and then tap the **ENTER** field. Refer also to "Password Protection" in the chapter "Using the System."

Press the reset button to start the computer again after you have left SETUP.

Declaring Parameters

You can operate all SETUP menus in the same way.

Note: When you have a keyboard connected to your system, you can press the corresponding arrow keys and function keys, instead of using the stylus to operate SETUP.

The highlight cursor marks the value of the parameter that you have selected for changing. Select the parameter that you want to change by tapping the respective value field in square brackets. You can also tap the ←, ↑, →, and ↓ symbols in the bottom part of the displayed menu. You cannot change values that do not show in square brackets. These values will be automatically adjusted depending on the settings for related parameters.

Tap the [F5] and [F6] fields in the bottom part of the displayed menu to switch the parameters to the desired value. By tapping these fields, or by resting the stylus tip on the parameter value field, you can also scroll through the list of available values for the selected parameter.

Tap the [F1] field to display additional information on the selected parameter.

Tap the [F9] field to set all parameters to the factory-defined default values.

Tap the [F10] field to save your settings. The system acknowledges

```
Notice !
Changes have been saved
Press < any key >
```

Tap the < any key > field to return to the previously modified submenu.

Tap the Esc field to return to the SETUP main menu. A message will notify you, if you are leaving the submenu modified without saving the changes.

Select another submenu now, or tap the [Esc Exit] field to leave SETUP.

Always press the reset button to initialize the system and the display again, after you have left SETUP.

Setup

Current Date
Current Time
Set the actual values.

Extended Memory
EMS Memory
Specify how much of the available memory above
1 MB you want to use for extended memory and for
EMS memory, according to the requirements of your
software. Refer to "Memory Management" in the
chapter "Using the System" for more details.

The default values are
Extended Memory **1024 KB** for systems with 2 MB
standard system memory, and
Extended Memory **3072 KB** for systems with
4 MB standard system memory
EMS Memory **0 KB**

Video System
Always select the **EGA/VGA** setting.

Power Up Speed

Use this option to determine the processor clock frequency at power-on. It allows to adjust the processor speed according to software written for slower systems.

Fast = 20 MHz processor clock frequency

Normal = 10 MHz processor clock frequency

The default setting is **Fast**

BIOS Shadow

With **System in RAM** specified, the computer copies the content of the system ROM BIOS into corresponding RAM memory space.
With **Video in RAM** specified, the computer copies the content of the Video ROM into corresponding RAM memory space.
The address areas are defined by the system.

Refer to "Memory Management" in the chapter "Using the System" for more information.

System/Video in ROM allows you to use 96 KB of memory between 640 KB and 1 MB as EMS memory.

The default settings are
System in RAM and **Video in RAM**.

Serial Port

Enables / disables the 9-pin serial port connector

The port address is 3F8h - 3FFh for COM1.

The default setting is **Disabled.**

Parallel Port

Enables / disables the 25-pin parallel port connector

The port address is 378h - 37Fh for LPT1.

Select **Uni-Direct (AT)** if you want to connect a parallel printer or any other parallel device.

Select **Bi-Direct (PS/2)** if you want to connect a communication board that requires a bidirectional data line mode, or a PS/2 depending file transfer kit to the parallel interface.

The default setting is **Disabled.**

Option Slot

Enables / disables the option card interface

Select **Enabled** if you want to connect an option, for example, a Fax/Data modem, to the option card interface.

The default setting is **Disabled.**

IC-Card

Enables / disables access to the IC-card.

The default setting is **Disabled**.

Keyboard

Enables / disables the keyboard connector

Select **Enabled** if you want to connect an external keyboard to enter data.

The default setting is **Enabled**.

Volume

Adjusts the volume of the loudspeaker

The default setting is **Low**.

Diskette Drive 0

Set **Not Installed**, or the correct selection for an external flexible disk drive.

Diskette Drive 1

Set **Not Installed**.

Fixed Disk 0

Select **Type 2** for the factory-installed, internal 20 MB fixed disk drive.

If you have an external fixed disk connected to an IC card system, set the correct type number for the fixed disk, or select **User** and specify the technical data of your fixed disk drive.

Set **None** if you have no fixed disk drive connected to your system.

Fixed Disk 1

If you have an external fixed disk connected to a system with an internal fixed disk, set the correct type number for the external fixed disk, or select **User** and specify the technical data of the fixed disk drive.

The default setting is **None**.

████████████████████

VGA Setup

VGA Power Up Display

Set for the primary display for power-up.

LCD - built-in LCD

Both - LCD and external VGA display

Auto - automatic selection

The default setting is **LCD**.

LCD Display Type

If you select **Color**, the LCD emulates a color display. The colors are shown as gray shades.

The default setting is **Color**.

Cursor Style

Select the shape of the cursor.

The default setting is **Normal**.

Text Mode Display
Graphics Mode Display

Set the display mode at power-on.

Reverse - black characters on white background

Normal - white characters on black background

The default setting is **Normal**.

Contrast Control

Check your application to decide which setting, **Normal**, or **Auto**, or **None**, shows the best screen display.

The default setting is **Normal**.

Power Control

The "Power Control" submenu of the SETUP routine allows you to enable and define the power saving modes of the computer. For more detailed information on the power saving modes refer to "Power Management" in the chapter "Using the System."

Tap the [F2] field to switch the system to the system standby mode immediately.

Tap the [F8] field to switch the system to the suspend mode immediately.

Power Management

Enables/disables all defined power management settings and timers.

The default setting is On.

Warning Beeps

Enables/disables acoustical signals, for example, when a low battery is detected, or the automatic saving has finished.

The default setting is Enable.

Caution You may loose data if you disable the warning beeps, especially when you do not use Auto Save, because the system may run out of battery power without warning indication.

Battery Low Suspend

When enabled, the system goes to the suspend mode when the battery is low.

If **Auto Save** is installed and enabled, the system status is saved automatically before the system switches off.

The default setting is **Enable**.

Modem Ring Resume

When enabled, the system resumes normal operation when it is called by an installed modem.

The default setting is **Disable**.

CPU Standby

Define after how many seconds without input from the stylus or a keyboard the system reduces the processor clock frequency to 0 MHz.

The default setting is **2 Mins**.

System Standby

Define after how many minutes without input from
the stylus or a keyboard the system
- sets the processor clock frequency to 0 MHz,
- turns the fixed disk motor off,
- switches the flash disk and the IC card off,
- switches the display off,
- switches the sensor tablet to sleep mode, and
- switches serial output and parallel input/output off.

To switch the system to the standby mode
immediately, tap the [F2] field.

The default setting is 3 Mins.

Auto Suspend

Define after how many minutes without input from the stylus or a keyboard the system goes to the suspend mode.

The default setting is **10 Mins**.

Auto Save

Define after how many minutes in suspend mode you want to save the contents of the system RAM automatically on the fixed disk or flash disk, before the system switches off completely.

Refer to "Power Management" in the chapter "Using the System" for information on how to install **Auto Save** and how to prepare your flash disk or fixed disk.

The default setting is **60 Mins**.

Alarm Resume

When enabled, the system resumes normal operation on RTC (Real-Time-Clock) alarm.

The default setting is **Disable**.

Device Controls

Set the device control timers to define after how
many minutes without input from the stylus or a
keyboard the system switches the respective device
off. The **Manual** setting disables the power
management for the selected device.

To switch a device off immediately, select the **Manual**
setting for the respective device and tap the **[F3]**
field.

Default settings

Power Saver, that means CPU speed reduced to
10 MHz and the LCD switched off - **1 Mins**

Fixed Disk - **2 Mins**

Flex Disk - **1 Mins**

IC-Card, that means flash disk and IC card,
- **1 Mins**

Serial Port - **1 Mins**

Modem - **1 Mins**

How to Access SETUP

How to invoke SETUP depends on the operating system of your system.

PenOS

Write the **K** gesture to display the virtual keyboard. Tap **Ctrl Alt S** to display the SETUP menu.

Keyboard

If you have a keyboard connected to your system, press **Ctrl-Alt-S** to invoke the SETUP routine.

Chapter 3

Using the System

Using Software

Identifying the Logical Drives

Depending on the model, either a fixed disk drive, or removable IC cards with non-volatile memory are used as internal mass storage device.

The interface board for connecting IC cards may also hold non-volatile memory. The system will address this memory as a logical drive, similar to a fixed disk. This drive is referred to as the flash disk.

The extension unit may provide external flexible and fixed disk drives.

You may also connect an external flexible disk drive via the option board slot.

The following table lists which logical drive number (letter) is allocated for the different storage device combinations. If the IC card interface has no on-board memory, the logical drive listed for "flash disk" is not available.

System	Storage Device	Logical Drive
IC card system	IC card	D
	flash disk	C
IC card system with external flex disk drive	external flex disk	A
	IC card	D
	flash disk	C
IC card system with external flex disk drive and external fixed disk drive	external flex disk	A
	IC card	E
	external fixed disk	C
	flash disk	D
fixed disk system	internal fixed disk	C
fixed disk system with external flex disk drive	external flex disk	A
	internal fixed disk	C
fixed disk system with external flex disk drive and external fixed disk drive	external flex disk	A
	internal fixed disk	C
	external fixed disk	D

Note: You can start the computer with the operating system files on an IC card, although the IC card is logical drive D or E. During start-up, the system recognizes the IC card as drive A, if no external flex disk is connected. As soon as the operating system is loaded, the system assigns the logical drive number for the IC card as shown in the table above.

Factory-installed Software

The factory supplies the following software factory-installed on the mass storage device of your computer. The software is additionally provided on removable media, for example, diskettes or IC cards.

- Operating system, for example, PenPoint or MS-DOS 5.0 and PenOS.

- LapLink Pen data transfer program.

- Autosave Setup utility to reserve the storage capacity on the fixed disk or flash disk that is required for the **Auto Save** routine of the power management.

- Utilities and drivers to customize the fixed disk or flash disk.

Also, your supplier or system administrator may have installed the applications that you want to use more frequently.

Loading Software

You can load software to IC card models by using an IC card with the software, or, from diskettes, via the extension unit, or via another computer and a serial file transfer cable kit.

If you do not have the extension unit, the easiest way to load software to models with a fixed disk drive is from another computer via a serial or parallel file transfer cable kit.

You may also load software from diskettes via special external flexible disk drive sets.

Using the Operating System

The operating system controls the computer, so that it responds in the desired way to the instructions from both the operator and application programs. The documentation supplied with your operating system describes the use and functions.

The operating system is factory-installed on the permanent storage device of your computer, the fixed disk drive or the flash disk (on-board memory of the IC card adapter). The special utilities for stylus operation, handwriting recognition, and electronic ink may be an integral part of the operating system (for example, PenPoint), or are supplied as an extra package together with a standard operating system (for example, MS-DOS 5.0 with PenOS).

Instructions displayed on the screen and the documentation will guide you in using your operating system effectively. Also, you will find some additional information on the following pages.

Signature Verification

The operating system may provide a special utility that allows you to control access to the computer with your signature.

With a signature training program, you can store the authorizing signature in the system.

Whenever you start the signature check routine, you then must enter the authorizing signature before you can continue computer operation.

For example, if you are leaving the system unattended for a while and want to prevent non-authorized use, simply start the signature check before leaving. To continue with normal operation, you must write the authorizing signature that the system has stored.

How to run the signature training program and how to invoke the signature check routine depends on the operating system that is installed on your computer. Refer to your operating system documentation for the details.

Setting Date and Time

Use the operating system utilities or SETUP to set the date and time correctly. Refer to the documentation supplied with your operating system.

System Configuration

The use of some special hardware, for example, scanners or analog tablets, may require the use of specific utility programs.

You may have to configure the operating system to meet your country-specific requirements, for example, if you are using the English operating system version in Scandinavia.

In a special file, the operating system stores necessary data about the system configuration, for example, an external disk drive, and definitions, where to find device drivers.

Device Drivers

To operate some special hardware devices, you may have to the install specific device driver software into the operating system.

When installing new devices to your computer, software provided with the devices may automatically initiate the required update of the system configuration file; otherwise, you must update the system configuration file manually.

Networks

When using your computer within a network

- enter the parameters of the communication adapter and the network to the system configuration files of the computer operating system.

- update the network configuration software with the parameters of your computer.

File Transfer

You can transfer data via the telephone line when a modem is installed in the option card slot, provided you have the modem control software installed on your computer.

For file transfer between computers via the serial interfaces, file transfer programs are available. The file transfer packages normally contain the connecting cable, a software diskette, and an installation and operating manual that fully describes how to perform file transfers.

For your convenience, the LapLink Pen data transfer program is factory-installed on the storage device of your computer. With LapLink you can transfer data from another computer to your system, and vice versa.

The *LapLink Pen User's Guide* and the chapter "Using the LapLink Pen Data Transfer Program" describe how to use this program.

Applications

Applications direct the system to perform specific tasks and provide the desired information. The software is supplied together with instructions on how to install and use it. Refer to your operating system documentation for additional help.

Since your computer has no flexible disk drive, the following table lists different methods of how to load applications from diskettes to your computer.

Loading Method	Hardware / Software Requirements
extension unit	extension unit kit
Serial cable file transfer	second computer with a flexible disk drive
	serial file transfer kit with cable and software
	serial interface enabled with SETUP
	I/O connector adapter connected
external flexible disk drive to parallel interface	external flexible disk drive for parallel interface connection with separate power supply
	appropriate driver software loaded
	I/O connector adapter connected
	Parallel Port set to **Bi-Direct (PS/2)** with SETUP
external flexible disk drive	external flex disk drive controller board in the option card slot
	Option Slot set to **Enabled** with SETUP
	external flexible disk drive with separate power supply

Before you start installing applications, be sure that

- the application is compatible to the operating system installed on your computer, and to the processor speed of your computer.

- all hardware devices you want to use for running the application (for example: display/display adapter, printer/output device, mouse, memory extension) are installed and configured to meet the requirements of your application.

- you know the specific parameters of your hardware devices for use with the application. It may be helpful to prepare a hardware checklist with this information.

Resetting the Computer

You can reset the computer to reload the operating system or to restart a program. You may also need to do this if an error occurs and the computer does not respond to any of your entries.

Resetting erases all data in the computer's temporary memory (RAM). Save important data before you reset your computer.

Caution Do not reset the computer to exit a program unless you cannot exit any other way. Some applications classify and store new data whenever you exit the program properly. If you reset the computer while such a program is running, you may loose data.

When the system is in standby or suspend mode, you will loose the system status data when resetting the computer.

Press the reset button if you want to reset the computer.
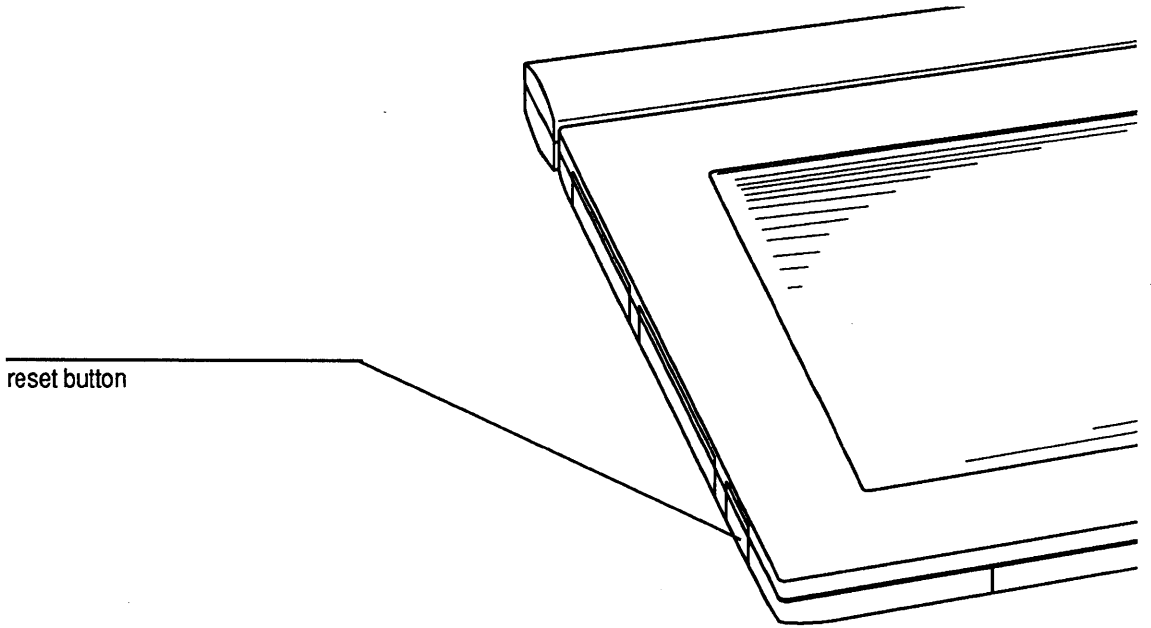
reset button

Memory Management

Customizing the system memory can, under certain conditions, improve the performance of the system.

To make the best use of your computer's memory, you assign parts of the RAM (Random Access Memory) capacity to different memory types.

In hardware terms, the RAM is installed in two different ways in your system.

1 Standard System Memory
   Chips with 2 MB or, depending on the model, 4 MB of memory are soldered on the main processor board.

2 Upgrade Memory
   You can install a memory upgrade card with 4 MB of memory to models with 4 MB of standard system memory.

Memory Categories

There are different ways of how the system can use its RAM or parts of it.

Conventional Memory

640 KB of memory are required for basic system operation and operating system requirements. You cannot access this memory area. This memory is also referred to as system memory or base memory.

Extended Memory

Extended memory is extra memory used for software applications that require larger amounts of memory, for example, a RAM disk.

Reserved Memory

The memory between 640 KB and 1 MB, reduced by the 96 KB of memory that can be used for shadow memory. The operating system can use the reserved memory to install device drivers.

Shadow Memory

Shadow memory increases the processing speed by transferring the contents of the ROM (Read Only Memory) of the main system, or on a peripheral board, to the main system RAM.

EMS Memory

EMS (Expanded Memory System) memory expands the conventional memory beyond the standard 640 KB.

To take advantage of EMS memory, the software must support EMS to access more than one megabyte of memory.

Also, you must install an EMS device driver, that allows to use parts of the system memory as EMS memory.

Follow the instructions supplied with the driver software to install the EMS device driver.

It normally requires to copy the driver to your operating system disk and add a statement like

```
DEVICE=<DRIVERNAME> [PARAMETERS]
```

to your **CONFIG.SYS** file. The parameters setting, for example, will allow to specify how much memory you want to use for EMS.

Using Memory

Standard System Memory

The system requires 640 KB for conventional memory.

You can use the remaining RAM, or parts of it, as shadow memory, extended memory, or EMS memory. For example, you can use 128 KB as shadow memory for the BIOS ROM and the video ROM, and the rest as extended memory.

Upgrade Memory

You can use the upgrade memory as extended memory and/or EMS memory.

Non-volatile Memory

Some models use special memory chips on the IC card adapter and removable IC cards, instead of a fixed disk, as mass storage device to read, write, and store data.

Like standard diskettes, this memory keeps the data stored in it until they are deleted or overwritten, even if the system is powered down.

Password Protection

A responsible person ("Master") can control the access to the computer by allocating up to three user passwords. The user passwords then allow only authorized persons to use the system.

Each password can have up to six characters. The characters you can use for your passwords are limited to those displayed on the password menus. The system does not distinguish between upper- and lower-case letters.

Caution Use passwords that are easy to remember. Write your password down and store it in a safe place. Tell a co-worker where it is stored.

If you forget the master password, only a service representative can remove the password.
Phone your supplier or service representative for help.

Using an External Keyboard for Password Entry

You can enter the password with the stylus or with an external keyboard.

The characters you can use for your passwords are limited to those displayed on the password menus.

On an external keyboard use only the top row on the alphanumeric keypad for entering numerics.

Use the arrow keys (←, ↑, →, ↓) when you are instructed to tap the cursor fields.

Press the spacebar and the **Enter**, **Esc**, and **F1** keys accordingly when you are instructed to tap the corresponding fields.

How to Invoke the Password Utility

How to invoke the password utility depends on the operating system of your system. This chapter provides only brief descriptions on how to access the password utility for different operating systems. Refer to your operating system documentation for more detailed instructions.

Note: When passwords have been set and enabled, only the owner of the master password can invoke the password utility.

PenOS
Write the **K** gesture to display the virtual keyboard. Tap the paragraph (§) symbol in the status line of the virtual keyboard.

External Keyboard
Type **PC** on the MS-DOS prompt and press **Enter**.

Password Utility Main Menu

When you invoke the password utility, the display shows the password main menu that looks similar to the illustration below.

	INSTALL / CHANGE PASSWORDS	
	ENABLE / DISABLE PASSWORDS	
	HELP SCREEN	

input keyboard for
password utility

F1	1	2	3	4	5	6	7	8	9	0	ESC	
A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
UP	DOWN		SPACE		LEFT		RIGHT		ENTER			

To operate the password utility correctly tap all menu selections, entries, and input confirmations exclusively on the input keyboard that is displayed for each password utility menu.

How to Install the Master Password

To install the master password, follow the steps outlined below.

1 Switch on the system and invoke the password utility.
   Refer to "How to Invoke the Password Utility" for the routines to invoke the password utility.

2 Tap the cursor fields (**UP, DOWN, RIGHT,** and **LEFT**) to select **INSTALL/CHANGE PASSWORDS** from the menu, and tap the **ENTER** field.

3 Tap the **ENTER** field on the input keyboard to opt for changing the password. Then tap a password with no more than six characters. For each character you tap, the screen will display an asterisk in the **ENTER PASSWORD** line. When you have entered the password, tap the **ENTER** field. To confirm the master password entry, enter the master password again and tap the **ENTER** field.

4   Tap the **ESC** field. On the prompt

> YOU HAVE MADE CHANGES
> DO YOU WANT TO SAVE (1=YES/0=NO)

tap **1** and **ENTER** to save and store the defined master password.

5   With the **ENABLE/DISABLE PASSWORDS** selection of the password utility menu, tap **E** on the input keyboard to enable the master password and the user passwords to be defined later.

To access the password utility or the SETUP utility in future, you must enter the correct master password.

How to Install User Passwords

To install the user passwords, follow the steps outlined below.

1 Switch on the system

   Invoke the password utility.
   Refer to "How to Invoke the Password Utility" for the routines to invoke the password utility.

   On the screen prompt enter the correct master password, and tap the **ENTER** field.

2 Tap the cursor fields (**UP**, **DOWN**, **RIGHT**, and **LEFT**) to select **INSTALL/CHANGE PASSWORDS** from the menu, and tap the **ENTER** field.

3 On the next menu tap the cursor fields to select **1** for the first user password.

   Tap the **ENTER** field on the input keyboard to opt for changing the password. Then tap a password with no more than six characters. For each character you tap, the screen will display an asterisk in the **ENTER PASSWORD** line.

   When you have entered the password, tap the **ENTER** field.

   To confirm the password entry, enter the password again and tap the **ENTER** field.

4   You can also define the level of application use,
    allowed for the owner of the password. Tap the
    cursor fields to select **Level** from the menu and
    tap the **SPACE** field to set the application use
    level.

    To help preparing application software,the
    password user information byte holds
    information for the programmer. Refer to the
    appendix "Technical Data" for the details.

5   You can allow the owner of each user password to
    boot the system with his own operating system
    diskette / IC card. Tap the cursor fields to select
    Boot-Flex from the menu and then tap the
    SPACE field to select **YES** or **NO**.

6   Define the other user passwords in the same way.

7   If you need help with the password installation, tap the **F1** field to display a help screen. Also the menu screens will display additional instructions and information.

8   If you want to quit the password utility without saving your entries, tap the **ESC** field. Then tap **0** at the **DO YOU WANT TO SAVE** prompt.

9   When you have defined all required user passwords, tap the **ESC** field. On the prompt

```
YOU HAVE MADE CHANGES
DO YOU WANT TO SAVE (1=YES/0=NO)
```

tap **1** and **ENTER** to save and store the defined passwords.

10   The next time you turn on the system, the user password prompt will appear and you must enter the correct password.

How to Change the
User Password

If you want a new password, press the reset button. When the password prompt appears, enter the current user password, tap the **ESC** field, and enter the new password. Tap the **ENTER** field. To confirm the new user password entry, enter the password again and tap the **ENTER** field.

For example, if your current password is OLD and you want NEW to be the password, enter the following commands and tap the **ENTER** field after each.

```
OLD <ESC> NEW
NEW
```

The next time you turn on the system, enter the new password at the password prompt.

How to Change the Master Password

Select **INSTALL/CHANGE PASSWORDS** from the password utility menu and tap the **ENTER** field. In the displayed menu select the field for the master password. Enter the new master password in the same way as if installing a user password.

If You Want No Passwords

The master password owner can use the **ENABLE/DISABLE PASSWORDS** selection of the password utility menu and disable all passwords.

After that, a password prompt will not appear.

What if You Forget the Passwords?

The battery-maintained memory retains the passwords.

If you forget your user password, get a new password allocated by the master.

If you forget the master password, only a service representative can remove the password.

Phone your supplier or service representative for help.

Power Management

The power saving provisions of the system allow you to adjust the power usage to optimize the battery life for your working environment.

With SETUP you can select the following power saving options.

- Reduced processor speed
- Fixed disk drive switched off automatically
- Flash Disk and IC card switched off automatically
- Serial port switched off automatically
- Option board switched off automatically
- System standby
- Suspend mode

You can define the time of system inactivity required to enable a certain power saving mode.

The Suspend mode offers an additional level of reduced system activity that you can also enable manually.

━━━━━━━━━━━━━━

Power Save Modes

In the "Power Control" menu of the SETUP program set the following parameters to meet your requirements.

Power Management - on or off

Processor standby - CPU Standby

System Standby

Auto Suspend

Auto Save

Battery Low Suspend

Device Controls

Refer to the chapter "Running SETUP" for information on how to access SETUP, set the values, and save the changes.

You can also access the "Power Control" menu of the SETUP program by performing the following steps.

1 Press the start/suspend switch.

2 Tap the **Power Control** field on the displayed menu.

Power Management

Enables/disables all defined power management
settings and timers.
Power management for the devices listed in the
"Device Control" section of the screen is available
only, when a time setting is specified for the
respective devices.

Caution   You may loose data when **Power Management** is
disabled, because **Auto Save** is not available and
no warning beep indicates a low battery.

Processor Standby Timer

The **CPU Standby** reduces the processor clock
frequency to 0 MHz after a defined time without
input from the stylus or a keyboard.

System Standby Timer

After a defined time without input from the stylus or a keyboard, **System Standby**

sets the processor clock frequency to 0 MHz,

turns the fixed disk motor off,

switches the flash disk and the IC card off,

switches the display off,

switches the sensor tablet to sleep mode, and

switches serial and parallel input/output off.

To switch the system to the standby mode immediately, tap the **[F2]** field in the "Power Control" menu of the SETUP program.

Auto Suspend Timer

Auto Suspend switches the system to the suspend mode after a defined time without input from the stylus or a keyboard. If **Auto Save** is installed and enabled, the system status is saved automatically before the system switches off.

Battery Low Suspend

When **Battery Low Suspend** is enabled, the system goes to the suspend mode when the battery is low. If **Auto Save** is installed and enabled, the system status is saved automatically before the system switches off.

Device Controls

Set the device control timers to define after how many minutes without input from the stylus or a keyboard the system switches the respective device off. The **Manual** setting disables the power management for the selected device.

To switch a device off immediately, select the **Manual** setting for the respective device and tap the **[F3]** field.

Fixed Disk parks the fixed disk read/write heads and stops the disk from turning if the computer does not access the fixed disk in the defined period of time.

Power Saver reduces the processor clock frequency to 10 MHz and switches the LCD off after the defined period of time.

IC Card switches the flash disk and the IC card off after the defined period of time.

Resuming Normal Operation

Each of the following actions will cause the system to resume normal operation status from the standby modes.

- You tap the display with the stylus.

- You press any key on the keyboard if you have a keyboard connected to your system.

- RTC (Real-Time-Clock) alarm if **Alarm Resume** is enabled.

- Your telephone number is called, if your system is connected to the telephone line with a modem, and **Modem Ring Resume** is enabled.

Auto Save

With **Auto Save** you can save the contents of the system RAM (Random Access Memory) on the fixed disk or flash disk before the system switches off. After starting the system again you can continue working with the same system status where the system was switched off.

When installed, **Auto Save** automatically saves the system status when the battery is low.

To install and run **Auto Save** successfully you must

- set **Power Management** to *On* in the "Power Control" menu of SETUP
- specify an **Auto Save** time setting in the "Power Control" menu of SETUP
- reserve storage capacity on your flash disk or fixed disk for **Auto Save** with **ASVSETUP**

Caution **Auto Save** can restore the system status completely only if all data, including temporary application data, are stored in the system RAM, and not on the fixed disk or flash disk. If you do not configure your applications accordingly, you may loose data when using **Auto Save**.

The **Auto Save** setting in SETUP specifies after how many minutes in suspend mode you want the system to save the system status and switch off completely.

To use **Auto Save**, you must have reserved storage capacity, corresponding to the RAM size of your system, on your fixed disk or flash disk. Use the **ASVSETUP** utility that is provided on the fixed disk or flash disk to reserve disk capacity for **Auto Save**.

To run the **ASVSETUP** utility, enter **ASVSETUP** on the system prompt **C>**.

Note: If you install RAM upgrade memory to your system, you must run **ASVSETUP** again to reserve disk capacity for **Auto Save** according to the new system RAM size.

Caution If you did not reserve storage capacity for **Auto Save** on your fixed disk or flash disk, the system cannot perform the utility, although you may have enabled **Auto Save** during SETUP.

After an unsuccessful attempt to run **Auto Save**, the system resumes normal operation and you may loose data when the battery is low.

Running ASVSETUP on a Fixed Disk System

ASVSETUP will install the hidden file AUTOSAVE.SAV in the root directory of your fixed disk. This file will store the contents of the system RAM when **Auto Save** is used. The user accessible storage capacity of your fixed disk is reduced by the size of your system RAM.

If **ASVSETUP** cannot install the AUTOSAVE.SAV file, a screen message will tell you what to do. Follow the instructions, and then run **ASVSETUP** again.

Auto Save on a Flash Disk System

When the **RAM size** of your system is **the same as**
your **flash disk capacity,** for example, 2 MB RAM
and 2 MB flash disk, you must decide if you want to
use the flash disk for data processing or for
Auto Save.

Consider that **Auto Save** will require all flash disk
capacity; you cannot use the flash disk for normal
data processing any longer.

If you opt for normal data processing, be aware that
Auto Save is not available.

Perform the following steps to prepare your system
for using **Auto Save.**

1 Prepare a complete backup copy of the flash disk
   on removable media.

2 Clear your flash disk for **Auto Save.**
   Run **FFORMAT /K /D.**

3 Run **ASVSETUP** from an IC card or an external
   flex disk.

   ASVSETUP will prepare the flash disk to store the
   contents of the system RAM when **Auto Save** is
   in use.

When your **flash disk capacity exceeds** the **RAM size** of your system, perform the following steps to prepare your system for using **Auto Save**.

1 Prepare a complete backup copy of the flash disk on removable media.

2 Format the flash disk for a storage capacity that leaves flash disk capacity corresponding to your RAM size free of DOS access.

   For example, if your system has 2 MB RAM and an 8 MB flash disk, use the **FFORMAT /6 /D** command to format the flash disk for 6 MB capacity. **Auto Save** will use the remaining 2 MB to store the contents of the system RAM.

3 Re-install the system files, the operating system and your applications to the flash disk.

4 Run **ASVSETUP** from the flash disk, an IC card, or an external flex disk.

   ASVSETUP will prepare the flash disk to store the contents of the system RAM when **Auto Save** is in use.

Suspend Mode

When you switch the system to the suspend mode, it turns off all system components, except of the RAM (Random Access Memory).
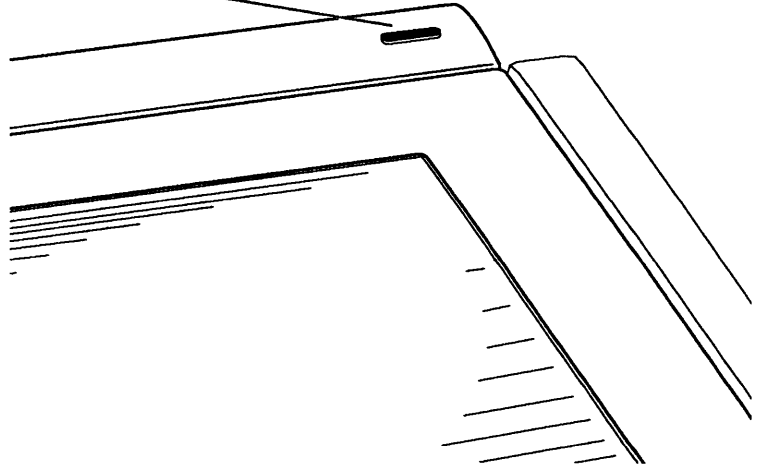
The system goes to the suspend mode

- after a certain period of time without input from the stylus or a keyboard, that you have defined with **Auto Suspend** in the "Power Control" menu of the SETUP program.

- when you tap the **[F8]** field in the "Power Control" menu of the SETUP program.

- when you press the suspend switch and tap the **Suspend Mode** field on the displayed menu.

- when the battery is low and you have enabled **Battery Low Suspend** in the "Power Control" menu of the SETUP program.

Notes: When you have installed and enabled **Auto Save**, the system status is saved automatically after the time that you have set for **Auto Save** in the "Power Control" menu of the SETUP program.

When the system is in suspend mode, the DOS clock is switched off. The PMEXT.SYS driver is provided, and installed in the **CONFIG.SYS** file, to set the DOS clock correctly, when the system resumes normal operation.

suspend switch

The following actions will cause the system to
resume normal operation status from the suspend
mode.

- You press the suspend switch.

- RTC (Real-Time-Clock) alarm if **Alarm Resume** is
  enabled in SETUP.

- Your telephone number is called, if your system is
  connected to the telephone line with a modem,
 and **Modem Ring Resume** is enabled in SETUP.

Using the ac/dc Adapter

The ac/dc adapter supplied with your computer allows you to operate the computer on the mains power and charge the installed battery.

Because the adapter automatically switches to the correct mains voltage (100 - 240 Vac), you can use the ac/dc adapter in other countries, provided you have the appropriate adapter cable.

The illustration shows how to connect the ac/dc adapter to the computer.

The green indicator lamp on the ac/dc adapter shows when the adapter provides dc power at the computer outlet. The amber LED indicates quick battery charge.
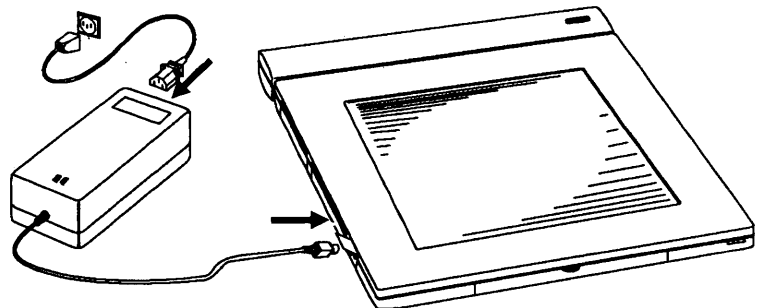
Warning   Use only the ac/dc adapter supplied with your computer. Using a different adapter can damage the computer and/or the battery.

Caution   Keep the ac/dc adapter at least 150 mm (6 inches) away from your computer, or any diskettes, or any IC cards. If not, you may loose data.

Using the Battery

Rechargeable NiCd cells in the battery provide power for the system. The computer is delivered with one battery. Additional batteries are available as options.

You need to charge the battery at the following times.

- Before using the battery with the computer for the first time
- If you did not use the battery for a long time
- If the battery is low

When the Battery is Low

When the battery is low, you hear a warning beep code. If **Auto Save** is installed and enabled, the contents of the system RAM is saved on the fixed disk or flash disk automatically before the system switches off. A second beep code indicates successful saving.

If the **Battery Low Suspend** option of SETUP is enabled, the system automatically switches to the suspend mode.

You cannot resume normal operation without connecting the ac/dc adapter.

Charging the Battery

To charge the battery, leave the battery connected to the computer and connect the ac/dc adapter. Then connect the power cable to the ac/dc adapter and to an electrical wall outlet.

You can charge the battery whether the computer is on or off. It takes approximately two hours to charge the battery completely. The battery has a built-in overcharge protection.

The amber LED on the ac/dc adapter indicates quick battery charge. When the LED is off, although the computer isn't in use, the battery is fully charged.

Warning   **If you connect and disconnect the ac/dc adapter frequently in a short period of time to the system when the battery is fully charged, you may damage the battery.**

A fully charged battery provides approximately four hours of computer use. If your programs use the fixed disk drive intensively, and you do not use the power saving modes, you may need to recharge the battery sooner.

To maximize the charge time your battery supplies, and to avoid the battery memory effect, discharge the battery almost completely before you recharge it.

Note: Battery Memory Effect - If you recharge a battery that still has 60% of its capacity, the result is a battery with only approximately 40% of its original capacity.

Perform the following steps to refresh the battery completely.

1   Disconnect the computer from the ac/dc adapter and operate the system from the battery until the "battery low" warning beeps. Remember to set **Power Management** and **Warning Beeps** to **On** in the "Power Control" menu of SETUP.

2   If you do not use **Auto Save**, save your work in progress (if any) and exit any program that you are using. Then switch off the system.

3   Connect the ac/dc adapter to charge the battery until the amber LED on the ac/dc adapter is off.

Installing the Battery

Engage the locating lugs on the battery into the slots at the rear of computer.

Then push the battery to the right until it fully connects to the computer. To ensure that the battery is fully connected, push the battery lock. Refer to the illustration.
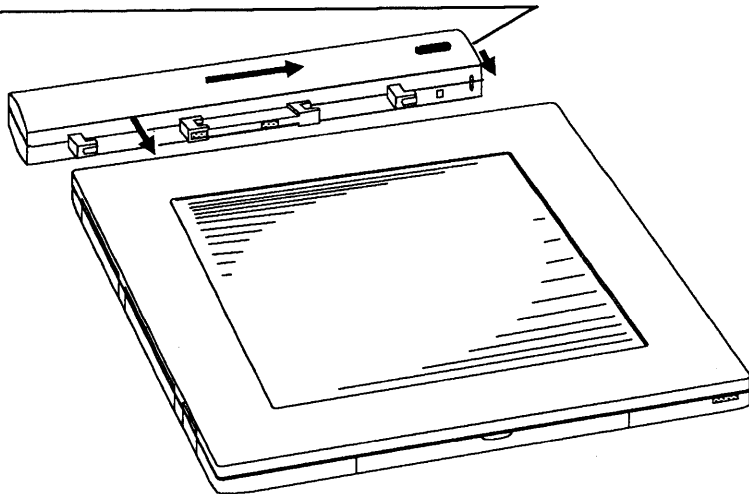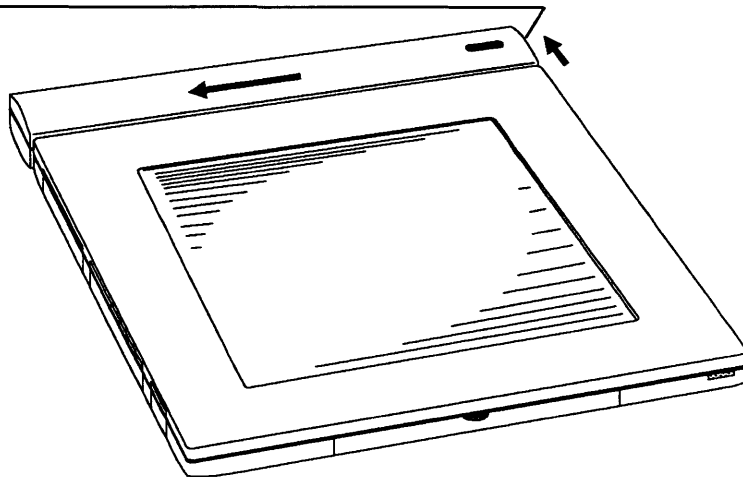
battery lock

Removing the Battery

Shift the battery lock back.

Push the battery to the left until it disconnects, then remove it. Refer to the illustration.

battery lock

Using IC Cards and the Flash Disk

Some models use non-volatile memory on the IC card adapter and removable IC cards, instead of a fixed disk, as mass storage device to read, write, and store data.

Like standard diskettes, this memory keeps the data stored in it until they are deleted or overwritten, even if the system is powered down.

The credit card size IC card memory is an easy removable storage media. It is available in various memory sizes.

With the write-protect switch you can prevent unintended changes to the stored data.

The IC card connects to the system via a standard PCMCIA (Personal Computer Memory Card International Association) connector.

Each IC card and each flash disk must have its own AUTOEXEC.BAT file.

The system doesn't support the following MS-DOS commands when they are applied to a flash disk or IC card. DISKCOPY, DISKCOMP, SYS, FDISK, FORMAT, UNFORMAT, MIRROR, UNDELETE, RECOVER.

To insert an IC card to the system perform the following steps.

1 Open the flap that covers the IC card slot

2 With the label on the IC card facing up and the connector pointing into the computer, insert the IC card into the slot.

3 Push the IC card in until it is securely plugged into the IC card interface of the system.

4 Close the flap.

IC card label

write-protect switch
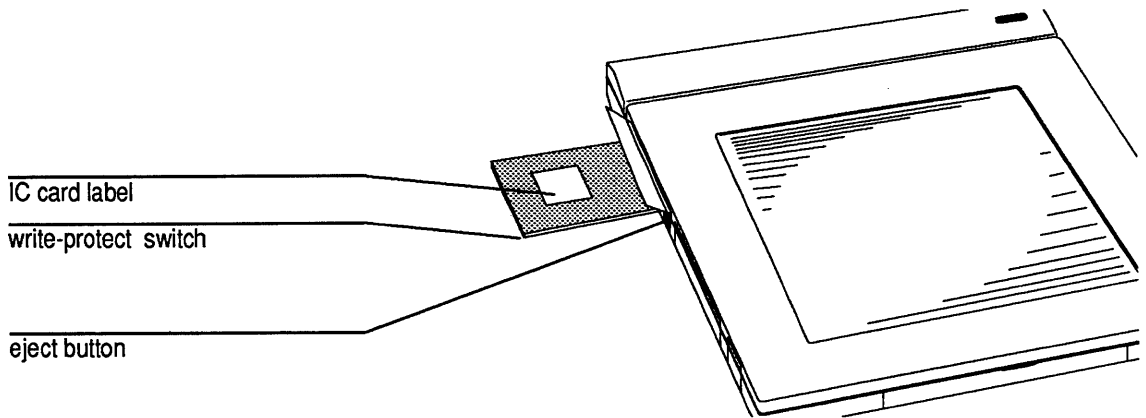
eject button

To remove an IC card, press the eject button. The IC card partially pops out.

Formatting the Flash Disk and IC Cards

To prepare IC cards to accept files, they must be formatted.

Use the **FFDISK** and **FFORMAT** commands that are available on the flash disk (on-board memory of the IC card adapter) to format an IC card.

FFDISK

FFDISK is the format command if you are operating your flash disk and IC card with the MEMCARD.SYS driver. This driver is described later in this section.

Using the **FFDISK** utility is necessary only if you want to prepare an IC card for the PCMCIA standard. Normally only experienced personnel, for example, system administrators, will run this utility.

Caution   **FFDISK** erases all data from the flash disk or IC card, including the factory-installed operating system and utilities. You cannot recover this data without re-installing it from backup media. Make sure that you have a complete backup of all system and utility files.

Note: Before starting **FFDISK** make sure that you know exactly the file and directory structure for your IC card. That means, how many and which files of which size you want in which directory or subdirectory.

The **FFDISK** utility is menu driven. For each menu you can display a help screen with additional information. The following list points out briefly the steps to be performed if you want to prepare an IC card for the operating system and format it.

1   Enter **FFDISK** ↵ on the system prompt **A>** or **C>**, then select **Utility** from the displayed menu.

2   Select **Tree** from the **Utility** menu. In the **Tree** submenu exactly define the file and directory structure that you want for your IC card. Note that you must specify precisely the number of files that you want to copy later to each directory or subdirectory. Save the structure that you have defined.

3   Exit the **Tree** submenu and select **Partition** from the **Utility** menu.

4   In the **Partition** submenu specify your settings
     for partitioning the IC card. Make sure to define
     the partition size so that there is space for all
     files that you want to load to the partition. Save
     the settings that you have defined.

5   Exit the **Partition** submenu and select **Format**
     from the **Utility** menu.

6   In the **Format** submenu select **no system**. Then
     tap the **F5 Start** field and select **load
     directory tree**. Tap the **Enter** field to start
     the formatting.

7   When you see the message **Formatting
     Finished** tap the **Enter** field to enter the
     DOS-Shell. Copy your files to the IC card
     partition according to the file and directory
     structure that you have defined.
     Note: Do not create directories.
               Do not delete files.

8 Enter **EXIT** to exit the DOS-Shell. Tap the **Enter** field when you see the following message.

> **Formatting has been completed successfully**

9 Select **Partition 2** from the **Format** submenu to format the second partition on the IC card, if required.

10 Select **Exit** from the **Format** submenu. Exit the **Utility** menu and select **Exit** from the **Card** menu to exit the **FFDISK** utility.

FFORMAT

FFORMAT is the format command if you are operating your flash disk and IC card with the SCMCARD.SYS driver. This driver is described later in this section.

The parameters refer to the storage capacity of the IC card and if you want to boot the system from the IC card.

The following table lists the valid **FFORMAT** command and parameter entries.

FFORMAT command	Description
FFORMAT /n ↵	formats a n MB IC card
FFORMAT /n /S ↵	formats a n MB IC card as boot device
FFORMAT /n /D ↵	formats the flash disk to n MB capacity
FFORMAT /n /S /D ↵	formats the flash disk to n MB capacity as boot device
FFORMAT /K ↵	erases all data and format information from an IC card
FFORMAT /K /D ↵	erases all data and format information from the flash disk; use for **Auto Save**
FFORMAT /? ↵	displays a help menu
FFORMAT /P ↵	suppresses all FFORMAT display messages; use for batch processing

n = available/desired flash disk/IC card capacity
set n in increments of 1 MB for flash disk
n = 1, 2, 4, or 8 for IC card

For example, to format a 4 MB IC card for using it to boot the system, enter **FFORMAT** /**4** /**S** and **Enter** at the flash disk system prompt (**C>**).

Caution **FFORMAT** erases all data from the flash disk or IC card, including the factory-installed operating system and utilities. You cannot recover this data without re-installing it from backup media. Make sure that you have a complete backup of all system and utility files.

Notes: The flash disk driver uses between 560 KB and 900 KB of the formatted flash disk capacity. For example, a flash disk that was formatted for 2 MB capacity provides 1.44 MB of usable storage capacity.

Each IC card used as boot device, and each flash disk must contain separate **AUTOEXEC.BAT** and **CONFIG.SYS** files.

System Drivers

To address the flash disk and IC cards like normal drives, system drivers are provided on the flash disk. and installed in the **CONFIG.SYS** file of your system.

Two drivers, **SCMCARD.SYS** and **MEMCARD.SYS**, are available.

SCMCARD.SYS

With this driver installed, you can read, write, and erase data to/from the flash disk and to/from IC cards as you like.

Use only "Flash Card"-type IC cards with this driver.

You cannot split the storage capacity into several logical units.

You must install device drivers that use the upper memory area, for example, the EMM386.EXE driver of MS-DOS, so that the memory address area D000 - DFFF is excluded from being used by the drivers.

The **CONFIG.SYS** file must include the following statements.

```
DEVICE=SCMCARD.SYS
SHELL =COMMAND.COM Y: /E:256 /P
```

(**Y** = **C** for flash disk, **Y** = **D** for IC card)

The last entries in the **AUTOEXEC.BAT** file must read

Y:
VECTOR

(**Y** = **C** for flash disk, **Y** = **D** for IC card)

Note: The file **VECTOR.BAT** is provided with each system.

Use **FFORMAT** to format your flash disk or IC card to accept data.

Caution   **FFORMAT** erases all data from the flash disk or IC card, including the factory-installed operating system and utilities. You cannot recover this data without re-installing it from backup media. Make sure that you have a complete backup of all system and utility files.

MEMCARD.SYS

With this driver installed, the flash disk and IC cards work like WORM (write once read multiple) devices according to the PCMCIA standard.

You cannot start your system from an IC card or flash disk that has the MEMCARD.SYS driver installed.

MEMCARD.SYS supports all PCMCIA -standard IC cards of the types "ROM," "RAM," "EPROM," and "Flash." You can write data only to IC cards of the types "RAM" and "Flash."

You can define partitions to split the storage capacity into several logical units.

The **CONFIG.SYS** file must include the following statements.

DEVICE=MEMCARD.SYS
SHELL =COMMAND.COM Y: /E:256 /P

(**Y** = **C** for flash disk, **Y** = **D** for IC card)

You cannot edit, erase, or overwrite single files or directories on the media; you can only remove all data.

To erase all data from a full flash disk or IC card, run the **FFDISK** command from the flash disk to prepare the flash disk or IC card for the operating system and to format your flash disk or IC card to accept data.

Caution   **FFDISK** erases all data from the flash disk or IC card, including the factory-installed operating system and utilities. You cannot recover this data without re-installing it from backup media. Make sure that you have a complete backup of all system and utility files.

Operating the System Safely

Good operating habits prevent damage to the system and loss of important files. The following suggestions will help insure trouble-free operation.

- To ensure long term reliable operation of your computer, please observe carefully the "Environment" data that are set out in the appendix "Technical Data."

- Operating the system in the travel bag provides additional shock protection.

- Locate the system away from direct sunlight and heat ducts. Plug it into an electric circuit with no radio or TV receivers.

- The display/sensor tablet is sensitive against magnetic field changes. Keep the area around the system free from static electricity and magnetic fields. You may loose data, or these forces can scramble programs in the system memory and on the fixed disk. Even jewelry can have magnetic properties.

- Before you touch the system, discharge static electricity on your body by touching a metallic surface.

- Keep food and drink away from the system.

- Don't smoke in the system area.

- Clean the display and cabinet periodically with a slightly dampened cloth. Dust that gets inside the system can adversely affect performance.

- Put IC cards away when not in use. Keep them away from excessive heat and humidity.

- Always switch the computer off and disconnect the power cable before you connect or disconnect external devices, for example, keyboard, display, printer, to or from the computer.

- Since the fixed disk drive is shock-sensitive, move a fixed disk system only when the fixed disk is switched off. Consider to use a RAM disk if you want to process data while moving the system. If you have enabled **Auto Save**, you will not loose the RAM disk data when the battery is low.

Travel Considerations

When moving the system, disconnect peripheral devices, and handle the system and its cables carefully.

The fixed disk drive has an automatic park feature. It does not require special preparation for moving.

Carry the system only in the carry bag.

Take along the ac/dc adapter or fully charged spare batteries.

When traveling to another country, purchase a compatible ac power cable.

When traveling by airplane take your computer into the passenger compartment. Prevent it from being stored in a non-pressurized storage compartment.

Power Cable Instructions

For installation in the United States with a power source of 115 V ac, use an 18 AWG, type SVT or SJT, three conductor power cable with a maximum length of 15 feet and a parallel- blade grounding plug rated 15 A, 125 Vac.

For installation in the United States with a power source of 230 V ac, use an 18 AWG, type SVT or SJT, three conductor power cable with a maximum length of 15 feet and a tandem-blade grounding plug rated 15 A, 250 Vac.

For international installation with a power source of 230 V ac, use a 0.75 mm² PVC sheathed three-core flexible cord, type H05VV-F or H05VVH2-F, with a green/yellow protective earthing conductor electrically connected to the protective earthing terminal within the equipment and connected to the protective earthing contact of the plug. The cable set should have safety approvals for the international installation and be marked HAR.

For pluggable equipment the socket-outlet shall be installed near the equipment and shall be easily accessible.

Chapter 4

Using the LapLink Pen
Data Transfer Program

What is LapLink Pen ?

LapLink Pen is a file transfer utility that lets you connect your handheld computer to another PC, and easily transfer files between the two computers. You can also use it as file manager for managing your local disks and files.

LapLink Pen Manual

This chapter provides only a brief description on how to install and run LapLink Pen with your computer.

Refer to the *LapLink Pen Manual* supplied with the program if you want to learn more about using LapLink Pen. Also refer to this manual for more detailed information on

- how to prepare computers for using LapLink Pen

- customizing LapLink Pen

- using LapLink Pen commands

- interpreting LapLink error messages

Linking the Computers

Before you can start transferring data, you must link
your system with the other computer. In LapLink
terminology your computer will be referred to as the
"local computer" and the other computer will be
referred to as the "remote computer."

To link the computers use the LapLink cable
provided with your system and perform the following
steps.

1   Connect the I/O connector adapter to your system.

-   Open the flap that covers the I/O connector of
    your computer.

-   With the flat side of the I/O connector adapter
    on top, carefully align the connectors on the
    computer and the I/O connector adapter.

-   Push the I/O connector adapter to your
    computer until it is securely connected.

2   Connect the single 9-pin plug at one end of the
    LapLink cable to the serial connector on the I/O
    connector adapter.
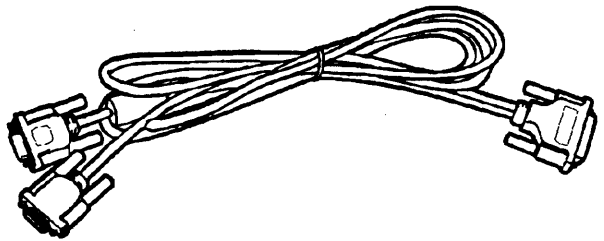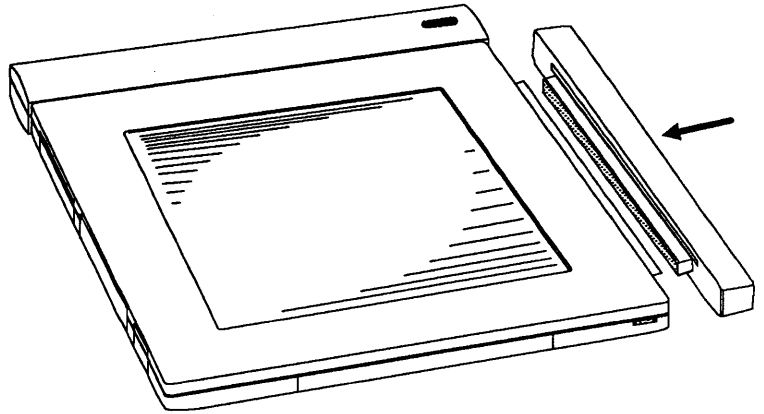
3   Connect the 9-pin or 25-pin plug at the other end of the LapLink cable to the serial connector on the remote computer.

4   Start both computers.

5   Prepare the remote computer. You must have the MS-DOS command MODE available on the remote computer.

6   To check this, enter MODE and press **Enter**.

If you get the error message **Bad command or file name,** log to the subdirectory with the MODE.COM file, or copy the MODE command from a system disk.

If you see an **Invalid Parameters** message, the remote computer is ready.

7   Run SETUP on your computer and set "Serial Port" to **Enabled**.

8   Display the virtual keyboard on your computer.

Type **LLPN** with the stylus and tap the **Enter** field.

The display shows the LapLink Pen menu.

9   Tap the **Connections** field and select **Remote Install** from the drop-down menu. LapLink will ask for the port number used on the remote computer.

Tap the field in parenthesis that is before the appropriate port number.

10   LapLink will prompt you to enter a two line command on the remote computer.

For example, when you have selected *COM1* in step 9, type the following and press **Enter** after each line.

```
MODE COM1:1200,n,8,1,p
CTTY COM1
```

When you have acknowledged the second line, the computer locks. This is normal since your computer now controls the remote computer.

11   Return to your computer.
The system displays a message about the installation of LAPLINK.EXE on the remote computer. On successful installation, both computers display the LapLink Pen menu.

Now the computers are ready to use LapLink Pen.

Using the LapLink Pen Menu

The LapLink Pen menu consists of two windows and the command line.

Windows

The LapLink Pen screen is divided in two windows.
The left window always shows disks, directories, and files on the local computer.
The right window can show local items, or disks, directories, and files on the remote computer.
Drive and directory path are displayed at the bottom of the window.

The active window is surrounded by double lines and shows a highlight bar. Items are always copied from the active window to the opposite window.

To copy files or directories, you select them in the active window and tap **Copy** with the tip of the stylus.

If you tap the **Tree** line near the top of the window, you can see a tree diagram of the current disk. When you tap a branch of the tree, you can see the contents of the directory.

You can display a help window at any time. Tap **F1=Help** in the command line or the question mark (**?**) in the drop-down menus.

Command Line

The command line at the top of the screen displays the possible LapLink Pen command menus. These are **File**, **Disk**, **Select**, **Connections**, and **Options**. Tap the main menu name with the tip of the stylus to display the menu.

Using LapLink Pen Commands

The following tables briefly summarize the functions of the following LapLink Pen command menus.

File

Disk

Select

Connections

Options

For more information see the individual help screens, or refer to the *LapLink Pen Manual*.

File

The **File** menu commands operate on the selected files or directories.

Command	Description
Copy	copies the selected files or directories from one computer to another
Wildcopy	copies multiple files by means of the DOS wild card characters ? and *
Move	copies the selected files or directories from one computer to another, and then deletes the selected item
Copy Size	displays the size of the selected files or directories and the space required for them on the target computer.
Options	set the transmission rate, adjust the colors of your display, speed the copy process, set parameters for the selection of files for copying, among other matters
Delete	deletes the selected files or directories
Rename	renames the selected files or directories
View	displays the contents of a document file on the screen
Exit	quits LapLink Pen

Disk

The **Disk** menu commands are designed for disk management.

Command	Description
Make Directory	creates a new subdirectory within the highlighted directory (*Tree* mode) or open directory (*List* mode)
Change Directory	displays the directory you specify
Tree Mode	switches the display in the active window between *Tree* mode and *List* mode
Synchronize	performs a two way copy between directories so that both directories end up with the same version of each file

Select

Use the **Select** menu commands to quickly select files and directories.

Command	Description
Select By	selects displayed files by matching the name criteria you specify
Select All	selects all the files and subdirectories within the current directory
Select Directories	selects all subdirectories within the current directory
. Select Files	In *List* mode, selects all the files but none of the subdirectories in the current directory
Clear Selections	"deselects" all items, leaving nothing selected
Invert Selections	"deselects" all selected items and selects all items not previously selected
Reselect Copied Items	after copying, selects all previously selected items again

Connections

Use the **Connections** menu commands to copy LapLink Pen software from your computer to the desktop computer, to switch between displaying local or remote files in the right window, and to specify port and communication settings.

Command	Description
Local / Remote	switches the right window between displaying local files or displaying remote files
Remote Install	copies the LapLink Pen software to the desktop PC and starts LapLink Pen
Choose Port	specifies the port that the cable is connected to, and allows you to view and change the communications settings

Options

The **Options** menu commands let you control how to display and copy files, and let you change the colors for the display screen.

Command	Description
Copy /Delete Options	allows you to change settings that control how the **Copy** and **Delete** commands works
File Display Options	allows you to specify which files are displayed in the active window, and to control the order in which they are listed
Setup	changes the colors used to display the screen and further options

Selecting Files and Directories

The bar cursor marks the selected file or directory to which the selected LapLink Pen command will apply.

Tap the window that you want to be the active window.

Tap the drive, directory, or file within a window to select the item.

Chapter 5

Troubleshooting

What to Check if the System Doesn't Work

You can easily resolve many of the problems that may be encountered in the day-to-day use of your system by referring to the following tables.

Perform the activities listed under "Possible Remedy" in the order they appear.

If activity 1 doesn't correct the error, try activity 2. If activity 1 corrects the error, resume using the computer; do not perform activity 2.

If you cannot correct the error, phone your service representative. The symbol of a telephone shown below tells you to phone for help.

☎

Also, refer to your software documentation if you have problems using particular software on this system.

Problem	Possible Reason	Possible Remedy
No prompt at power-on	Battery not installed/ Battery not installed properly	Install battery. Connect battery properly to computer.
	Battery discharged or battery defective	Connect fully charged battery or ac/dc adapter
	Power cables not connected correctly	Insert cables snugly into computer, ac/dc adapter, and wall outlet.
	Power cable is faulty.	Replace cable.
	Display intensity control not set properly.	Check display intensity control.
	Standby mode active or Suspend mode active	**1.** Tap display with stylus. **2.** Press suspend switch. **3.** Press reset button. **Caution** All data stored in RAM will be lost when you reset the system.
	Internal system problem	**1.** Run automatic SETUP **2.** Press reset button **Caution** All data stored in RAM will be lost when you reset the system. **3.** ☎

Problem	Possible Reason	Possible Remedy
Unable to enter data with the stylus correctly	User password set.	Tap in password required.
	Forgot user password	Get new password from master
	Forgot master password	☎
	NumLock, Scroll Lock, or **Caps Lock** set incorrectly	Reset keys on virtual keyboard.
	Stylus buffer full	Wait until present operation is complete.
	Suspend mode active	Press suspend switch.
	Characters/gestures not recognized by system	**1.** Write more clearly **2.** **2.** Check operating system documentation for allowed characters/gestures **3.** Use handwriting training to adapt handwriting recognition of the system.
	Stylus tip worn out	Replace the stylus tip.
	Defective stylus	Use spare stylus.
	Internal system problem	**1.** Run automatic SETUP. **2.** Press reset button. **Caution** All data stored in RAM will be lost when you reset the system. **3.** ☎

Problem	Possible Reason	Remedy
Unable to read from / write to IC card	No operating system installed	Insert IC card with operating system and press reset button. **Caution** All data stored in RAM will be lost when you reset the system.
	IC card not inserted correctly	Insert diskette with label up and connector toward the computer.
	IC card write-protected	Move the write-protect tab if appropriate.
	IC card not formatted	Run **FFORMAT** or **FFDISK**. **Caution** All data on IC card will be lost when using these routines.
	IC card full (WORM)	Run **FFDISK**. **Caution** All data on IC card will be lost when using this routine.
	IC card damaged	Use different IC card.
	Standby mode active or Suspend mode active	1. Tap display with stylus. 2. Press suspend switch. 3. Press reset button. **Caution** All data stored in RAM will be lost when you reset the system.
	Internal system problem	1. Run automatic SETUP 2. Press reset button **Caution** All data stored in RAM will be lost when you reset the system. 3. ☎

Problem	Possible Reason	Remedy
Unable to read from / write to flash disk	No operating system / system driver software installed	Install operating system / system driver software to flash disk from external load device according to operating system manual.
	Flash disk full (WORM)	Run **FFDISK**. **Caution** All data on flash disk will be lost when using this routine.
	Standby mode active or Suspend mode active	**1.** Tap display with stylus. **2.** Press suspend switch. **3.** Press reset button. **Caution** All data stored in RAM will be lost when you reset the system.
	Internal problem with IC card interface board.	**1.** Run automatic SETUP. **2.** Phone the service representative; it may be necessary to replace the IC card interface board, or the main processor board. ☎

Problem	Possible Reason	Remedy
Unable to read from / write to fixed disk	No operating system / system driver software installed	Install operating system/ system driver software on disk from external load device according to operating system manual.
	Fixed disk standby mode active	Wait about 15 seconds to allow the fixed disk to speed up again.
	Standby mode active or Suspend mode active	1. Tap display with stylus. 2. Press suspend switch. 3. Press reset button. **Caution** All data stored in RAM will be lost when you reset the system.
	Internal problem with fixed disk drive, or fixed disk drive interface on main processor board not working properly.	1. Run automatic SETUP. 2. Phone the service representative; it may be necessary to replace the fixed disk drive, or the main processor board. ☎

Problem	Possible Reason	Remedy
Unable to print	Printer not turned on properly	1. Turn on the printer.
		2. Turn on the on-line indicator.
	Printer not plugged into working outlet	Check power plug and outlet.
	Signal cable not connected properly	Insert cable snugly into computer and printer.
	I/O connector adapter not connected properly	Check I/O connector adapter.
	Printer port setting incorrect	Run SETUP to get the printer ports set correctly and enabled.
	Incorrect software configuration	Check that the type of printer installed on your system is correctly identified in your software installation program.

Problem	Possible Reason	Remedy
Undefined problem — unable to continue any processing	Problem with operating system or application	Reinstall operating system / application.
	System not configured properly	Run automatic SETUP.
	Cables are not tightly connected	Check cables and connections.
	ac/dc adapter is overheating Battery is overheating	1. Reposition unit so there is sufficient airflow around it. 2. Phone your service representative. ☎
	Internal system problem	☎

Problem	Possible Reason	Remedy
System "hang-up" while running some application programs (for example, Spread Sheets, External LAN Adapters for parallel ports, etc.)	Power Save Mode settings not compatible with the application	Re-activate the system by tapping the screen with the stylus, then: **1.** Increase settings of CPU Standby and/or System Standby a step at a time until reliable operation is achieved. **2.** Switch CPU Standby and System Standby off. **3.** Switch Power Management completely off. For more information, refer to "Power Management" ☎

Interpreting Error Messages

The power-on diagnostic operates each time you switch on the system or restart it by pressing the reset button. Power-on diagnostic programs test the basic system components.

Failure of a basic system component may cause the system to stop. If the system does not stop, a Morse-type beep code relays the type of error. Write down the pattern of the beep code and give the information to your service representative.

After the VGA and display pass their tests, a
message like

```
Notice!
The CMOS checksum is invalid
Default values will be loaded
Press < any key >
```

appears on the screen if one of the components fails
the test.

Tap the **< any key >** field with the tip of the stylus
to display the SETUP menu.

```
Setup
VGA Setup
Power Control
System Information
Automatic Setup
↑↓ Move [Enter Select] [Esc Exit]
```

Tap the **Automatic Setup** field and then tap
[Enter Select] for automatic SETUP. Automatic
SETUP sets all system configuration data to the
factory-defined default values and starts the system.

This may correct errors caused by invalid system
configuration data setting.

Tap the corresponding field with the tip of the stylus
if you want to set some of the system configuration
data, or the power management timing, according to
your requirements.

If the display shows the message

```
Notice!
The CMOS checksum is invalid
Default values will be loaded
Press < any key >
```

after a manual SETUP, tap the **< any key >** field
with the tip of the stylus to display the SETUP menu.

```
Setup
VGA Setup
Power Control
System Information
Automatic Setup
↑↓ Move [Enter Select] [Esc Exit]
```

Now tap the **Automatic Setup** field and then tap
[Enter Select] to set all system configuration
data to the factory-defined default values and start
the system.

If this does not correct the error, phone your service
representative for assistance.

☎

Chapter 6

Installing Options

Preparing for Installation

Read all installation instructions before you begin.
Separate the parts for each kit you are installing.
Check off each installation procedure as you perform
it for each kit.

Follow the warnings and cautions listed below. They
can protect you and your computer system.

Warning   To avoid electric shock, **switch off the system**
and **unplug the power cable** before you begin
work.
Only disconnect components as directed by
installation instructions.

Caution   Only install kits or options which have been
approved for use with this computer. The
installation of non-approved kits may cause
damage to the equipment and violate local safety
or radio interference regulations. Consult your
service representative or supplier for more
information about the suitability of kits and
options.

- Touch a metal surface to ground yourself before
  you handle boards or components. Static charges
  on your body could damage electronic equipment.

- Do not install options in an area known to
  contain static electricity such as rooms with
  static-inducing carpet.

- Remove the IC card from the computer before you
  install options.

- Hold option-controller boards by the edge and do
  not touch the components.

- Use only shielded cables to make options
  connections. Non-shielded cables may cause radio
  and TV reception interference.

Connecting the
I/O Connector Adapter

1 Open the flap that covers the I/O connector of
   your computer.

2 With the flat side of the I/O connector adapter on
   top, carefully align the connectors on the
   computer and the I/O connector adapter.

3 Push the I/O connector adapter to your computer
   until it is securely connected.

I/O connector adapter

flap
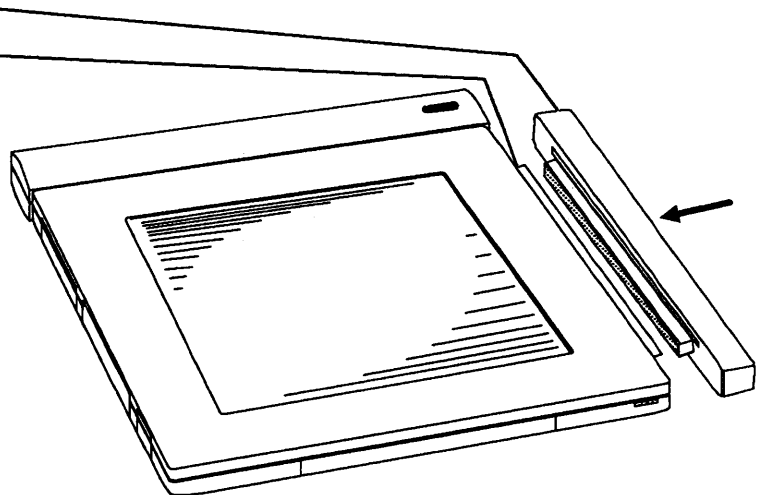
Installing Upgrade Memory

Memory upgrade cards with 4 MB are optionally available. You can install memory upgrade cards only to models with 4 MB of standard system memory.

Perform the following steps to install a memory upgrade card to the system.

1   Open the flap of the stylus compartment.

2   With the label on the memory upgrade card facing up and the connector pointing into the computer, insert the memory upgrade card into the memory card slot.

3   Push the memory upgrade card in until it is securely plugged into the memory card receptacle of the system.

4   The next time you switch on the computer, the power-on routine will automatically recognize the newly installed memory as extended memory. Refer to "Memory Management" in the chapter "Using the System" to decide on a more sophisticated use of the memory.

Note: For using **Auto Save** you must run **ASVSETUP** again after installing upgrade memory to reserve disk capacity for **Auto Save** according to the new system RAM size.

flap of stylus compartment

memory card slot
memory upgrade card
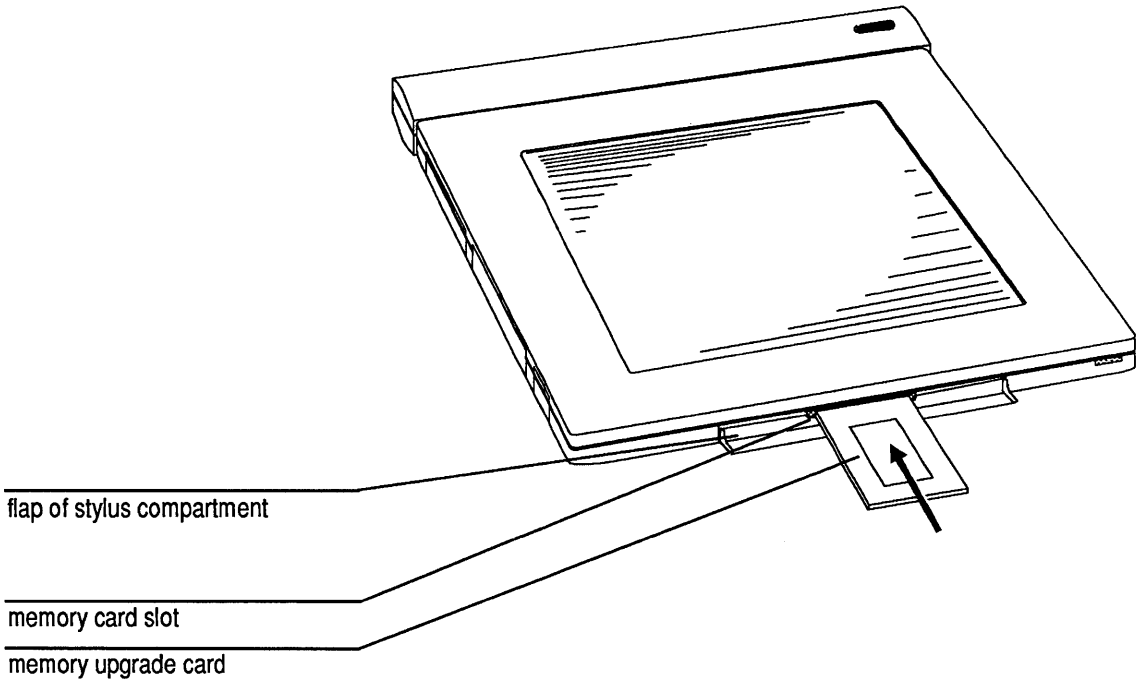
Installing an Option Board

A Fax/Data modem board and a flexible disk
controller board are available as option boards.

Perform the following steps to install an option board
to the system.

1 Remove the cover from the option board slot.

   Keep the flap to cover the option board slot if you
   remove the option board later.

2 With the component side of the option board
   facing up and the connector pointing into the
   computer, insert the option board into the option
   board slot.

3 Push the option board in until it is securely
   plugged into the option board receptacle of the
   system.

4 If you have installed a modem, connect the
   modem to a telephone line. Use a country-specific
   modem cable or an adapter plug.

5 To operate the option board successfully you must
   load appropriate driver software to the system.

option board

option board slot flap
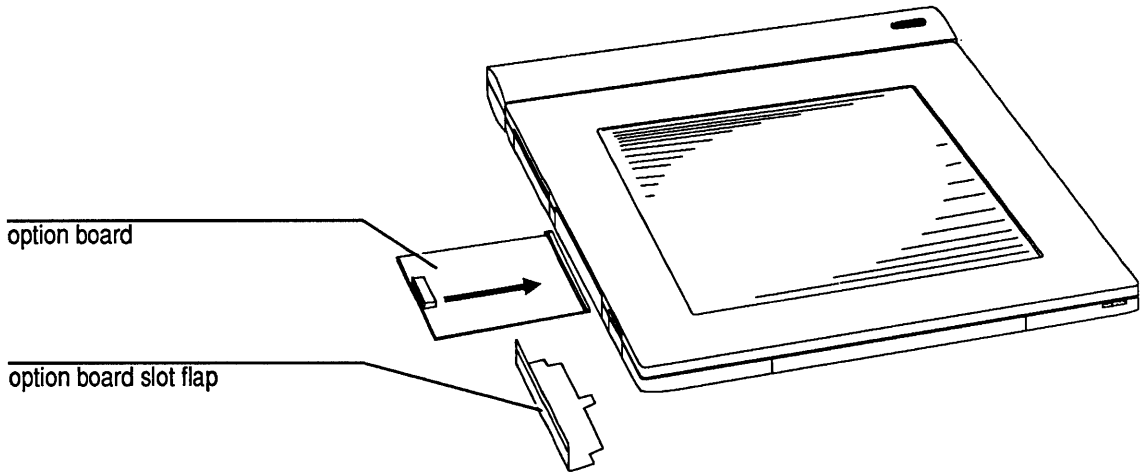
Connecting an External VGA Display

Connecting an external VGA display does not disable the built-in LCD.

Perform the steps listed below to connect an external VGA display.

1   Switch off your computer.

2   Connect the I/O connector adapter.

3   Connect the signal cable of the external VGA display to the VGA connector on the I/O connector adapter and the power cable to a wall outlet.

4   Switch on the external display and start the computer.

5   Adjust brightness and contrast on the external VGA display.

Note: To use VGA features exceeding standard VGA, you must load extra VGA support software to your system.

Appendix A

Technical Data

General Features

80386sl main processor board, 20 MHz

16 KB cache memory

2 MB or 4 MB RAM memory, depending on model

Reflective LCD with sensor tablet, VGA
640x480 pixel, 16 gray shades

180-pin connector for extension unit or I/O connector
adapter

100-pin connector for option board, for example
Fax/Data modem, or flex disk controller

60-pin connector for RAM extension

I/O connector adapter with

9-Pin Serial (RS-232C) connector

25-Pin Parallel (Centronics) connector

6-Pin PS/2 type keyboard connector

15-Pin connector for external VGA display

| **Dimensions** | Height: 28 mm (1.1 in.)
Width: 297 mm (11.7 in.)
Depth: 239 mm (9.4 in.) |

| **Weight** | Approximately 1.5 kg (3.3 lb)

The above weight is typical for a system with the fixed disk drive and the battery installed. |

Environment

Temperature
Operating: 5°C to 35°C (41°F to 95°F)
Storage: -20°C to 70°C (-4°F to 122°F)
Transit: -40°C to 60°C (-40°F to 158°F)

Temperature Change: 10°C (18°F) per hour

Humidity
Relative Humidity: 5% to 95%

Humidity Change: 10% per hour

Altitude
Operating: -60 m to 3000 m
Storage/Transit: -60 m to 12000 m

When travelling by airplane take your computer into the passenger compartment. Prevent it from being stored in a non-pressurized storage compartment.

Acoustical Noise Information

Sound pressure level in operator's ear position ≤ 40 dB(A). Measurement, operating conditions and installation according to DIN 45635.

Protection Against Penetration of Solid Particles and Water

The cabinet is protected against penetration of solid particles and water in compliance with international protection code IP42, IEC/VDE.

Power Requirements

ac/dc adapter
Input Voltage 100 - 240 Vac with 50 - 60 Hz automatic voltage detection

Car adapter
Input Voltage : 10 - 16 Vdc
Output Voltage: 5.6 Vdc at 1.5 A

Storage Media

20 MB AT fixed disk drive or

Non-volatile memory

Flash disk (IC card interface on-board memory), 2 MB or 8 MB, depending on model
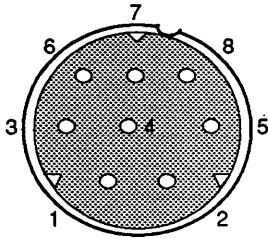
Optional IC cards, 2 MB or 4 MB

Index 34h of the Extended CMOS-RAM.

Password User Information Byte

Bits			
1, 0	**User logged in**		
	00	=	Master
	01	=	User 1
	10	=	User 2
	11	=	User 3
3, 2	**Password Level**		
	00	=	Master
	01	=	Level 1
	10	=	Level 2
	11	=	Level 3
7	**Password Required at Start**		
	0	=	No
	1	=	Yes
4, 5, 6	**Reserved (0)**		

External Connectors Pin Assignments

All connectors are shown viewed from outside of the computer.

Power Connector
8-pin, female

Pin	Signal
1, 2, 7, 8	Power Voltage Input
3, 4	Battery Charging Voltage
5	Charging Indication
6	Ground
Shell	Ground, Shielding

Keyboard Connector
6-pin, female - on I/O connector adapter
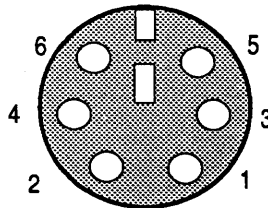
Pin	Signal
1	Data
2	Not Used
3	Ground
4	+5 Vdc
5	Clock
6	Not Used
Shell	Shielding

Display Connector (VGA)
15 pin, female - on I/O connector adapter
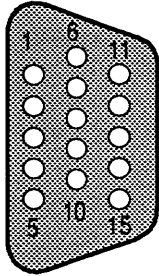
Pin	Signal	Pin	Signal
1	Red Video	9	Not Connected
2	Green Video	10	Digital Ground
3	Blue Video	11	Not Connected
4	Not Connected	12	Not Connected
5	Digital Ground	13	H-Sync
6	Red Ground	14	V-Sync
7	Green Ground	15	Not Connected
8	Blue Ground		

Parallel (Centronics) Connector
25-pin, female - on I/O connector adapter
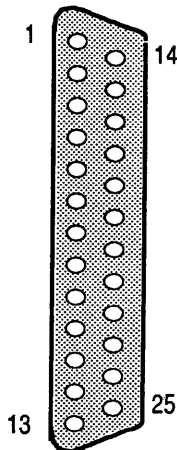
Pin	Signal	Pin	Signal
1	Strobe/	14	Auto/
2	Data Line 0	15	Error/
3	Data Line 1	16	Init/
4	Data Line 2	17	Select In/
5	Data Line 3	18	Ground
6	Data Line 4	19	Ground
7	Data Line 5	20	Ground
8	Data Line 6	21	Ground
9	Data Line 7	22	Ground
10	Acknowledge/	23	Ground
11	Busy	24	Ground
12	PE	25	Ground
13	Select		

Serial (RS-232C) Connectors

9-pin, male - on I/O connector adapter
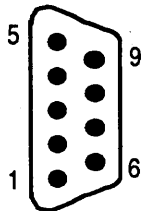
Pin	Signal
1	Receive Line Signal Data
2	Receive Data
3	Transmit Data
4	Data Terminal Ready
5	Signal Ground
6	Data Set Ready
7	Request To Send
8	Clear To Send
9	Ring Indicator

Extension Unit and I/O Connector

```
90                                    41  40                              1
┌────────────────────────────────────┐  ┌────────────────────────────────┐
│                                    │  │                                │
└────────────────────────────────────┘  └────────────────────────────────┘
 180                                  131 130                            91
```
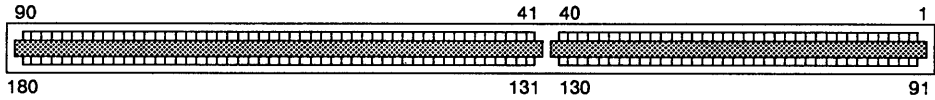
Use	Pin	Signal	Pin	Signal	Use
DC	1	DC IN (5.75 Vdc)	91	/DACK 2	ISA Bus
Power	2	DC IN (5.75 Vdc)	92	TC	Signals
Input	3	DC IN (5.75 Vdc)	93	BALE	
	4	DC IN (5.75 Vdc)	94	LPT DIR	Parallel
	5	DC IN (5.75 Vdc)	95	OSC	ISA Bus
	6	DC IN (5.75 Vdc)	96	GND	
Battery	7	BATT LOD	97	/MEMCS16	ISA Bus
Charge	8	BATT LOD	98	/IOCS16	Signals
Line	9	BATT LOD	99	IRQ 10	(AT-Bus)
	10	BATT LOD	100	IRQ 11	
	11	BATT LOD	101	IRQ 12	
	12	BATT LOD	102	IRQ 15	
Power	13	GND	103	IRQ 14	
GND	14	GND	104	/DACK 0	
	15	GND	105	DRQ 0	
	16	GND	106	/DACK 5	

Use	Pin	Signal	Pin	Signal	Use
Power	17	VCC (+5 V dc)	107	DRQ 5	ISA Bus
Lines	18	VCC (+5 V dc)	108	/DACK 6	Signals
	19	VID (+5 V dc suspend)	109	DRQ 6	(AT-Bus)
	20	+12 Vdc	110	/DACK 7	
	21	-5 Vdc	111	DRQ 7	
ISA Bus	22	SA 9	112	RING (wake up from suspend)	
Signals	23	SA 8	113	/MASTER	ISA Bus
(AT-Bus)	24	SA 7	114	GND	
	25	SA 6	115	RED_VIDEO	VGA
	26	SA 5	116	GREEN_VIDEO (Mono)	Video
	27	SA 4	117	BLUE_VIDEO	Signals
	28	SA 3	118	GND	
	29	SA 2	119	HSYNC	
	30	SA 1	120	GND	
	31	SA 0	121	VSYNC	
	32	/SBHE	122	MS 2 (Monitor Detect)	
	33	LA 23	123	MS 1 (Monitor Detect)	
	34	LA 22	124	MS 0 (Monitor Detect)	
	35	LA 21	125	/SLAVE	IDE
	36	LA 20	126	/PDIAG	(AT-Fix
	37	LA 19	127	/RSTDRV	Disk)
	38	LA 18	128	/HCS1	Drive 2
	39	LA 17	129	/HCS0	
	40	/MEMR	130	EXTERN_SPEAKER	Analog
	41	/MEMW	131	/LPT STROBE	Parallel
	42	SD 8	132	PD 0	Port
	43	SD 9	133	PD 1	(LPT1)
	44	SD 10	134	PD 2	
	45	SD 11	135	PD 3	
	46	SD 12	136	PD 4	
	47	SD 13	137	PD 5	
	48	SD 14	138	PD 6	
	49	SD 15	139	PD 7	
AT-Fix	50	IDED 15	140	/LPT ACK	
Disk	51	IDED 14	141	LPT BUSY	
	52	IDED 13	142	LPT PE	
	53	IDED 12	143	LPT SLCT	
	54	IDED 11	144	/LPT AFD	

Use	Pin	Signal	Pin	Signal	Use
IDE	55	IDED 10	145	/LPT ERROR	Parallel
(AT-Fix	56	IDED 9	146	/LPT INIT	Port
Disk)	57	IDED 8	147	/LPT SLCT IN	(LPT1)
	58	IDED 6	148	GND	
	59	IDED 5	149	VCC	+5 Vdc
	60	IDED 4	150	VCC	
	61	IDED 3	151	TXD	Serial Port
	62	IDED 2	152	RTS	(Com)
	63	IDED 1	153	DTR	
	64	IDED 0	154	RXD	
	65	HD 7	155	RI	
	66	GND	156	CTS	
ISA Bus	67	RST DRV	157	DSR	
	68	P GOOD	158	DCD	
ISA Bus	69	IRQ 9	159	GND	ISA Bus
DC Input	70	V BAT (5...15Vdc)	160	/IO CHCK	Signals
	71	DRQ 2	161	SD 7	(AT-Bus)
Keyboard	72	KBD (data)	162	SD 6	
ISA Bus	73	/OWS	163	SD 5	
Keyboard	74	KBC (clock)	164	SD 4	
	75	GND	165	SD 3	
ISA Bus	76	/SMEMW	166	SD 2	
Signals	77	/SMEMR	167	SD 1	
(AT-Bus)	78	/IOW	168	SD 0	
	79	/IOR	169	IOCHRDY	
	80	/DACK 3	170	AEN	
	81	DRQ 3	171	SA 19	
	82	/DACK 1	172	SA 18	
	83	DRQ 1	173	SA 17	
	84	/REFRESH	174	SA 16	
	85	SYSCLK	175	SA 15	
	86	IRQ 7	176	SA 14	
	87	IRQ 6	177	SA 13	
	88	IRQ 5	178	SA 12	
	89	IRQ 4	179	SA 11	
	90	IRQ 3	180	SA 10	

Glossary

A

ac   Abbreviation for alternating current. It is usually measured in Hertz (Hz). The standard ac value in the U.S. is 120 volts at 60 Hz. The standard international ac value is 240 volts at 50 Hz.

ac Adapter   A self-contained power supply which converts alternating current (ac) to direct current (dc) required by the computer. The ac adapter provides external power to the computer and simultaneously charges the battery. *See also* alternating current, direct current.

Acronym   A word formed from the first letter or letters of the words in a name, term, or phrase.

Adapter   The interface between the computer main processor board and peripheral devices. The term also can be used to indicate a board which acts as an interface. It is also called a plug-in board, controller board, circuit board.

Adc   Amperes direct current.

Address   Each accessible location within a device is assigned a number, which is known as an address. In internal memory, the address is a specific byte number. In external memory, the address is a unit number (for example, drive A) and, for disk or diskette drives, the address may include a track number and a sector number. Your computer is able to locate data using these addresses.

Alpha-numeric   A character set that contains letters, numbers, and punctuation.

Alternating Current   The current available in an ac outlet. *See also* direct current.

Ampere   One ampere (amp) is the basic unit for measuring electrical current.

Application Program   A software program that performs a specific job; these programs include spreadsheets, data bases and word processors.

ASIC   Acronym for application specific integrated circuit. It is a computer chip designed for to perform a specific function.

Asynchronous Communications Interface   A link between two devices that transmits and receives data in a serial manner; that is, a single wire transmitting data one bit at a time and another wire receiving data one bit at a time.

AUTOEXEC.BAT   An MS-DOS batch file that automatically executes a set of commands when you turn on the computer.

Automatic Head Parking   A feature of some fixed disk drives. It automatically moves the drive read/write heads to an unused track when the computer is turned off. This is especially important when you are moving the computer since it reduces the chance of the head contacting the data area on the disk and damaging it.

B

Back Up The process of copying data from one storage medium to another (i.e., diskette to diskette, or fixed disk to diskette) to prevent total information loss should the original record be lost or damaged.

Bad Sector A disk sector that does not reliably hold data because of a problem with the disk or incorrect format parameters.

Bad Track Table Record of which tracks on the fixed disk are damaged and cannot hold data.

Base Memory The section of memory between 0 and 640 Kbytes in which most MS- DOS applications run.

Batch File An MS-DOS file that contains a series of commands which execute automatically when the file is called up. The file must have a .BAT extension.

Binary Code A system of numbering which uses only two values, zero and one. For example, the ASCII letter D is represented as 01000100.

BIOS Acronym for the Basic Input-Output System. It controls the interaction of the main processor board and peripheral devices such as the disk drives, keyboard, and display.

Bit (Binary Digit) One unit of computer data represented by the characters 0 or 1. Bits are grouped to form bytes.

Block   A physical unit of data that can be conveniently stored by a computer on an input or output device. The term is synonymous with physical record of information.

Boot   To load an operating system program into the computer memory. You can boot the computer by pressing the reset button, or by using the **Ctrl-Alt-Del** key combination.

Bootable   A disk that has been formatted and contains an operating system.

Buffer   A part of memory which holds information until the computer or peripheral device is ready to process it.

Byte   A group of bits which form a computer-readable unit which usually represents one character. In your computer, each byte consists of eight bits.

C

Card   The term used to indicate a board which acts as an interface. Also called adapter, plug-in board, controller board, circuit board.

Central Processing Unit (CPU)   The computer's CPU contains the memory, the arithmetic logic (ALU), and the input/output (I/O) control for the system.

CGA   Color Graphics Adapter™ is a type of display adapter and a display. CGA supports monochrome, color, text, and graphic applications.

Chip   An integrated circuit etched into the surface of a wafer, or chip, of silicon. Chips are usually placed in a plastic or ceramic carrier which has pins to make electrical connections with controller board circuits.

Circuit   A complete electronic path.

Circuit Board   A card or board which contains printed circuits. The board is made of an insulating material and components are mounted and interconnected by the circuit conductors.

CMOS   Complementary Metal Oxide Semiconductor. A type of chip that requires little power. In computers, this chip is often battery-powered and stores configuration data.

Coding   The writing of a list of instructions which causes a computer to perform specified operations.

Color Graphics Adapter   A video graphics standard that supports 640 x 200 text and graphics resolutions.

Command   An instruction which tells the operating system what you want to do.

Computer System   The equipment and instructions used as a unit to process data. It includes the central processing unit (CPU), operating system, and peripheral equipment and programs.

CONFIG.SYS   A file that tells MS-DOS what parameters are required to run the system and loads programs called device drivers into memory. It operates as soon as the computer is turned on.

Configuration   The amount and type of hardware in a computer system.

Configuration Memory   A 64-byte memory device that stores the date and time and system configuration.

Controller   A group of circuits etched into a board to send signals from the main processor board to a peripheral. The term also can be used to indicate a board which acts as an interface. Also called adapter, plug-in board, controller board, circuit board.

Coprocessor   A supplementary microprocessor assigned the task of numeric computations in mathematics-intensive operations, thus removing this activity from the central microprocessor.

CPU   See central processing unit.

Crash   A malfunction that brings work to a halt.

Cursor   A moving, sliding, or blinking symbol on a display screen which indicates where the next character will appear.

D

dc   Direct current

Daisy Chain   An adapter interface where the data passes from one peripheral device to another. Most disk drives are connected in daisy chain fashion.

Data   Any information (letters, numbers, symbols) input to, or output from, the computer for storage or manipulation.

Debug   To detect, trace, and eliminate mistakes in computer programs or in other software.

Default   A value or option automatically selected by the computer program when none has been specified.

Delimiter   A character that separates or limits words or values in a line of input. A delimiter is not part of the string of characters it delimits.

Device Driver   A program loaded into memory by the system configuration file, config.sys, so a particular device can work with the system.

Diagnostics   Procedures used to identify and isolate problems within the computer or its peripherals.

Digitizer   See Sensor Tablet.

Diode   An electronic device that permits current flow in one direction and inhibits current flow in the other direction.

Direct Current   A nonalternating current that powers the computer. The ac adapter converts alternating current to direct current required by the computer. *See also* alternating current.

Directory   Names of files or groups of files stored on a fixed disk, flexible diskette, or tape cartridge.

Disk   See diskette and fixed disk.

Disk Drive   The physical unit that reads and writes data from and to a flexible diskette or fixed disk.

Diskette   A thin, flat, round piece of flexible plastic which is coated with magnetic material and placed in a paper or plastic casing. Data is recorded and stored on diskette. Flexible disk, floppy disk, disk, flexible diskette, floppy diskette, floppy, mini disk are all common names used to refer to a removable diskette.

DMA   Abbreviation for Direct Memory Access. A circuit which provides high-speed transfer of data between a device and system memory.

DOS (MS-DOS)   Microsoft's Disk Operating System which allows the computer to store data and work with information in memory.

Drag   Moving the stylus across the screen.

Drive Position   The identification of the physical location in the computer where a mass storage device is installed. Drive positions are designated by numbers or letters. *See also* physical drive.

E

Edit   To rearrange, add, and delete data or programmer's code or change formats.

EGA   Enhanced Graphic Adapter™ is both a type of display adapter and a display. EGA supports text, color, and graphic applications in varied resolutions. It can emulate previous graphics modes including CGA.

Electronics   Pertaining to the application of that branch of science which deals with the motion, emission and behavior of currents of free electrons, especially in vacuum, gas or photo tubes and special conductors or semiconductors. Electronics is contrasted with electric which pertains to the flow of large currents in wires only.

Electronic Ink   The electronic emulation of ink, that allows you to see what you have written on the screen with the stylus.

EPROM   An acronym for Erasable Programmable Read Only Memory. Data etched on an EPROM chip can be erased with ultraviolet light and reprogrammed with special equipment.

Erase   To remove data from a medium, leaving the medium available for recording new data.

Error Message   A message which tells the user what type of error occurred.

Expanded Memory   Memory addressed between standard base memory and 1 megabyte of memory. It is accessed by hardware and software supporting the Lotus/Intel/Microsoft (LIM) Expanded Memory Specification (EMS) Standard.

Extended Memory   Memory above the 1-megabyte boundary that cannot normally be accessed by MS-DOS applications and that is made accessible through special utilities and certain operating systems on 286-, 386- and 486-based computers.

Extension   A one-, two-, or three-letter addition to an MS-DOS file name generally used to identify what type of data file it is.

F

File   A set of related records; the records in a file may be sequenced according to a key contained in each record.

File Name   The name applied to a data file to identify it so that the computer can locate and recall it from a storage device. It can have up to 8 letters and a 3 letter extension.

Fixed Disk   A thin, flat, circular piece of rigid plastic or aluminum coated with a magnetic material for data storage. Fixed disks store more data than flexible diskettes and cannot be removed like flexible diskettes.

Fixed Disk Drive   A mass storage device that reads from and writes to a rigid magnetic disk enclosed in a permanently sealed housing.

Flash Disk   A device to store, read, and write data that is provided by the non-volatile on-board memory of the IC card interface board.

Flexible Diskette   A thin, flat, circular piece of flexible plastic coated with a magnetic material for data storage. Flexible diskettes can be removed from the drive.

Formatted Disk(ette)   A disk(ette) on which track and sector control information has been written by an operating system like MS-DOS.

Function Keys   Keys on the keyboard that can be programmed to perform specific functions.

G

Gestures   Special symbols that you write on the screen, and are used to instruct the system to perform a specific task.

Gray Shades   Levels of display brightness (intensity).

H

Hard Disk   See fixed disk.

Hardware   Physical equipment used in data processing. Used with software, it creates a complete computer system.

Head   A device that reads, records, or erases data on a storage medium, e.g., a small electromagnet used to read, write, or erase data on a magnetic disk.

Head Parking   A procedure where the fixed disk drive read/write heads are moved to an unused track when the computer is turned off. This is especially important when you are moving the computer since it reduces the chance of the head contacting the data area on the disk and damaging it. Disks with automatic head parking do this automatically.

Hertz   A unit of frequency equal to one cycle per second.

Hexadecimal Number   A whole number in the hexadecimal numeral system (using base 16 notation). A hexadecimal digit can be expressed as any one of sixteen different characters.
0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F

Hz   Hertz.

I

IC Card   A removable, credit card-size data storage device that uses non-volatile memory chips to store, read, and write data.

Icon   A pictorial representation.

Illegal Character   A character or combination of bits which is not accepted as a valid or known representation by the computer.

Inactivity Timeout   The period of system or subsystem inactivity before the system or subsystem is affected by Power Management.

Indicator   device which registers a condition in the computer such as an LED which indicates that the power is on.

Initialize   To set counters, switches, and addresses to zero or other starting values in a computer routine. Also, initialize refers to a method of preparing a fixed disk. See low-level format.

I/O   abbreviation for input and output. Input is the data received by the CPU from devices connected to it. Output is data sent from the CPU to other devices.

Interface   A common link between two or more electronic devices or software programs which enables them to transfer information.

Interface Address   An input/output (I/O) port location assigned to a communications device.

Interleave   To arrange a sequence of memory addresses or disk sectors to reduce access time. This allows the system to work efficiently.

Interrupt   A mechanism in the computer for reporting changes in the states of hardware and software resources. These changes cause current processes to be interrupted so the system can give new assignments to meet work-load demands.

J

Jumper   A small mechanical device used to connect/disconnect pairs of pins on a printed circuit board. Jumper settings control specific circuit board operations.

K

Kilobyte (KB)   kilobyte is 1024 bytes. It is commonly abbreviated as K, and used as a suffix when describing memory size in computers. Thus, 24K really means a 24 x 1024 = 24,576 byte memory system.

L

Language   A set of characters, conventions, and rules used to convey information. COBOL, BASIC, and FORTRAN are some common computer languages

LCD   Liquid Crystal Display, a display technique that provides a very flat display unit. Primarily used in portable devices.

Light-Emitting Diode (LED)   An electronic device that can emit visible light. LEDs are often used as indicator lamps.

LIM Standard   The Lotus/Intel/Microsoft Expanded Memory Specification developed to permit access of the memory beyond the 640-Kbyte limit imposed by MS-DOS.

Load   To enter data or programs into storage or working registers of the computer.

Low Battery   A condition under battery-powered operations in which the battery is nearing the end of its operating time.

Logical Drive   1. A portion of a mass storage device that is perceived and treated as an independent physical drive by the operating system. 2. A partition of a physical fixed disk drive. *Contrast with* physical drive. *See also* partition, physical drive.

Low-Level Format   A program that divides the tracks on the fixed disk into sectors. Low-level format sets the disk interleave factor and identifies tracks and sectors that are damaged and should not have data stored on them.

M

MB   See megabyte

MCA   Acronym for Micro Channel Architecture. See Micro Channel

MHz   See megahertz

Main processor board   A printed circuit board that contains the central processing unit and other key elements that form the basis of the computer.

Mass Storage Device   A mechanism that reads, writes, and stores programs and data files. Mass storage devices include diskette drives, fixed disk drives, tape drives, and memory IC cards.

Medium   The material on which data is recorded for input into memory. This includes paper tape, diskettes, disks, magnetic tape, and memory chips. The plural is media.

Megabyte (MB)   A unit of information storage. One megabyte equals 1,048,576 bytes.

Megahertz   A measurement of cycles per second.

Memory   Any device which stores data until needed. In a digital computer, this can include Random Access Memory (RAM) chips or magnetic storage media (disks and tapes).

Memory Caching   A method of copying the most recently used information into fast memory chips for quick access by the CPU.

Menu   A list of possible functions the computer can perform or programs the computer can use. Menu items can be selected by using the arrow keys, a mouse, or another pointing device.

Micro Channel   A computer system expansion bus which provides improved reliability, performance, and ease of option installation.

Micro-Processor   A computer central processing unit (CPU) placed on a single chip.

Modem   A communications device that allows data to be exchanged between computers over telephone lines.

Module   A self-contained unit and can be integrated into a system.

MS-DOS   Microsoft Disk Operating System. MS-DOS as published by NCR is an operating system recommended for this NCR unit.

Multitasking   The ability to run several programs at once.

N

NiCd   Nickel cadmium.

Nickel Cadmium   A rechargeable battery technology commonly used in electronic devices.

Non-Volatile Memory   Memory that keeps the data stored in it until they are deleted or overwritten, even if the system is powered down.

O

Operating System   A software program which controls the overall operation of a computer. It is available to the computer at all times from a fixed or flexible disk drive.

Operating System Prompt   The character or series of characters that appear on the screen requesting input from the user.

Operation   An action specified by a computer instruction or high level language statement.

Option   An add-on hardware device that expands or enhances computer system capabilities (for example, mass storage device, expansion board, coprocessor, or modem).

OS/2 (MS-OS/2)   An operating system developed by Microsoft that supports simultaneous use of multiple programs.

Output   Data transferred from a computer's internal storage unit to some storage or output device.

P

Parallel port   A connector for the data cable of an external device using parallel data transmission. Typically, a printer or plotter uses the parallel port.

Park   A program that sets the read/write head on the fixed disk drive to an unused cylinder so it won't damage data when the computer is moved.

Partition   An area of storage or logical drive on a fixed disk. *See also* logical drive.

Password   A unique string of characters that a program, computer operator, or user must supply to meet security requirements before gaining access to data.

Peripheral   A device which is separate from the computer but works with it, such as a printer, keyboard, or disk drive.

Physical Drive   The actual location of a mass storage device.

Pixel   The smallest unit of video display that is accessible by computer software.

Power Management   The combination of hardware and software features designed to extend the operating time of the battery.

Power-On Self-Test (POST)   A series of diagnostic tests the computer runs to check that basic components are working properly.

Processor   A device or system capable of manipulating data; e.g., CPU (hardware) or compiler (software). A compiler is sometimes referred to as a language processor.

Processor Frequency   The speed at which the processor runs. Normally, the higher the frequency, the faster the computer processes data.

Program   A set of sequenced instructions that direct a computer to perform particular operations.

Q

Quick Charge   A 2-hour external charge to the battery.

R

RAM   Random Access Memory. The type of internal memory of a computer in which data can be written to, read from, erased, or stored in any order. RAM is maintained by electrical current and makes up much of the internal memory.

Read Only Memory   Non-erasable, permanently programmed memory used to store I/O drivers, interpreters, or special application functions. It is not possible to write into ROM memory.

Real-Time Clock/Calender   A device that allows the computer to store the time and date and compute elapsed time between events.

Register   A storage area in memory which holds data of a specified size and intended for a special purpose.

Restore   Procedure used to recover data from a storage device such as a tape cartridge and transfer it back to the disk from which it was originally copied.

ROM   An acronym for Read Only Memory.

Root Directory   The main directory of a fixed disk or flexible diskette. It is created by formatting the disk(ette).

Routine   A set of machine instructions for carrying out a specific processing operation. Sometimes used as a synonym for program.

S

Scroll   To roll lines up or down a display screen to review text or information. Most screens display 25 lines at a time; scrolling is useful in viewing large files of information.

Sector   A section of one track on a disk surface.

Sensor Tablet   A foil attached to the LCD that, with help of emulator software, converts the input from the stylus into keyboard/mouse-type instructions for the processor.

Serial Port   A connector for the data cable of an external device using serial data transmission. Typically, a printer or modem uses the serial port.

SETUP   The program that stores system configuration information.

Software   Programs that control the operation of the computer. Software programs are read into the computer memory from diskette.

Source Diskette A diskette that holds information to be copied to another (target) diskette.

Standby The condition in which the computer is inactive and uses the lowest possible amount of power by shutting down most of the subsystems. Standby can be system initiated or user initiated.

Storage Capacity The amount of data a storage device can hold. Frequently defined in terms of computer words, bytes, or characters.

Strapping Setting switches or jumpers to enable or disable certain system features.

Streaming Tape Drive A tape drive which backs up information as quickly as the fixed disk can transmit it. It is also called a streamer tape drive.

Stylus A special pen that you use to write on the screen.

Subdirectory A directory for programs stored inside another directory.

System See also computer system.

System Prompt The symbol that appears on the display screen to show that the computer is waiting for an action from the user.

System Reset Restarting the computer without turning off the computer power. The system is reset by pressing the reset button, or with a keyboard by pressing and holding the **CTRL** and **ALT** keys while pressing the **DEL** key. Information not saved before resetting the system is lost.

T

Target diskette   A diskette that receives data copied from the source diskette.

Tracks   A series of concentric magnetic rings on a disk or diskette. Data can be written to or read from the tracks by the read-write head.

U

Update   To incorporate new data into a file.

Utility   A general support program that performs a task required by many of the programs using the system.

Utility Routines   Software used to perform some frequently required process in the operation of a computer system.

V

Vac   Volts alternating current; ac voltage

Variable   A quantity that can assume any of a given set of values.

Verify   To determine whether an operation has been accomplished accurately or to check if data is valid.

Virtual Keyboard   A representation of a keyboard that can be displayed on the screen of the system, and used for data input.

VGA   Video Graphics Array™ is both a type of display adapter and a display. It is an analog display which supports text, color, and graphic applications in a variety of resolutions. It can also emulate previous types of display adapters including CGA and EGA.

W

Write   The process of copying data from the computer to a storage or output device.

Write-Inhibit Tab   Tape or tab which covers the write-enable notch on a diskette or IC card to prevent changing the data already on the medium.

Write-Protect   A form of memory protection where a computer program can read data from any area in memory but cannot record data on a protected area.

Writing Window   A window on which you write text, that the operating system translates into electronic data.

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