



Integrated Circuit

In most mice, the processing of the electronic signals is carried out by an interface card mounted inside the computer. Here, however, a custom-designed chip is used to convert the signals into RS232 (serial) form

PCB

As in most computer devices, mounting all components on a Printed Circuit Board makes for easier construction and increased reliability

Interface

Most mice use their own special interface (dubbed a 'mousetrap') but this one can plug into any RS232 port, using the standard 25-way connector

the other system, two slotted discs are fitted to the rollers. A light is continuously directed at the discs and the beam is detected optically on the other side of them by a photocell. The pulses of light passing through the slots are then converted to electrical signals, which are treated in the same way as those of the mechanical system.

There are other systems, as well. In one case, for example, the mouse is used in conjunction with a special pad covered with a pattern of dots. A light inside the mouse's body illuminates the area of the pad covered by the mouse and this pattern is detected by a special optical processing chip. Any movement of the mouse will change the pattern that the chip detects and it can instantly calculate how far the device has moved in any direction. This system has the advantage of having no moving parts, but it is much more expensive than the others.

Once the cursor has been moved to the required place on the screen its position can be entered into the computer by pressing one of the 'ears' (buttons) on the mouse. The number of buttons fitted varies from one manufacturer to another. Some systems use as many as three; Microsoft have chosen to fit two, while the Apple Lisa mouse has only one. The buttons can also be used to select items from a menu — programs such as Microsoft's MultiTool Word use this facility — and give the mouse control of the normal cursor motion. These devices can be used with highly sophisticated software such as that provided on the Apple Lisa. Here the button is pressed once to select an 'icon' (see page 262) from a screen menu, and twice to open out that particular application.

The main advantage of all mice, and the software that has been produced to complement them, is that they can be used by those who have no keyboard skills. Rather than having to type in the name of a program or press certain letters or numbers to select a function, the user simply moves the mouse so that the screen cursor points to the application or course of action that is required, and presses a button to activate it.

Unfortunately, the mouse doesn't completely eliminate the need for a keyboard — new text and numbers still have to be fed into the computer — but it does make the manipulation of that information much simpler. Tests conducted by Apple during the development of the Lisa showed that a user entirely unfamiliar with a computer can learn to work with the Lisa's mouse-driven software in as little as 15 minutes. Similar software running on a conventional system takes nearly 20 hours to become familiar with, mainly because of the problems involved in learning to use the keyboard, and the need to learn lengthy and complicated commands. Electronic mice will soon be an integral part of home computers. They are efficient and simple to use and they don't frighten the faint-hearted as much as the sight of a traditional QWERTY keyboard.