
Microsoft[®] Mouse User's Guide

Version 8.20

for IBM[®] Personal Computers and Compatibles

Microsoft Corporation

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Introduction

Congratulations on buying the Microsoft® Mouse. Your Microsoft mouse is a hand-held pointing device that helps you use your computer more easily and efficiently. With its speed, accuracy, and simplicity, the mouse will become an indispensable part of your work environment.

You can use the mouse with popular products such as Microsoft Windows™ and applications for Windows. You can also use the mouse with character-based applications such as Microsoft Works and WordPerfect.

You can use your mouse to move or delete text in an instant, insert a value into a worksheet cell, or choose a command on a menu. All you do is point to an area on the screen, and then click a mouse button.

About This Guide

In addition to this introductory material, this *User's Guide* includes two parts: Part One, "Installing the Mouse," and Part Two, "Using the Mouse." Appendixes and an index follow Part Two.

This user's guide explains the two types of Microsoft Mouse:

- Serial-PS/2 version
- Bus (or InPort®) mouse

There is another mouse product—the Microsoft BallPoint™ Mouse, which is a stationary mouse designed for use with laptop and notebook computers. Contact Microsoft or your computer dealer for information about the BallPoint mouse.

Note This *User's Guide* assumes you are familiar with your computer's hardware and with basic commands and procedures for your Microsoft Disk Operating System (MS-DOS®). You may want to keep the documentation that came with your computer and your MS-DOS manuals at hand while you install the mouse.

How to Use this Guide

First read "Connecting the Mouse Hardware" and "Installing the Mouse Software" in Part One. Then, read the section called "The Mouse Control Panel," in Part Two. If you have used a mouse before, you may want to skip most of "Moving the Mouse" in Part Two.

Document Conventions

To help you locate and interpret information easily, this *User's Guide* uses the typographic conventions shown below:

Convention	Used for
bold	Words and characters you type, as well as operating-system commands and switches. Unless told otherwise, you can type either lowercase or uppercase letters or any combination of the two. You should always press ENTER after typing a command. For example, if a procedure instructs you to type setup to start the mouse Setup program, you should type setup in either lowercase or uppercase letters, and then press ENTER.
<i>italic</i>	Placeholders that represent information you must provide.
ALL CAPITALS	Filenames. You can type filenames in either lowercase or uppercase letters.
KEY + KEY	Keynames. Keynames appear in small capitals and are abbreviated (as they are on the keyboard). A plus sign (+) between keynames means that you must press the keys at the same time; for example, "Press CTRL+ALT" means that you press the CTRL key and hold it down while you press the ALT key.

This *User's Guide* and other Microsoft documentation uses specific terms to describe certain movements of the mouse.

Term	Meaning
Click	Point to an item and press the primary mouse button.
Select	Mark an item by clicking it so that a subsequent action can act on that item: "Select the order number from the list box."
Choose	Click an option in a dialog box: "Choose OK or Cancel" or, open a menu and click a command: "From the File menu, choose Open."

Microsoft Support Services

Microsoft offers a variety of support options to help you get the most from your Microsoft product. These options include telephone support, support for the hearing impaired, Microsoft forums on CompuServe, and support outside the United States.

If you have a question about your Microsoft Mouse, first check this guide to make sure that the Mouse is installed correctly. If you still need assistance, contact Microsoft Product Support as explained below.

When you call, the Microsoft Product Support staff can provide better service if you are **at your computer** and if you have the following information and materials at hand:

- The FCC ID number (found on the bottom of the mouse)
- The *Microsoft Mouse User's Guide*
- The make and model of your computer
- An MS-DOS system disk for restarting your computer
- A list of the peripheral devices attached to your computer
- The exact wording of any messages that appeared on your screen
- What happened and what you were doing when the problem occurred
- How you tried to solve the problem

Getting Product Support Inside the United States

Within the United States, you can obtain support as follows.

Call the Microsoft Product Support Staff

You can reach the Microsoft Product Support staff between 6:00 A.M. and 6:00 P.M. Pacific Time, Monday through Friday. If you think your Microsoft Mouse is not working properly, call Microsoft Product Support Services at **(206) 637-7096**. The technicians at this number can help you determine whether the mouse requires repair.

Microsoft's support services are subject to the Microsoft prices, terms, and conditions in place at the time the service is used.

Call Product Support Services for the Hearing Impaired

You can contact the Microsoft Product Support staff with a Telecommunications Device for the Deaf (TDD) by dialing **(206) 635-4948**.

Use the Microsoft Forums on CompuServe

The Microsoft Product Support staff is active on several CompuServe forums. For an introductory CompuServe membership kit specifically for Microsoft users, dial **(800) 848-8199** and ask for operator 230. If you are already a CompuServe member, type **go microsoft** at any ! prompt.

Getting Product Support Outside the United States

Microsoft provides product support services throughout the world. To receive product support or for information on how to receive product support, contact the Microsoft subsidiary office that serves your country. If you bought your mouse outside the United States, a card included with the Microsoft Mouse package lists the subsidiaries and how to reach them.

What You Need to Install and Use the Mouse

Make sure you have the following software and hardware:

- MS-DOS version 2.0 or later
- A personal computer and display adapter. (See “Compatible Hardware,” later in this section, for a list of devices that you can use with the mouse.)

Make sure the following items are included in your mouse package:

- A Microsoft Mouse
- The Setup disk

If you purchased a Serial-PS/2 mouse, your package should also contain the following items:

- A serial-to-PS/2 adapter cable
- A 9-pin-to-25-pin serial adapter
- A 9-pin-to-6-pin mini-din adapter

If you purchased a Bus (InPort) mouse, your package should also contain:

- A Bus Interface board (the InPort device interface)

Note The Serial-PS/2 mouse and the Bus (InPort) mouse are different types of mouse; they are not interchangeable. Also note that the Bus InPort mouse and older versions of the Bus mouse are not interchangeable. The (InPort) interface uses a mini 9-pin circular connector, in contrast, earlier versions of the Bus mouse use a large DB-9 connector and a larger board.

Compatible Hardware

The Microsoft Mouse is designed to be used with the IBM PC family of computers (including the PC, PC/XT, PC/AT, and PS/2) or computers that are 100 percent compatible with MS-DOS.

The mouse hardware and software support the following display adapters:

- IBM monochrome adapter
- Hercules Graphics Card
- IBM color graphics adapter (CGA)
- IBM enhanced graphics adapter (EGA)
- IBM video graphics array (VGA)
- IBM multi-color graphics array (MCGA)
- IBM extended graphics array (XGA)
- Compaq advanced video graphics array (AVGA)
- A display adapter that is 100 percent compatible with one of the adapters listed above

Note The IBM monochrome display adapters can be used only with character-based programs. To run graphics-based programs, you must have a graphics display adapter.

The README.TXT File

The Setup disk in your mouse package may include a file named README.TXT. This file contains additional information that became available after this manual was printed. The mouse Setup program lets you read the README.TXT file during installation. However, if you wish, you can read the file before you run Setup.

To read the README.TXT file on your screen:

- 1 Start your computer.
- 2 Insert the Setup disk into drive A.
- 3 At the command prompt, type

a:readme

A viewer program on the disk displays the information on the screen.

To print README.TXT:

- 1 Make sure your printer is turned on and ready to receive information from the computer.
- 2 At the command prompt, type

copy a:readme.txt prn

The document is sent to the printer.

Radio Interference Information

This device complies with Part 15 of the U.S. Federal Communications Commission (FCC) Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

For more information, see the “Interference Information” page at the end of this guide.

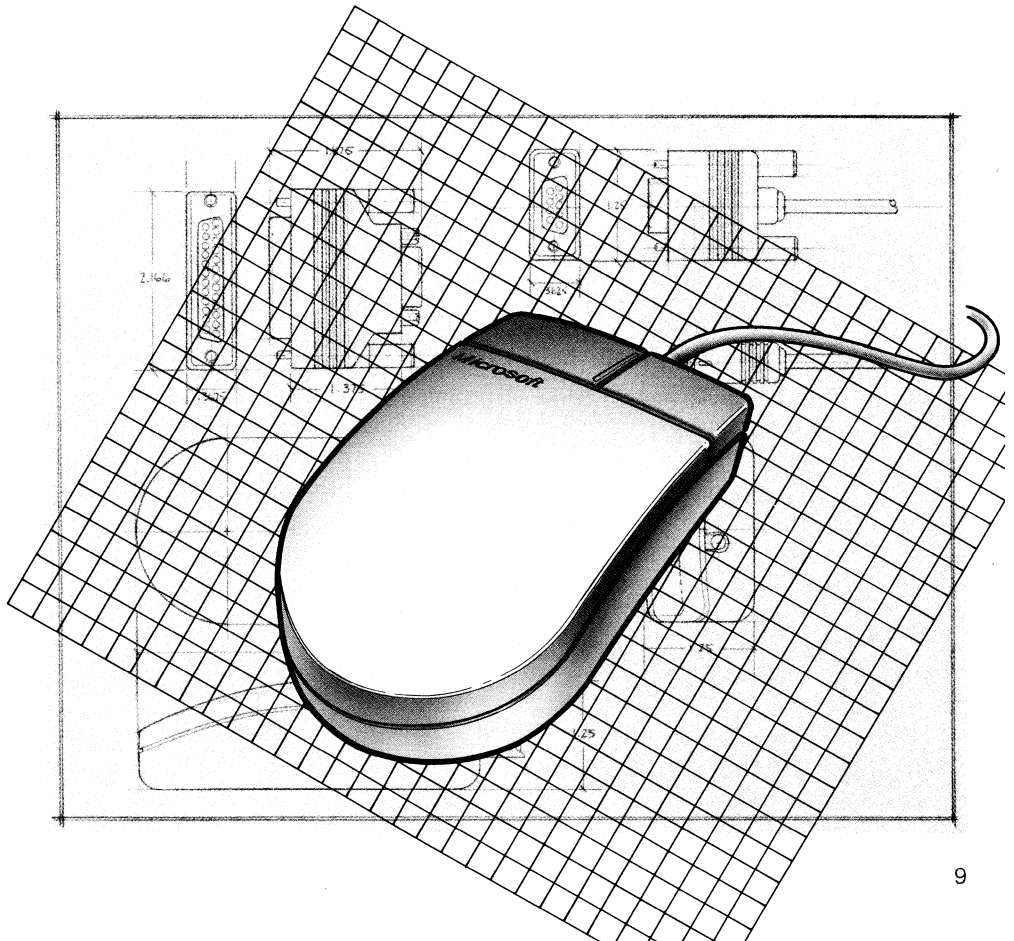
Part One

Installing the Mouse

This part explains how to install the Microsoft Mouse hardware and software. It has two major sections:

“Connecting the Mouse Hardware” explains how to attach the mouse to your computer. If you purchased the Bus mouse, read the instructions for installing the Bus Interface board.

“Installing the Mouse Software” explains how to install and set options for the mouse software.



Connecting the Mouse Hardware

If you have a Serial-PS/2 mouse, follow the instructions under “Installing the Serial-PS/2 Mouse” later in this section. If you have a Bus (InPort) mouse, follow the instructions under “Installing the Bus Interface Board” later in this section.

Note The Serial-PS/2 mouse and the Bus (InPort) mouse are different types of mouse; they are not interchangeable. Also note that the Bus (InPort) mouse and older versions of the Bus mouse are not interchangeable. The InPort interface uses a small 9-pin circular connector, in contrast to earlier versions of the Bus mouse which use a large DB-9 connector and a larger board.

You can connect more than one mouse to your machine. If you do so, you indicate which mouse you want to use by typing a command-line switch or by changing the setting in the MOUSE.INI file. See Appendix A, “The MOUSE.INI File,” for details on settings and command-line switches. Note that you can only use one mouse at a time.

Installing the Serial-PS/2 Mouse

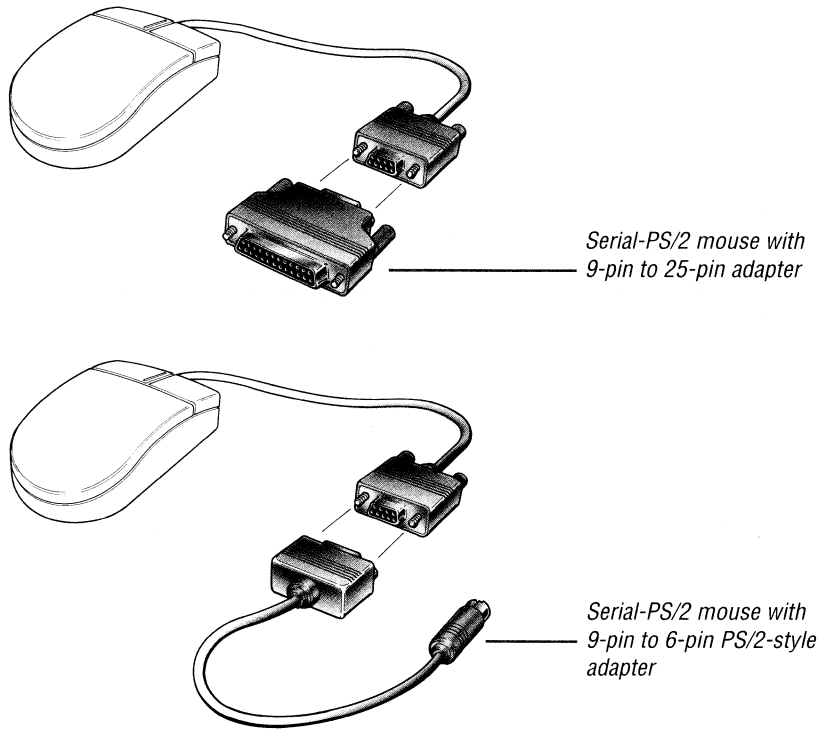
If you have an IBM PS/2 computer, you can attach the Serial-PS/2 mouse to either the serial port or the PS/2 mouse port. In most cases, you’ll want to use an available PS/2 mouse port and leave your serial port available for another device.

Cables and Adapters

The Serial-PS/2 mouse is a serial device with a 9-pin connector (also referred to as a DB-9 connector). If you’re connecting the Serial-PS/2 mouse to a serial port that has a 9-pin connector, it will connect directly.

If you’re connecting the Serial-PS/2 mouse to a serial port that has a 25-pin connector, then use the supplied 9-pin to 25-pin adapter to attach the cable to your computer.

If you’re connecting the Serial-PS/2 mouse to a PS/2-compatible mouse port, use the supplied 9-pin to 6-pin mini-din PS/2-style adapter to attach the cable to your computer.

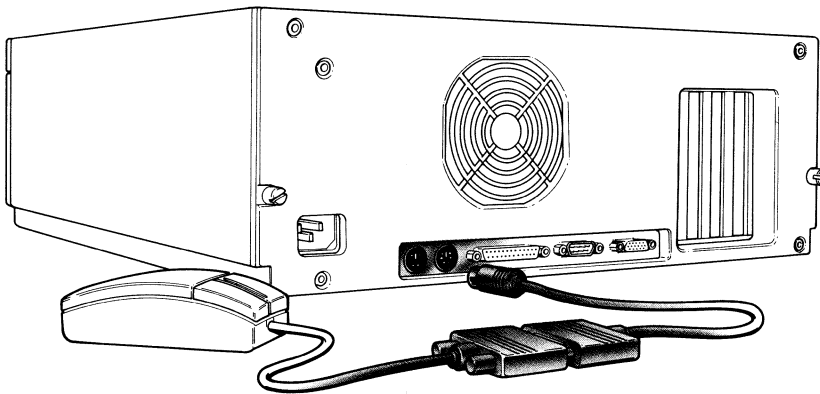
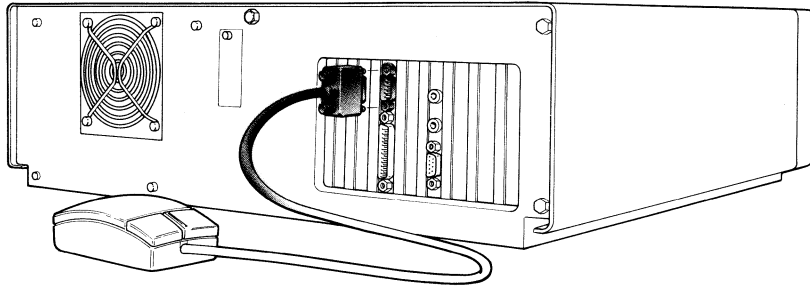


The Serial-PS/2 mouse

The first illustration below shows the Serial-PS/2 mouse connected directly to a 9-pin serial port. The second illustration shows the Serial-PS/2 mouse connected to a PS/2-style mouse port using the 9-pin to 6-pin adapter.

Warning Always turn your computer off before connecting or disconnecting your mouse.

If you have a Serial-PS/2 mouse, disconnect the system power and connect the mouse to your computer as shown below. Then you can skip the rest of this section, and turn to “Installing the Mouse Software.”



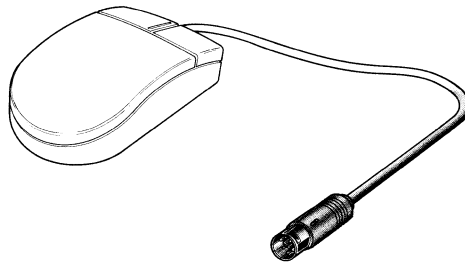
The Serial and PS/2-style mouse connections

Installing the Bus Interface Board

Before you handle the Bus Interface board, discharge any static electricity from your body by touching any bare, grounded metal on the back of your computer's system unit. As you work, avoid contact with materials that create static electricity, such as plastic, vinyl, and Styrofoam.

The Bus Interface board is a Microsoft InPort device interface. The Bus (InPort) mouse and older versions of the Bus mouse are not interchangeable. The InPort interface uses a small 9-pin circular connector, in contrast to earlier versions of the Bus mouse which use a large DB-9 connector and a larger board.

Warning Always turn the computer off before connecting or disconnecting your mouse.

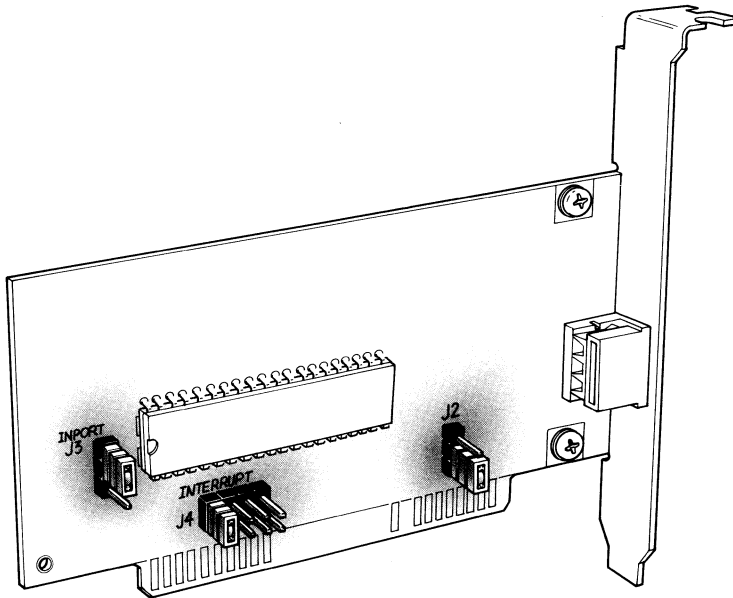


The Bus mouse

The Bus Interface Board Jumpers

The Bus Interface board has three jumpers. These jumpers must be set properly for the mouse to work correctly with your computer and the peripheral devices attached to it. You may not need to adjust the jumpers, but you should read this section carefully to determine how the jumpers are set and which jumpers affect which computer functions.

Each jumper is a plastic block with a small removable plastic hood that fits over a pair of pins on the block. The three jumpers on the Bus Interface board are labeled “J2”, “J3”, and “J4”. The following figure illustrates the position of each of these jumpers on the Bus Interface board that came with your mouse. The actual appearance of your board may vary slightly from this illustration, but it will work as described in this guide.

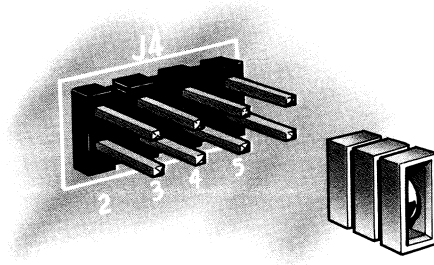


The Microsoft Bus Interface board

Setting the J4 Interrupt Jumper

Interrupts are temporary breaks in the sequence of a program caused by various input/output devices such as keyboards, drawing devices, and printers. Generally, two devices connected to the same computer should not use the same interrupt level. You must specify a mouse interrupt that does not interfere with the other devices connected to your computer. The interrupt settings used by the mouse are controlled by jumper J4.

Jumper J4 has four positions labeled “2”, “3”, “4”, and “5”, from left to right. The jumper is preset with the removable hood covering position 2.



The J4 jumper

Use the following list to determine how you should set jumper J4. Read the list and circle or cross out the positions you cannot use due to the type or configuration of your system. You can then position the removable plastic hood on any position not on the list.

Note The following list does not include every system type or configuration possible. If you have any problems, see “Microsoft Support Services,” in the Introduction of this *User’s Guide*.

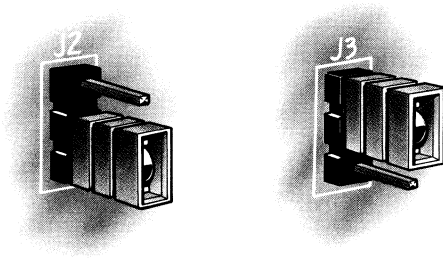
If you have	Do not use jumper position
IBM PC/AT or compatible (286, 386, or 486)	2
IBM PC, PC/XT, or compatible (with a hard disk)	5
Serial Communications Adapter: 1st serial port (COM1:)	4
Serial Communications Adapter: 2nd serial port (COM2:)	3
IBM Enhanced Graphics Adapter	2
Some Video Graphics Adapters	2
IBM Network Adapter	2

Setting the J2 Jumper

If your computer is an IBM PC/XT and you want to install the Bus Interface board in slot 8 of your computer's system unit, you must change the setting of the J2 jumper. Slot 8 of an IBM PC/XT is the slot farthest to the left when you face the back of the system unit.

To change the setting of the J2 jumper:

- 1 Find the 2-position jumper block labeled "J2".
- 2 Move the removable hood so that it covers the top two pins (labeled "XT SLOT 8").



The J2 and J3 jumpers in default positions

Setting the J3 Jumper

If you have more than one InPort device installed in your computer, you must specify one InPort device as the primary InPort-device interface and the other as the secondary InPort-device interface. Jumper J3 is preset to specify the Bus Interface board as the primary InPort device interface. When the primary InPort jumper is set, the I/O address used is 23Ch-23Fh. This setting is correct for most systems. But if you need to make the Bus Interface board the secondary InPort, use the following procedure to change jumper J3.

To specify the primary and secondary InPort device interface:

- 1** Find the 2-position jumper block labeled “J3”.
- 2** Move the removable hood so that it covers the lower two pins (labeled “SEC.INPORT”).

This setting indicates that the Bus Interface board is the secondary InPort device installed in your computer. When the secondary InPort-device jumper is set, the I/O address used is 238h-23Bh.

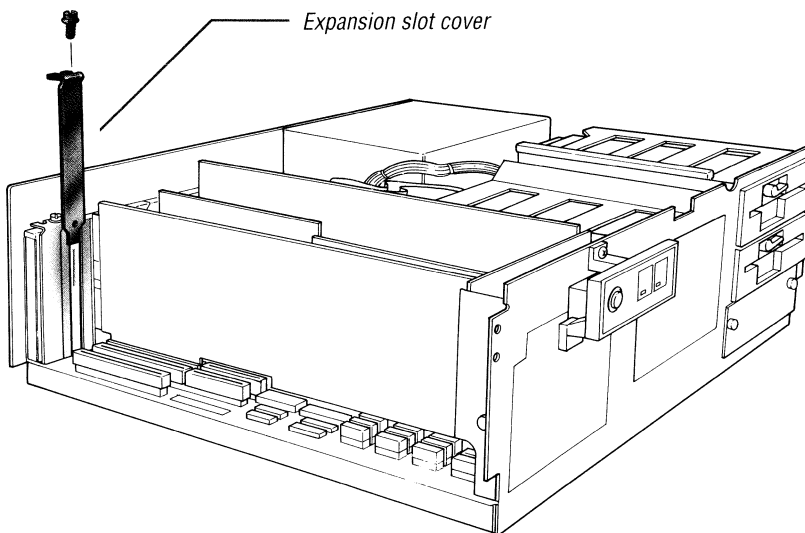
- 3** When you install the mouse driver, use the /I2 switch on the mouse command line.

For information on mouse command-line switches, see Appendix A, “The MOUSE.INI File.”

Warning Always turn the computer off before opening it.

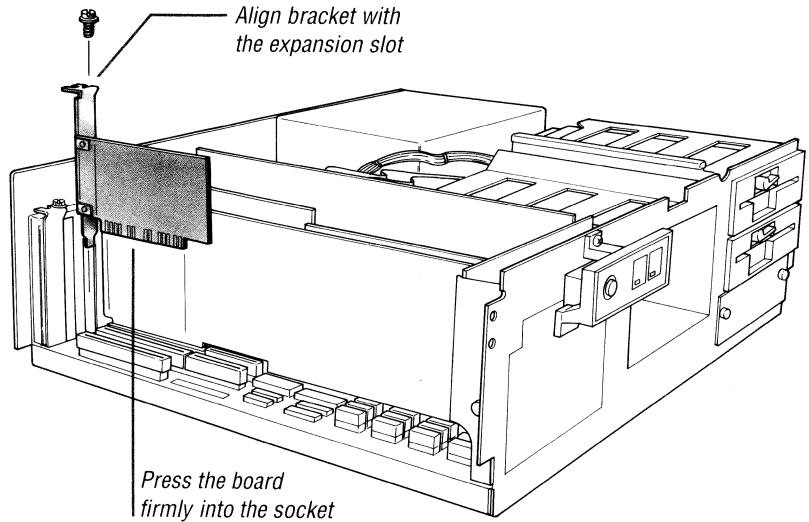
To install the Bus Interface board in your computer:

- 1 Adjust the Bus Interface board jumpers, if necessary, as described in the proceeding sections.
- 2 Turn off your computer and all devices attached to your computer (for example, your printer and monitor).
- 3 Discharge static electricity from your body by touching any bare, grounded metal on the back of your computer's system unit.
- 4 Turn the system unit so that the back of the unit faces you. You may need to disconnect the power cord and any other cables from the back of your computer to gain access to the back panel.
- 5 Remove the system unit cover. If necessary, refer to the user's guide for your computer.
- 6 Locate the expansion slots at the rear of the system unit and choose any unused slot. Refer to the user's guide for your computer to determine how the expansion slots are numbered.
- 7 Remove the screw that secures the expansion slot cover to the system unit. Save the screw to secure the Bus Interface board's metal retaining bracket. Then remove the slot cover.



Removing the expansion slot cover

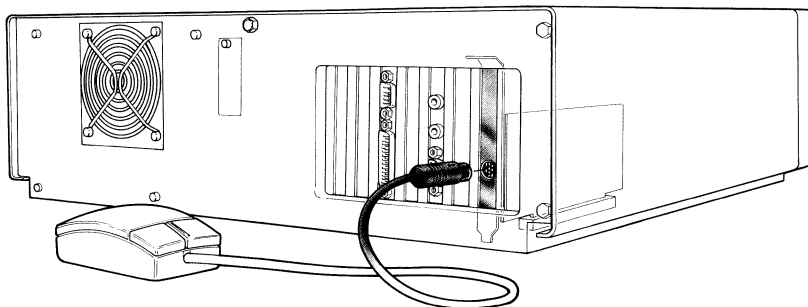
- 8 Align the hole on the retaining bracket of the Bus Interface board with the hole on the top of the expansion slot, and align the gold-striped circuit board edge-connector with the expansion slot socket. Press the board firmly into the socket.



Installing the Bus Interface board

- 9 Make sure the slot on the top of the metal retaining bracket lines up with the hole on the top of the expansion slot.

- 10** Attach the mouse connector to the circular port on the Bus Interface board. Replace the screw you removed from the expansion cover slot.



Connecting the mouse to the Bus Interface board

- 11** Replace the system-unit cover. Reconnect any cables you removed and turn on your computer and any peripheral devices connected to your computer.

You are now ready to install the mouse software as described in the section “Installing the Mouse Software,” later in this guide.

Installing the Mouse Software

Like most hardware products you use with your computer, the mouse needs software to make it run. The Setup disk that came with your Microsoft Mouse includes the software you need to set up and use the mouse.

Note If you plan to install the mouse and Windows, install Windows first and then install the mouse software.

Making a Backup Copy of Your Setup Disk

Before you begin, make a backup copy of your disk. You should use the backup disk as your working copy.

To make a backup copy of your disk:

Copy the disk using your operating system's **diskcopy** command (see your MS-DOS manual for detailed instructions on how to use this command).

Label the backup disk and store the original disk in a safe place.

The Setup Program

You can use the Setup program in either MS-DOS or Windows (versions 3.0 or later). The Setup program installs several files to your hard disk or to a floppy disk that contains the MS-DOS system files. These files include:

Filename	Description
MOUSE.COM	MS-DOS mouse driver
CPANEL.EXE	Mouse Control Panel for MS-DOS
MOUSE.DRV	Windows mouse driver
POINT.EXE	Mouse Control Panel for Windows
MOUSE.INI	Mouse settings file
README.TXT	Additional release notes

Note To save disk space, most of the files on the Setup disk are in a compressed format. The Setup program decompresses these programs when it copies them to your disk. Compressed files are denoted with a dollar sign (\$) in the filename extension; for example, MOUSE.COS.

Required Files

The mouse driver (MOUSE.COM and MOUSE.DRV for Windows) is the file that lets the mouse work with your computer. The updated driver included on the Setup disk allows either a Microsoft Mouse or a Microsoft BallPoint Mouse to work with your system. If you have either of these pointing devices connected to your system when the driver is loaded, the system automatically recognizes the device you are using.

The Mouse Control Panel (CPANEL.EXE for MS-DOS and POINT.EXE for Windows) lets you customize the way the screen pointer responds as you move the mouse. The Mouse Control Panel lets you set the mouse buttons, mouse acceleration, and sensitivity. You can also set pointer options that make the pointer more visible.

Conserving Disk Space

If you need more disk space, you can delete the CPANEL.EXE file, the README.EXE, and README.TXT files from your disk after completing Setup. You can also use the Setup program's Confirm Choices screen to tell Setup not to copy the Mouse Control Panel onto your disk.

Other Files on the Setup Disk

The Setup disk also includes the MOUSE.SYS file. This file is a mouse device driver designed to be loaded from within the CONFIG.SYS file. It is provided for configurations in which the mouse must be loaded first. Note that once it has been loaded, MOUSE.SYS is not removable from memory.

MOUSE.SYS and certain other files are not necessary for most configurations, so the files are not automatically copied during setup.

Deleting Older Versions of the Mouse Driver

If you install the new mouse driver into the same directory where an old mouse driver is located, the Setup program replaces the older version automatically.

If you have an older version of the mouse software on your system and the directory that includes the older version is included in your PATH, delete that directory from the PATH statement. Leaving the directory in the PATH may cause the older files to be found when you enter mouse commands at the MS-DOS command line. In general, it's best to delete older versions of the mouse software from your system. Use a text editor to remove the older directory from the PATH statement in your AUTOEXEC.BAT file.

PATH Modifications

You have the option in Setup to add the mouse driver to the path statement in your AUTOEXEC.BAT file so that the mouse driver loads automatically when you start your computer. However, if you have a long path statement in your AUTOEXEC.BAT file, you may not want Setup to add the mouse directory to your path because MS-DOS limits the path to 127 characters.

Some systems may not start properly if the AUTOEXEC.BAT file being used contains a PATH statement that is too long. If this occurs with your system, restart the computer using a system disk (MS-DOS boot disk) and edit the PATH statement so that it contains fewer than 127 characters.

Running the Setup Program

You can run the Setup program in either MS-DOS or Windows (versions 3.0 or later). Once you start the Setup program, complete instructions for each option are provided on your screen. Use PAGE UP and PAGE DOWN to scroll through the instructions on the screen.

Note Setup may not work properly if you have used the MS-DOS append command. If the append command is in effect, remove it before running Setup by typing **append;** at the MS-DOS command prompt (include the semicolon).

To run Setup:

- 1 Start your computer.
- 2 Insert the Setup disk into the disk drive.
If you're running Setup from MS-DOS, skip to step 4.
- 3 If you have Microsoft Windows 3.0 or later, start Windows. From the Program Manager's File menu, choose Run.
- 4 Specify the disk drive, and type **setup**. For example, type **a:setup** if the disk drive you're using is drive A.

When you complete the Setup program, you are ready to use the mouse with your applications. Turn to Part Two, "Using the Mouse," for details on using the mouse and information on the Mouse Control Panel.

Note If you change your system's configuration after you have installed the mouse software, you may need to run Setup again to set up the mouse software for the new configuration.

Running Setup in Windows 3.0 or later

The Setup program automatically installs support for Windows 3.0 or later (Windows 3.X) by copying an updated Windows mouse driver (MOUSE.DRV). Setup also copies the Mouse Control Panel for Windows (POINT.EXE) and an online Help file onto your system.

The Setup program installs a mouse program group in Program Manager. This group includes icons for the README.TXT file and the Mouse Control Panel. You can double-click on the README.TXT to view the README.TXT file. You can also move the mouse program items into other program groups in Program Manager. For more information on program items and groups, see the *Microsoft Windows User's Guide*.

In Windows 3.1, the Setup program also integrates the mouse group into the Windows Control Panel.

Loading the Mouse Files Manually

When you're running the Setup program, you can choose to modify your AUTOEXEC.BAT file so that the mouse driver loads automatically every time you start your computer. If you choose to let Setup make this modification for you, the line "mouse" is added to your AUTOEXEC.BAT file. If you are installing the mouse software on a hard disk, you can also choose to add the mouse file to the **path** command line in your AUTOEXEC.BAT file.

If you do not want Setup to modify your AUTOEXEC.BAT file, load the software using MS-DOS (not Windows). You must type **mouse** at the MS-DOS prompt each time you start your computer in order to load the mouse driver.

If you choose not to have Setup modify your **path** command line, you will have to switch to or specify the directory containing the mouse driver to load it from the MS-DOS command prompt. For more information on the **path** command, see the explanation in your MS-DOS manual.

Note If Setup cannot find your AUTOEXEC.BAT file, it creates the file and inserts the necessary mouse commands.

Installing the Mouse for Additional Configurations

If you are installing the mouse software and you use a network, you may need to make sure that the network software loads before the mouse software. After running the Mouse Setup Program, check the order in which the files load in your AUTOEXEC.BAT file and change it if necessary.

The Setup program includes a feature that checks to see what version (if any) of Windows you are using. If you are using any version of Windows 3.X, the Setup program copies the files necessary for mouse support onto your system. If you are using any version of Windows 2.X, see the README.TXT for instructions on installing the mouse software.

Single-Drive Floppy Disk Systems

The Setup program supports only hard disk systems and floppy disk systems with two drives. If you are installing files onto a floppy disk system that has only one drive, you must decompress and copy the files manually. A file decompression program, EXPAND.EXE, is provided on the Setup disk for this purpose.

To install using a single-drive floppy disk system:

- 1 Start your computer.
- 2 Insert the Setup disk into drive A, and at the command prompt, type
expand mouse.co\$ b:mouse.com
- 3 When prompted by MS-DOS, remove the Setup disk and insert your destination disk.
- 4 Reinsert the Setup disk in the drive and type
expand cpanel.ex\$ b:cpanel.exe
- 5 When prompted by MS-DOS, remove the Setup disk and insert your destination disk.
- 6 To load your mouse driver, type
mouse
- 7 Run the Mouse Control Panel to set up pointer options, if desired. To start the Mouse Control Panel, type
cpanel.

If You Encounter Problems After Running Setup

If you see the message “Driver not installed; Microsoft Mouse not found” after running Setup and restarting your system, you may have a problem with your system hardware or the mouse hardware. Check that you installed the mouse hardware correctly before continuing.

If your mouse is attached to a serial port, ensure that your serial port is configured correctly as specified in your computer manufacturer’s installation guide. Make sure that non-IBM serial adapters are configured to be 100 percent compatible. Your port should be configured to conform to IBM standard RS-232C. (Serial port COM1 should use interrupt IRQ4, and COM2 should use IRQ3.) If those interrupts are being shared by other devices, then the mouse won’t work.

If you have a Bus mouse, ensure that the Bus Interface card jumpers are set correctly, and that no other peripheral boards use the same I/O address or interrupt.

If, after checking the mouse installation and restarting your computer, you still receive the error message, you may want to try installing the mouse on another system (to determine whether the problem is with the mouse or the system). If you still have problems, see the “Microsoft Support Services” section in this manual for instructions on getting product support.

Part Two

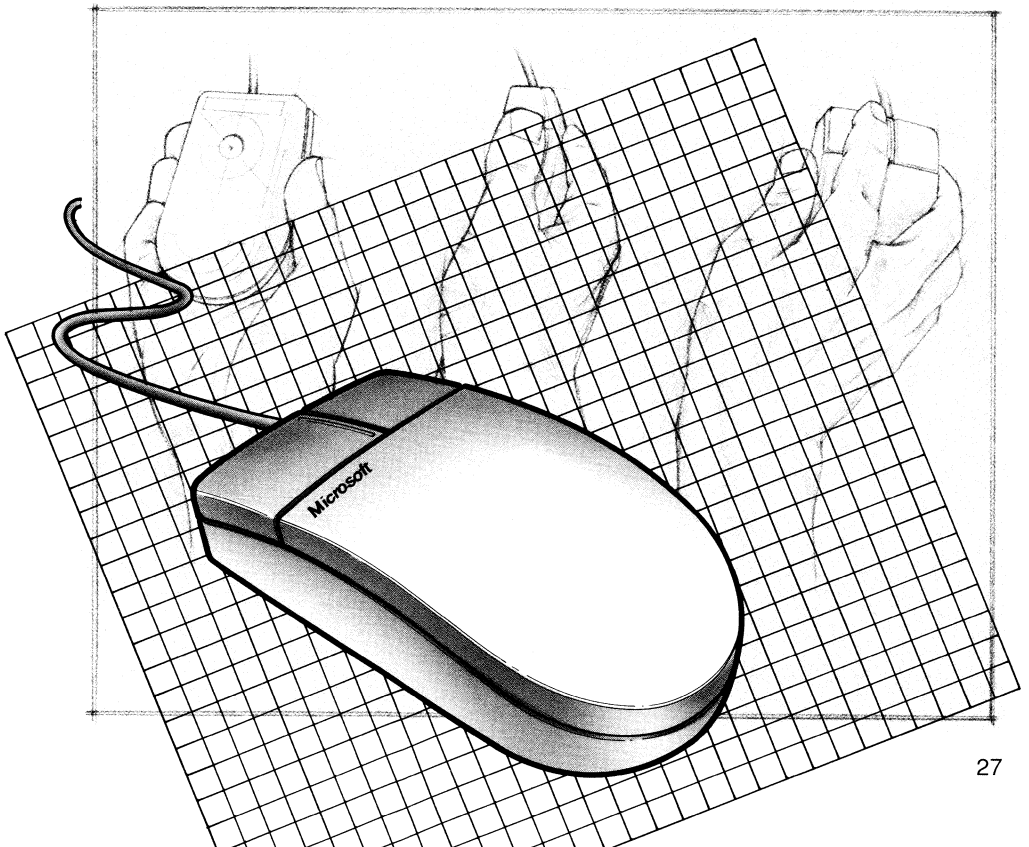
Using the Mouse

Part Two explains how to use the mouse. It has three major sections:

“Loading the Mouse Software” describes how to load the mouse driver if you told Setup not to do it automatically.

“Moving the Mouse” explains the basic techniques of using the mouse.

“The Mouse Control Panel” explains how to adjust mouse sensitivity, select acceleration profiles, set the buttons, and set pointer options using the Mouse Control Panel.



Loading the Mouse Software

If you choose not to have the mouse-driver software loaded automatically, you must load the mouse driver manually each time you start your computer.

Note The MS-DOS mouse driver uses approximately 55K of disk space and approximately 17K of memory.

Loading the MS-DOS Mouse Driver Manually

To load the mouse driver manually:

- 1 Exit Windows (if Windows is being used).
- 2 Change to the directory that contains the mouse driver, and at the command prompt type

mouse

The message “Mouse driver installed” or “Existing mouse driver enabled” should appear on your screen.

Removing the MS-DOS Mouse Driver from Memory

You can remove the mouse driver from memory if you run an application that needs more free memory.

Note Before the following steps can be effective, you may need to remove any memory-resident programs that were loaded after the mouse driver.

To remove the mouse driver from memory:

- Type **mouse off**

Moving the Mouse

This section describes the basic mouse techniques you will use with applications that support the mouse.

Basic Mouse Movements

The following list describes the four basic mouse techniques:

Action	Meaning
Pointing	Move the mouse pointer until the tip rests on a specific object or area on your screen.
Clicking	Press and release a mouse button.
Double-clicking	Press and release a mouse button twice in rapid succession.
Dragging	Press a mouse button and hold it down while moving the mouse pointer.

This *User's Guide* and other Microsoft documentation uses specific terms to describe certain movements of the mouse.

Term	Meaning
Click	Point to an item and press the primary mouse button.
Select	Mark an item by clicking it so that a subsequent action can act on that item: "Select the order number from the list box."
Choose	Click an option in a dialog box: "Choose OK or Cancel" or, open a menu and click a command: "From the File menu, choose Open."

Pointing with the Mouse

The mouse controls a pointer on your screen. That pointer can have a number of shapes. If you are running a graphics-based program, such as Microsoft Windows, the pointer often appears as an arrow. If you are running a text-based program, such as Microsoft Multiplan®, the pointer often appears as a blinking box.

The rubber-coated ball in your mouse rolls within its socket when you move the mouse across the surface of your desk. The mouse translates the movement of the ball into signals that tell the computer how to move the pointer. The mouse doesn't require much surface space in which to move. Remember that the movement of the mouse determines the movement of the pointer, not the location of the mouse on the desk. You can pick up the mouse and move it to a different spot on your desk without moving the pointer on the screen.

You move the pointer on the screen by moving the mouse in the direction you want the pointer to move. Moving the mouse slowly results in small movements of the pointer. Moving the mouse faster produces larger pointer movements. This type of mouse-to-pointer relationship lets you cover large distances on the screen with a minimum of movement, while helping you retain precise control when the pointer approaches the desired object.

Clicking and Double-Clicking the Mouse Buttons

Clicking means pressing and quickly releasing a mouse button. By pointing to something on your screen and then clicking a mouse button, you select the object underneath the pointer. Double-clicking means pointing to an object on the screen and quickly clicking a mouse button twice.

Left and right mouse buttons are referred to as primary and secondary mouse buttons. The Mouse Control Panel program from MS-DOS lets you choose primary and secondary buttons from the MS-DOS prompt. The Mouse Control Panel for Windows lets you choose primary and secondary buttons from Windows.

Dragging with the Mouse

Dragging means holding down a mouse button while moving the pointer. Dragging lets you select a portion of your screen or move objects around the screen.

To drag an object, move the pointer onto the object. Then, hold down the mouse button and move the mouse in the direction desired.

Tip To highlight everything between two locations (in Windows 3.0 or later), click at the start point, move the pointer to the end point, and then press SHIFT and click.

The Mouse Control Panel

Both the Windows (versions 3.0 and later) and MS-DOS versions of the Mouse Control Panel let you adjust several mouse options.

You can use the Mouse Control Panel to:

- Change mouse sensitivity and acceleration.
- Change the primary and secondary mouse buttons.
- Make your mouse cursor easier to see.

Each Mouse Control Panel option is described in more detail in this section.

Note The Mouse Control Panel for Windows is an enhanced version of the standard Control Panel that comes with Windows. It is a separate application for Windows that is copied to your system when you tell the Mouse Setup to install for Windows.

Running the Mouse Control Panel for MS-DOS

Use the following procedure to run the Mouse Control Panel from MS-DOS.

To run the Mouse Control Panel:

- 1 Make sure your mouse is connected and that the mouse driver is loaded.
- 2 At the command prompt type

cpanel

The Mouse Control Panel is displayed. An error message is displayed if the driver is not properly loaded.

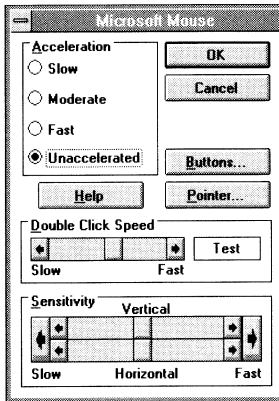
If the mouse is not in your AUTOEXEC.BAT path, then first change to the directory that contains the Mouse Control Panel before you run the program.

Running the Mouse Control Panel for Windows

When you tell the Setup program to install for Windows, the Mouse Control Panel replaces the mouse setting in the standard Control Panel that comes with Windows 3.1. For all versions of Windows 3.X, a new group is created that includes the Mouse Control Panel. There is no Mouse Control Panel for Windows 2.X.

The Mouse Control Panel for Windows is similar to the Mouse Control Panel for MS-DOS. However, the Windows version lets you set the double-click speed that is most comfortable for you, and lets you add Mouse Trails to your pointer to make it easier to see.

The Mouse Control Panel for Windows includes online Help. To see Help, press F1 or choose the Help button (if it's available).



The Mouse Control Panel for Windows

To run the Mouse Control Panel for Windows:

- 1 In Windows 3.0, open the Mouse group.
In Windows 3.1, open the Windows Control Panel.
- 2 Double-click the Mouse icon.

Note To get help on the Mouse Control Panel, press F1 or the Help button.

Setting Mouse Sensitivity

Mouse sensitivity is the ratio of actual mouse movement to pointer movement. Different applications may require different sensitivities. As you become more familiar with your mouse, you may want to change the sensitivity so that you can work more quickly.

Both the Windows and the MS-DOS versions of the Mouse Control Panel let you adjust sensitivity using slider bars to set axes independently. That is, the sensitivity for the horizontal axis (left/right) can be different from the sensitivity for the vertical axis (up/down). The position of the marker on the slider bar indicates the current sensitivity level for that axis. You can also change the sensitivity settings for both axes together.

To change the mouse sensitivity:

- 1 Click the left arrow on the sensitivity bar to decrease the sensitivity level for the chosen axis; click the right arrow to increase the sensitivity level.

Or, to decrease the sensitivity level for *both* axes click the large left arrow on the sensitivity bar. Click the large right arrow to increase the sensitivity level.

You can also change the sensitivity level by dragging the marker in the desired direction on the sensitivity bar.

You can test the changes you made by moving the pointer around your screen.

- 2 To save the new sensitivity levels and exit the Mouse Control Panel, choose OK.

Setting Mouse Acceleration

The Mouse Acceleration feature varies sensitivity with changes in the speed of the mouse ball. When you select a different acceleration profile, you change the ratio between the distance the pointer moves on your screen and the speed of mouse movement. You can choose from among four supplied acceleration profiles: Slow, Moderate, Fast, and Unaccelerated. These profiles are listed by name in the Mouse Control Panel. Acceleration profiles cause the pointer to move greater or lesser distances across the screen depending upon how quickly you move the mouse.

For example, when you use an accelerated mouse profile, moving the mouse quickly, even only a small distance, moves the pointer farther across the screen than when you move the mouse slowly. A small, fast mouse movement can move the pointer completely across your screen, while a large, slow movement may move the pointer only an inch or two. You can try each of the four selections to see which works best with your application.

Both the Windows and MS-DOS versions of the Mouse Control Panel let you adjust mouse acceleration.

To select a new acceleration profile:

- 1 Select the desired acceleration profile: Slow, Moderate, Fast, or Unaccelerated.

You can test the new profile by moving the pointer around your screen.

- 2 To save the new profile and exit the Mouse Control Panel, choose OK.

Setting Mouse Buttons

The Mouse Control Panel lets you specify the buttons that are used for primary and secondary mouse applications. The primary mouse button is most commonly the left button on the mouse, but you customize your mouse buttons so that the primary button is the right button on the mouse.

To assign the mouse buttons:

- 1 Choose Buttons.
- 2 Choose Set Buttons.
- 3 The “Press the Primary button on your mouse” prompt appears.

Click the mouse button that you want to use as the primary button.

The secondary button, by default, is the button you did not choose for your primary button.

- 4 To return to the Mouse Control Panel’s main window, choose OK.

Note The primary and secondary buttons are referred to as the left and right buttons in some documentation.

Setting Mouse Pointer Options

The Pointer options let you adjust the size and color of the pointer. You can choose a small, medium, or large pointer, and a normal, reverse, or transparent pointer. Choosing a larger size or a different color may dramatically improve pointer visibility on LCD screens.

If you increase the size of the pointer, you can also adjust the threshold and delay of the pointer growth.

The Growth feature makes the pointer grow to a larger size depending on the threshold setting, then the pointer shrinks back to its smaller size depending on the delay setting. However, application-specific pointers in Windows grow but do not shrink back to the smaller size.

Threshold is a speed limit. If you move the mouse cursor faster than that speed, it will switch to a larger size.

Delay is a time period. After the mouse stops moving, the pointer waits the delay time period, then switches to a smaller size. The delay setting can vary from nearly zero to a maximum of ten seconds before the pointer returns to normal size.

For EGA, VGA, and Super VGA: the Mouse Control Panel in Windows 3.1 and later includes the Mouse Trails Option. Mouse Trails gives your Pointer a comet-like effect that helps improve the pointer visibility on your screen. You can also adjust the length of the mouse trail.

To adjust the pointer options using the Mouse Control Panel:

- Choose Pointer.

To adjust pointer size and color:

- 1 Select the desired pointer size on the screen.
- 2 Select the desired pointer color on the screen.

You can test the new size and color by moving the pointer around your screen.

Note The Mouse Control Panel in MS-DOS lets you select color for graphics-mode cursors only. Since CPANEL.EXE runs only in text mode, you may not see the color change immediately.

To adjust pointer growth, threshold, and delay:

- 1 To enable pointer growth, select Pointer Growth Enabled.
- 2 To make the threshold of pointer growth slower, click the arrow labelled Slow or Fast.

To move the marker continuously in the direction of the arrow, point to the arrow and hold down the primary mouse button.

To adjust Mouse Trails:

- 1 To enable mouse trails (for systems with EGA, VGA, or Super VGA and Windows 3.1 or later), select Mouse Trails Enabled.
- 2 To make the mouse trails longer or shorter, click the arrow labelled Longest or Shortest to move the marker in the desired direction.

Or, to move the marker continuously in the direction of the arrow, point to the arrow and hold down the primary mouse button.

Exiting the Mouse Control Panel

- 1 Before you exit the Mouse Control Panel, test the changes you made by moving the pointer around your screen.
- 2 To save the new Pointer options and exit the Mouse Control Panel, choose OK.

To cancel the changes you made in the Pointer dialog box, choose Cancel.

To cancel all custom mouse options and restore the system mouse options, choose Restore.

Cleaning Your Mouse

If you notice that the pointer does not move smoothly or that the mouse does not move freely, you should clean your mouse.

To clean your mouse:

- 1 Turn your computer off.
- 2 Turn your mouse upside down.
- 3 Remove the mouse ball cover.
- 4 Turn your mouse right side up. The ball should drop into your hand. If it doesn't, gently shake the mouse until the ball drops out of its socket.
- 5 Once the ball is free, use adhesive tape to pick up any dust or lint on the surface of the ball. Wipe away dirt or lint inside the mouse socket. You can also blow gently to remove dirt and lint.

If lint is trapped inside the socket or on the rollers, use a cotton swab dipped in isopropyl alcohol to loosen it.
- 6 Return the ball to its socket and replace the mouse ball cover.
- 7 Start your computer.

Programming for the Mouse

If you want to design your own mouse menus or add mouse support to programs you have written, the *Microsoft Mouse Programmer's Reference* can show you how. This book, published by Microsoft Press®, contains technical reference information on all MS Mouse functions, including:

- Mouse function descriptions.
- Instructions and sample code for making mouse system calls from the BASIC interpreter, assembly language programs, and high-level languages.
- A description of the interface between the mouse driver and application programs, such as screen modes, graphics and text highlights, and the virtual screen.
- A description of the MS EGA Register Interface.
- Instructions and sample code for creating your own mouse-menu programs.

The *Microsoft Mouse Programmer's Reference* is available in many book and software stores. In the United States, you can order it directly from Microsoft Press. To place a credit card order in the United States, call **1-800-MSPRESS** (Mon.-Fri. 8:00 A.M. to 5:00 P.M. Central Time.)

To order the *Microsoft Mouse Programmer's Reference* outside the United States, contact your local dealer or Microsoft subsidiary.

Appendix A

The MOUSE.INI File

The MOUSE.INI file is where all settings for the mouse are stored. The MOUSE.INI file is a text file that you can edit with any editor or word processor that saves ASCII text files. The settings in the MOUSE.INI file are read by both the MS-DOS and Windows versions of the mouse driver when they are loaded into memory. Whenever you change any mouse settings using the Control Panel and save those changes permanently, the new settings are recorded in the MOUSE.INI file. However, the new settings do not take effect until you restart your computer or reload your mouse driver.

Once you have installed the MS-DOS mouse driver using the Setup program, you can use command-line switches to change the way some mouse functions work. To use a switch, add it to the mouse command line in your AUTOEXEC.BAT file, or you can type switches at the command prompt. See “Mouse Command-Line Switches,” later in this appendix, for more information on the individual switches.

In addition to storing individual mouse settings, the MOUSE.INI file stores acceleration profiles at the end of the file. For information on editing and creating your own custom acceleration profiles for inclusion in the MOUSE.INI file, see Appendix B, “Custom Acceleration Profiles.”

Mouse Settings

The following table lists the settings stored in the MOUSE.INI file, together with default and allowable values. The syntax for each setting is the name of the setting, followed by an equal sign (=), and a value for that setting. Note that there are no spaces allowed in the setting names before the equal sign. Setting names are not case-sensitive. When the mouse driver encounters syntax errors in the MOUSE.INI file, it skips the line containing the error and uses a default value. For settings that have command-line-switch equivalents, the switches are listed in the right-most column of the table below.

Settings and switches in parentheses () do not apply to the BallPoint mouse.
Settings and switches in brackets [] apply to the BallPoint mouse only.

Setting	Default Value	Allowable Values	Switches
Mouse Type	none	Serial1, 2 PS2 (InPort1, 2) (Bus)	/Cn /Z (/In) (/B)
Language	English	English German Spanish French Italian Dutch Portuguese Swedish Finnish	/L /LD /LE /LF /LI /LNL /LP /LS /LSF
(Interrupt Rate)	(1)	(0, 1, 2, 3, 4)	(/Rn)
Sensitivity			
Horizontal only	50	5-100	/Hn
Vertical only	50	5-100	/Vn
Horizontal and vertical	50	5-100	/Sn
Active Acceleration Profile	2	1, 2, 3, 4	/Pn
Cursor Display			
CursorDisplayDelay	0	0-10	/Nn
ForceDefaultCursor	off	on off	/M1 /M
Hardware Cursor Support	off	on / off	/Y
[Rotation Angle]	[0]	[0-359]	[/Or]
Button Selection			
Primary	1	1, 2, 3, 4	/KPnSm
Secondary	3	1, 2, 3, 4	/KPnSm
[Clicklock]	[on]	[on] [off]	[/KC] [/K]

Note The exact setting names are listed in your MOUSE.INI file.

Mouse Command-Line Switches

This section gives you information about mouse command-line switches, lists the choices available, and describes how you use each one.

Note Changing your MOUSE.INI file either manually or with the Mouse Control Panel is the preferred way to make changes to the mouse functions. Command line switch settings override the MOUSE.INI settings for the same value but are valid for the present session only.

Mouse Type

You can use command-line switches to bypass the mouse driver's automatic hardware-configuration search and instruct it to look for a mouse at a particular I/O port. This saves a small amount of load time, because the driver does not have to search all your ports for the mouse. And if you have more than one mouse connected to your system, you can use these switches to specify the one you want to use.

The **/C** command-line switch is used with the parameter *n* to specify a serial port (where *n* can be either 1 or 2). For example, to specify that the mouse serial-interface cable is connected to COM2, you would type **mouse /C2** at the command prompt.

The **/Z** command-line switch is used to specify a mouse connected to an IBM PS/2 port.

The **/I** command-line switch is used with the parameter *n* to specify the number of the InPort device to which you're connecting (where *n* can be either 1 or 2).

The **/B** command-line switch is used for older versions of the Bus mouse (not for the Bus InPort mouse).

Note The mouse driver must be removed from memory before using command-line switches to change mouse type. See "Removing the Mouse Driver from Memory," earlier in this guide, for more information.

Language

You can use command-line switches to change the language in which mouse driver and Control Panel messages appear. You can choose any of the following languages: English (the default), German, Spanish, French, Italian, Dutch, Portuguese, Swedish, and Finnish. See the table of settings and switches earlier in this appendix.

Interrupt Rate

This switch applies to the Microsoft Inport Mouse only. The interrupt-rate switch lets you change the interrupt rate for the mouse. At high interrupt rates, your application may slow down (because its processing is interrupted more frequently) but you will obtain more responsive cursor movement on the screen. In most cases, the default setting provides the optimal balance between application speed and cursor responsiveness. At an interrupt rate of zero (0), the mouse does not respond. The allowable values for the parameter *n*, and their matching interrupt rates are:

Value	Interrupt Rate
0	0 Hz
1	30 Hz
2	50 Hz
3	100 Hz
4	200 Hz

Sensitivity

You can use command-line switches to set the mouse sensitivity level, either horizontal sensitivity, vertical, or both. The value of the parameter *n* can be any number in the range 5 to 100 in increments of 5. It is interpreted as a Control Panel setting. For example, to set horizontal sensitivity to 25, you type **mouse /H25** at the command prompt. To set both horizontal and vertical sensitivities to 75, type **mouse /S75**.

Active Acceleration Profile

You can use the **/P*n*** command-line switch to load specific acceleration profiles, where the parameter *n* is 1, 2, 3, or 4 and corresponds to one of the internal acceleration profiles listed on the Control Panel. For example, to specify internal acceleration profile number 3, type **mouse /P3** at the command prompt. See Appendix B, “Custom Acceleration Profiles,” for details on acceleration profiles.

Cursor Display

If you are using a computer with a liquid-crystal display (LCD), you may find the switches for CursorDisplayDelay and ForceDefaultCursor helpful.

The CursorDisplayDelay switch **/N** controls how frequently the cursor is redrawn as you move the mouse across the screen. Reducing the redraw rate may help you follow cursor movement on slow LCD displays. The value of the parameter *n* can be any number in the range 1-10, with the larger numbers resulting in a less-frequent cursor display.

The ForceDefaultCursor switch **/M** is useful when you’re using an application that draws a small cursor on your screen. If the cursor is too small or thin, or invisible on certain background shades, you can make the application display the default (block) cursor in text mode.

Hardware Cursor Support

Some monitor boards include graphical cursors that appear in text mode (also called “sprites”). By default, hardware cursor support is off and you use the normal cursor. To turn it on, edit the hardware cursor support line of the MOUSE.INI file. When cursor support is on, the mouse driver automatically detects whether you have a sprite-capable monitor board that works with the mouse, and if so, it uses this hardware-cursor feature.

Note The mouse driver must be removed from memory before using a command-line switch to force it to use the normal cursor. See “Removing the Mouse Driver from Memory,” earlier in this guide, for more information.

Rotation Angle

This setting applies to the BallPoint mouse only; it specifies the rotation angle or orientation of the BallPoint mouse relative to the default axis

Button Selection

To set primary and secondary mouse buttons, you use the **/KP n S m** switch. You'd use this switch if you want to reverse the default priority of the mouse buttons—for example, if you're left-handed and want the right button to be the primary button instead of the left.

Either of the two mouse buttons can be considered as primary and secondary. The integer n defines the primary mouse button, where n can be 1 or 3. Similarly, the integer m defines the secondary mouse button. The button on the left side is numbered 1 and the button on the right side is numbered 3. The default button assignment, represented using a command-line switch, is **/KP1S3**.

You cannot define the same button as both primary and secondary. When this switch is used, both primary and secondary buttons must be specified.

Appendix B

Custom Acceleration Profiles

You can use the Mouse Control Panel to choose from the four acceleration profiles listed in the MOUSE.INI file: Slow, Moderate, Fast, or Unaccelerated. You can also create your own custom acceleration profiles and list them in the MOUSE.INI file yourself. When the mouse driver is loaded, the profiles listed in the MOUSE.INI file are read into memory and displayed in the Mouse Control Panel.

An acceleration profile determines the distance the pointer moves across your screen for a given movement of your mouse. The distance the pointer moves is affected by both the distance and the speed of mouse movement.

Ordinarily the effect of speed on pointer movement is determined by the four preset acceleration profiles in the MOUSE.INI file. However, you can override the preset acceleration profiles by creating your own.

Creating an Acceleration Profile

You can create your own profiles using any ASCII text-editing program. Just use the format of the following sample lines and type the values that you want. You can then modify the MOUSE.INI file on your system to include the new values. The following values appear in the default MOUSE.INI file:

```
[AccelerationCurve1]
Label:   Slow
Movement: 1   5   7   9   11  37  39  41  43
Factor:  1.00 1.25 1.50 1.75 2.00 2.25 2.50 2.75 3.00

[AccelerationCurve2]
Label:   Moderate
Movement: 1   9  12  15  18  21  24  27  30  33  37  41  46
Factor:  1.00 1.25 1.50 1.75 2.00 2.25 2.50 2.75 3.00 3.25 3.50 3.75 4.00

[AccelerationCurve3]
Label:   Fast
Movement: 1   2   3   4   5   7   9  11  13  16  19  22  25
Factor:  1.00 1.25 1.50 1.75 2.00 2.25 2.50 2.75 3.00 3.25 3.50 3.75 4.00

[AccelerationCurve4]
Label:   Unaccelerated
Movement: 1
Factor:  1.00
```

The top line of each entry is the label that defines the profile. In these sample profiles, the labels are the same as those appearing in the Mouse Control Panel: Slow, Moderate, Fast, and Unaccelerated. However, you can use any text label you want (up to 16 characters). When you load the mouse driver, you can display your labels by using the Mouse Control Panel.

The numeric values in the lines labeled “MOVEMENT” and “FACTOR” are associated with one another. For example, in the Slow profile, the second value in the MOVEMENT line, 5, is associated with the value 1.25 below it. The value 5 represents the speed of your mouse—the distance it moves in a given period of time. The higher the number, the faster the mouse is being moved. The value of 1.25 in the FACTOR line is used to compute the pointer movement when the mouse is moved at a speed of 5; the pointer will move at 1.25 times the normal speed. If you increase the value in the FACTOR line for a given value in the MOVEMENT line, you increase the sensitivity of the mouse at that speed, and vice versa.

Editing Profiles in MOUSE.INI

You can change the values in either the MOVEMENT or FACTOR lines to change the way the pointer moves. For example, if you want a flat mouse-to-pointer relationship where the pointer movement is the same for any speed of mouse movement, the MOVEMENT/FACTOR entries would look like this (notice that the label has also been changed to “Flat”):

```

LABEL: Flat
MOVEMENT: 5 10 20 30 40 50 60 70 80 90 100 110 120 127
FACTOR: .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 .8 8 .8 .8 .8

```

The same effect can be created by the following:

```

LABEL: Flat
MOVEMENT: 127
FACTOR: .8

```

To accelerate the pointer linearly, you can increase the FACTOR value as follows (again, notice the label has been changed to “Linear”):

```

LABEL: Linear
MOVEMENT: 5 10 20 30 40 50 60 70 80 90 100 110 120 127
FACTOR: .1 .2 .3 .4 .5 .6 .7 .8 .9 1.0 1.1 1.2 1.3 1.4

```

When creating or editing mouse profiles, the following rules apply:

- Do not exceed 32 values per row.
- Separate the values with one or more spaces.
- Use MOVEMENT values in the range of 1 through 127.
- Use FACTOR values in the range of 0.1 through 16.0 (leading and trailing zeros optional).
- Every MOVEMENT value must have a corresponding FACTOR value.
- Label names cannot exceed 16 characters.

United States Radio and TV Interference Regulations

The Microsoft hardware device(s) described in this manual can radiate radio frequency (RF) energy. If not installed and used in strict accordance with the instructions given in this manual, the device may cause harmful interference with radio and TV reception. Any cable that is connected to the Microsoft Mouse connector must be a shielded cable that is properly grounded.

Your Microsoft hardware device has been tested, and it complies with the limits for Class B computing device in accordance with the specifications in Part 15 of the Federal Communications Commission (FCC) rules. These limits are designed to provide reasonable protection against harmful RF interference in a residential installation. There is, however, no guarantee that RF interference will not occur in a particular installation.

To determine if your hardware device is causing interference, disconnect the device from your computer. If the interference stops, it was probably caused by the device. If the interference continues, after you disconnect the hardware device, turn the computer off and then on again. If the interference stopped when the computer was off, check to see if one of the input/output (I/O) devices or one of the computer's internal accessory boards is causing the problem. Disconnect the I/O devices one at a time and see if the interference stops.

If your computer does cause interference, try the following measures to correct it:

- Relocate the radio or TV antenna until the interference stops.
- Move the computer farther away from the radio or TV, or move it to one side or the other of the radio or TV.
- Plug the computer into a different power outlet so that the computer and radio or TV are on different circuits controlled by different circuit breakers or fuses.
- If necessary, ask your computer dealer or an experienced radio-TV technician for more suggestions. You may find helpful information in the booklet *How to Identify and Resolve Radio-TV Interference Problems*, published by the FCC. The booklet is available from the U.S. Government Printing Office, Washington, D.C., 20402. The stock number is 004-000-00345-4.

Note Any changes or modifications not expressly approved by Microsoft could void the user's authority to operate this device.

Canadian Radio Interference Regulations

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the Radio Interference Regulations of the Canadian Department of Communications.

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

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