

SYSTEM AND METHOD FOR PROVIDING COMPUTER MOUSE BROADCAST COMMANDS

5 FIELD OF INVENTION

Embodiments of the present invention relate to a computer mouse capable of providing broadcast commands to a plurality of other mice to allow a single operator to simultaneously operate a plurality of computers.

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BACKGROUND

It is sometimes desirable for a single individual to operate multiple computers simultaneously. For example, in a classroom environment, a lecturer may wish all students to launch a particular program from their computers at precisely the same time. Generally, each computer has a single keyboard, mouse and video display connected to it. The computer must be controlled from the attached input devices. Unfortunately, it is very difficult to synchronize the students to ensure that the programs are actually launched at precisely the same time. Delays of a few seconds between users often occur.

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One idea has been to attach an additional device, such as a keyboard, video, mouse (KVM) device to control multiple computers with a single keyboard, mouse, and monitor. However, KVM systems require the user to manually or electronically switch from one computer to another. They are unable to control more than one computer at a time.

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SUMMARY

One aspect of the present invention provides a system for broadcasting mouse commands, the system comprising: a master mouse; and a plurality of slave mice, each of said plurality of slave mice being connected to a separate computer and having a slave mouse processor; wherein said master mouse is coupled to each slave mouse processor such that operating said master mouse simultaneously operates each of said slave mice to effect commands on each of said computers.

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In some embodiments, the master mouse can be electrically connected to each of the slave mouse processors to allow the master mouse to operate a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for each of the slave mice. A control wire from a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder of the master mouse may be electrically connected to each of the slave mouse processors. The plurality of slave mice may include at least three slave mice. Each of the computers may be running an operating system selected from a group consisting of Disk Operating System (DOS), Microsoft Windows®, Linux®, Novell Netware®, and Apple Macintosh®.

In some embodiments, an electrical connection may be disabled between each of the slave mouse processors and a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for each of the slave mice. A processor of the master mouse may be electrically connected to each of the slave mouse processors.

An alternate aspect of the present invention provides a method of connecting a plurality of slave mice to a single master mouse, each of the slave mice being connected to a separate computer, the method comprising the step of: coupling the master mouse to each of the slave mice processors such that operating the master mouse simultaneously operates each of the slave mice to effect commands on each of the computers.

Some embodiments of the method may include a step for disabling an electrical connection between a plurality of control inputs and a slave mouse processor for each of the slave mice before the coupling step. The plurality of control inputs may include a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for each of the slave mice. The coupling step may further include connecting a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for the master mouse to each of the slave mouse processors. The coupling step may also further include connecting a master mouse processor to each of the slave mice processors.

An alternate aspect of the present invention provides a method for simultaneously controlling a plurality of computers, the method comprising the steps of: providing a

master mouse; providing a plurality of slave mice, each of the plurality of slave mice being connected to a separate computer and having a slave mouse processor; and coupling the master mouse to each slave mouse processor such that operating the master mouse simultaneously operates each of the slave mice to effect commands
5 on each of the computers.

In alternate embodiments, the coupling step may further include electrically connecting the master mouse to each of the slave mouse processor to allow the master mouse to operate a right mouse button, a left mouse button, a y-axis
10 encoder and an x-axis encoder for each of the slave mice. The electrically connecting step may further include connecting a control wire from a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder of the master mouse to each of the slave mouse processors.

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BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments of the invention will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example
20 only, and in conjunction with the drawings, in which:

Figure 1 illustrates one embodiment of a system for connecting and operating multiple computers with a single broadcast mouse;

25 Figure 2 illustrates one embodiment of a wiring modification diagram for connecting the multiple mice in the system of Figure 1; and

Figure 3 illustrates a flow chart of one method for implementing the system of Figure 1.

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DETAILED DESCRIPTION

Figure 1 illustrates one embodiment of a system, designated generally as reference numeral 100, that enables a single master mouse 102 to connect to a plurality of

computers 106 via a broadcast box 104. In this embodiment, the master mouse 102 can be any type of mouse device that controls a cursor in a computer system. The broadcast box 104 can include a plurality of slave mouse boards (Figure 2) that contain the control functions for each slave mouse. Each slave mouse is then
5 connected to one of the plurality of computers 106. Each slave mouse can be connected to the computers 106 using known connection technology, including but not limited to a personal system 2 (PS/2) port, a recommended standard 232 (RS-232) port, a universal serial bus (USB) port, etc.

10 The computers 106 can be any type of computer capable of using a mouse pointing device. The computers can use any known operating system. Examples of such operating systems can include, but are not limited to a Disk Operating System (DOS), Microsoft Windows®, Linux®, Novell Netware®, and the like.

15 Figure 2 illustrates one embodiment of a wiring modification diagram, designated generally as reference numeral 200, for connecting a plurality of slave mice 202 within the broadcast box 104 to the master mouse 102. The master mouse 102 includes a right mouse button 110 having an electrical connection 112 to a processor 114 mounted on a circuit board 105. Similarly, the master mouse 102
20 includes a left mouse button 120 having an electrical connection 122 to the processor 114. The master mouse 102 also includes a y-axis encoder 130 having an electrical connection 132 to the processor 114, and an x-axis encoder 140 having an electrical connection 142 to the processor 114. The x-axis and y-axis encoders receive signals from a roller or ball (not shown) that, in turn, move the cursor (not
25 shown) on the display screen connected to a computer. While the embodiments of the invention are described with reference to a standard mouse, it is understood that a track ball mouse or a wireless slave mouse can also be used as the master mouse.

30 Each of the slave mice 202 includes a right mouse button 210 having an electrical connection 212 to a processor 214 mounted on a circuit board 205. Similarly, each slave mouse 202 includes a left mouse button 220 having an electrical connection 222 (control wire) to the processor 214. Each slave mouse 202 also includes a y-axis encoder 230 having an electrical connection 232 to the processor 214, and an

x-axis encoder 240 having an electrical connection 242 to the processor 214. The x-axis and y-axis encoders receive signals from a roller or ball (not shown) that, in turn, move the cursor (not shown) on the display screen connected to the computer 106 (Figure 1).

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Figure 3 illustrates a flow chart of one method, designated generally as reference numeral 300, for simultaneously operating a plurality of computers 106. The method 300 includes a step for providing a master mouse 102, as shown with reference numeral 302. Reference numeral 304 illustrates the next step of Providing a plurality of slave mice 202, each of the plurality of slave mice 202 being connected to a separate computer 106 and having a slave mouse processor 214 connecting each of the slave mice 202 to the master mouse 102. Then, the master mouse 102 is coupled to each slave mouse processor 214 such that operating the master mouse 102 simultaneously operates each of the slave mice 202 to effect commands on each of the computers 106, as shown in step 306.

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In some embodiments, an electrical connection between a plurality of control inputs and the slave mouse processor 214 for each of the slave mice 202 is disabled. The control inputs can include each of the electrical connections 212, 222, 232, 242 between the right mouse button 210, left mouse button 220, y-axis decoder 230 and x-axis decoder 240, respectively, and the processor 214.

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The coupling step 306 can then include connecting each of the electrical connections 112, 122, 132, and 142 in series to each of the processors 214 for each of the slave mice 202. Alternately, the connecting step can include connecting the master mouse processor 114 to each of the slave mice processors 214. It is understood that the electrical connections can be disconnected and connected in any order. In some embodiments, the slave mouse boards 205 can be removed from the slave mouse housings and installed in the broadcast box 204. However, It is further understood that the broadcast box 104 is provided to secure the slave mice 202 to facilitate easier electrical connections. No broadcast box 104 is required to implement the embodiments of the invention described herein.

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With the master mouse 102 electrically connected to the slave mice 202 as described above, movement of the master mouse 102, or clicking either the right or left mouse buttons 110, 120, generates corresponding encoder/button electrical signals. These generated electrical signals are received by the corresponding slave mice processors simultaneously. Each of the slave mice processors then generates corresponding electrical signals to their respective computers, thus executing all commands generated from the master mouse 102 simultaneously.

The system and method described above has been tested using a single master mouse 102 and three slave mice 202 to simultaneously operate three separate computers. Since all commands are executed at the same time, the problems associated with timing the mouse command signals discussed in the background section can be eliminated. However, it is understood that more than three slave mice 202 can be connected to a single master mouse 102 without departing from the scope of the embodiments.

It will be appreciated by a person skilled in the art that numerous variations and/or modifications may be made to the present invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects to be illustrative and not restrictive.

CLAIMS

1. A system for broadcasting mouse commands, the system comprising:
a master mouse; and
a plurality of slave mice, each of said plurality of slave mice being connected
5 to a separate computer and having a slave mouse processor;

wherein said master mouse is coupled to each slave mouse processor such
that operating said master mouse simultaneously operates each of said slave mice
to effect commands on each of said computers.

10 2. The system of claim 1, wherein said master mouse is electrically connected
to each said slave mouse processor to allow said master mouse to operate a right
mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for each
of said slave mice.

15 3. The system of claim 2, wherein a control wire from a right mouse button, a
left mouse button, a y-axis encoder and an x-axis encoder of said master mouse is
electrically connected to each of said slave mouse processors.

4. The system of any one of the preceding claims, wherein said plurality of
20 slave mice comprises at least three slave mice.

5. The system of any one of the preceding claims, wherein each of said
computers is running an operating system selected from a group consisting of Disk
Operating System (DOS), Microsoft Windows®, Linux®, Novell Netware®, and an
25 Apple Macintosh®.

6. The system of any one of the preceding claims, wherein an electrical
connection is disabled between each of said slave mouse processors and a right
mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for each
30 of said slave mice.

7. The system of any one of the preceding claims, wherein a processor of said
master mouse is electrically connected to each of said slave mouse processors.

8. A method of connecting a plurality of slave mice to a single master mouse, each of said slave mice being connected to a separate computer, the method comprising the step of:

5 coupling said master mouse to each of said slave mice processors such that operating said master mouse simultaneously operates each of said slave mice to effect commands on each of said computers.

9. The method of claim 8, further comprising before said coupling step a step for disabling an electrical connection between a plurality of control inputs and a
10 slave mouse processor for each of said slave mice.

10. The method of claim 9, wherein said plurality of control inputs comprises a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for each of said slave mice.

15 11. The method of claims 8-10, wherein said coupling step further comprises connecting a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for said master mouse to each of said slave mouse processors.

20 12. The method of claims 8-10, wherein said coupling step further comprises connecting a master mouse processor to each of said slave mice processors.

13. A method for simultaneously controlling a plurality of computers, the method comprising the steps of:

25 providing a master mouse;

providing a plurality of slave mice, each of said plurality of slave mice being connected to a separate computer and having a slave mouse processor; and

30 coupling said master mouse to each slave mouse processor such that operating said master mouse simultaneously operates each of said slave mice to effect commands on each of said computers.

14. The method of claim 13, wherein said coupling step further comprises electrically connecting said master mouse to each said slave mouse processor to

allow said master mouse to operate a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder for each of said slave mice.

15. The method of claim 14, wherein said electrically connecting step further
5 comprises connecting a control wire from a right mouse button, a left mouse button, a y-axis encoder and an x-axis encoder of said master mouse to each of said slave mouse processors.

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