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G4A AKS AUXS

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WO 97/28847 A1 WO 96/09695 A1 WO 96/09617 A1
WO 96/07965 A2 US 5669818 A

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Selected publications and Online: COMPUTER, EDOC, JAPIO, WPI

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(54) Abstract Title
Controller interface

(57) An electronic interface device is connectable electronically between a computing device, a controller and an ancillary device. The controller is an input device such as a joypad, gamepad or joystick. The ancillary device is preferably a vibrating device worn on the wrist. The interface device operates to interrupt the data stream transmitted by the computing device and to transmit operating signals present in the data stream. In playing a computer game, signals relating to game events (e.g. sounds, impacts or rumbles) are interrupted by the interface device. The interface device may comprise a signal splitting device operating to direct separate data streams to both the controller and the ancillary device. Alternatively the interface device may operate to detect particular signals or signal sequences present in the data stream and transmit actuating signals to the ancillary device in response to such particular signals or signal sequences. The ancillary device feeds tactile sensations to the game player according to the signal relayed by the interface device.

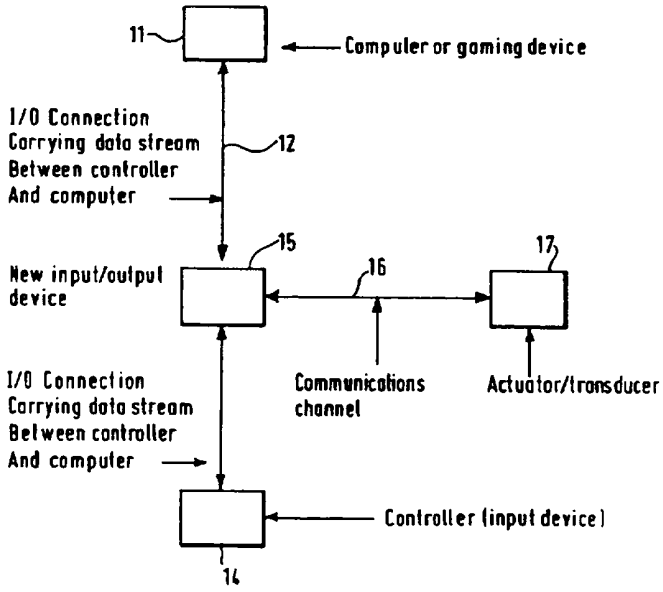

Fig.2.

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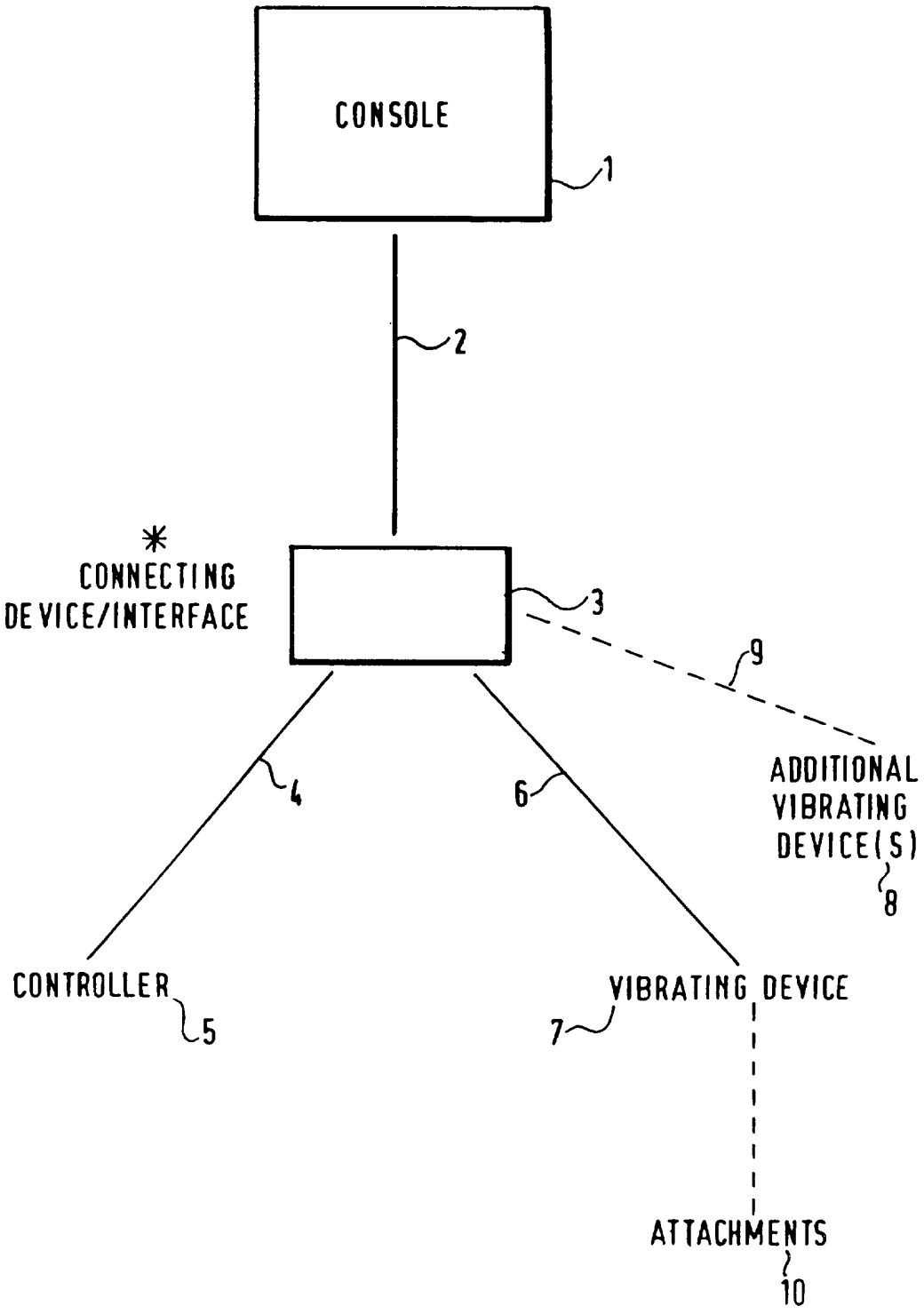
CONSOLE
1
2
*
CONNECTING
DEVICE/INTERFACE
3
9
ADDITIONAL
VIBRATING
DEVICE(S)
8
4
6
CONTROLLER
5
VIBRATING DEVICE
7
ATTACHMENTS
10

Fig.1.

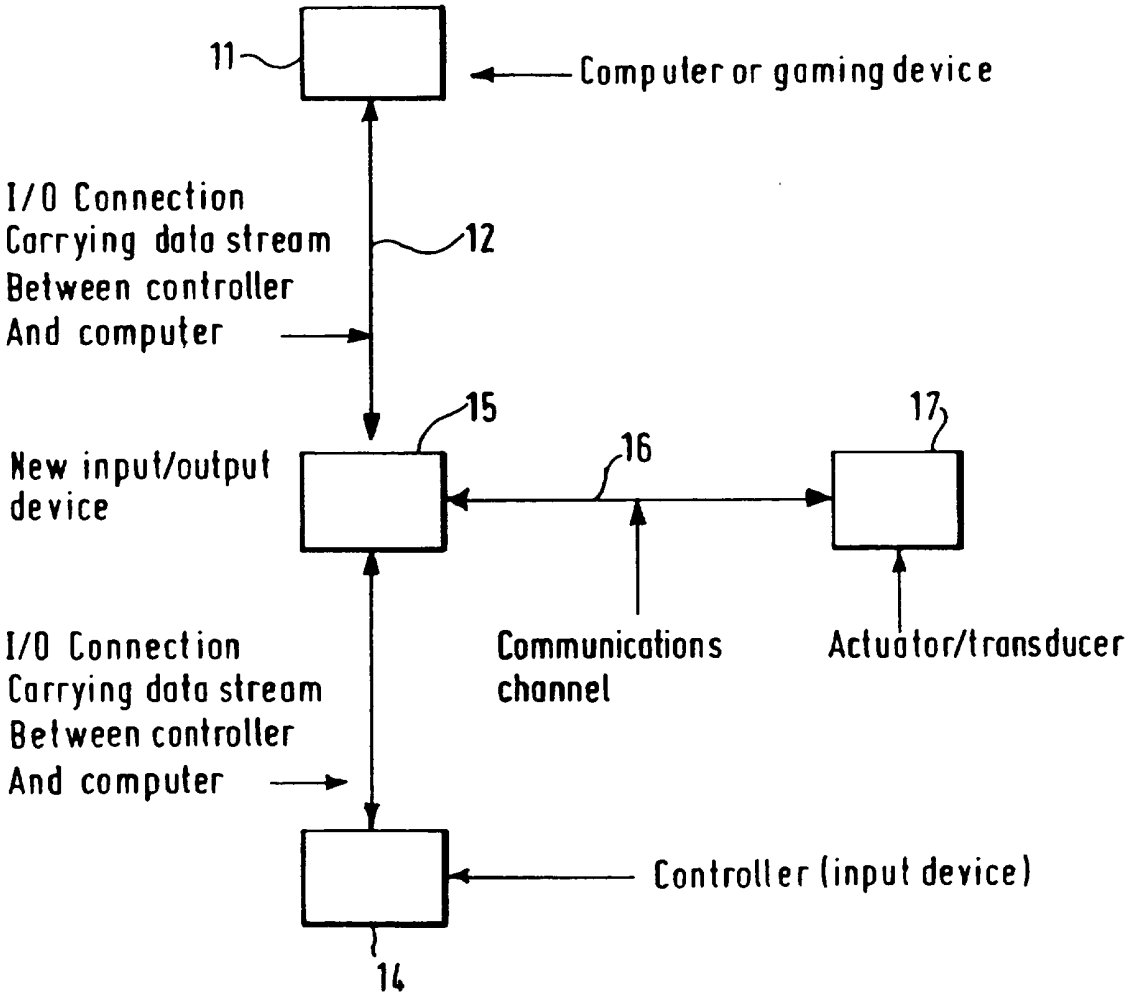
11
Computer or gaming device
I/O Connection
Carrying data stream
Between controller
And computer
12
15
16
17
New input/output
device
I/O Connection
Carrying data stream
Between controller
And computer
Communications
channel
Actuator/transducer
Controller (input device)
14

Fig.2.

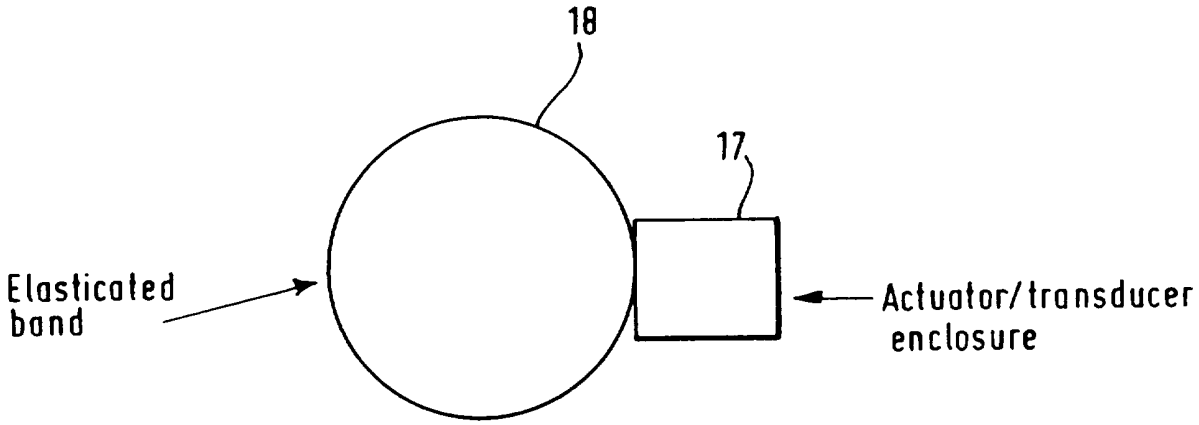

Fig.3A.

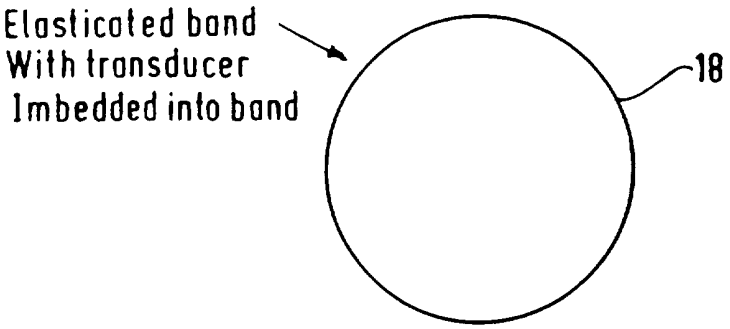

Fig.3B.

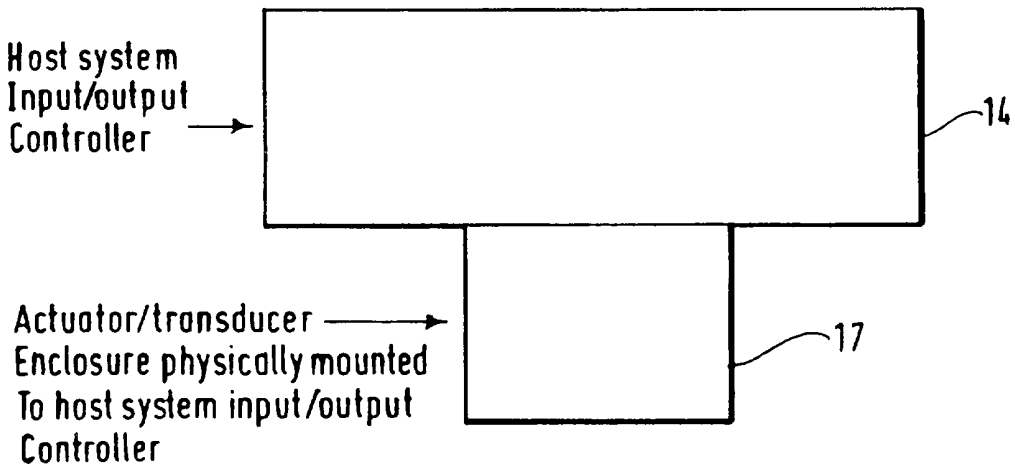

Fig.3C.

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ELECTRONIC APPARATUS

This invention relates to electronic apparatus which provides an interface between an electronic computing device and an external controller able to receive electronic signals from the computing device and to transmit such signals to the computing device.

The term "computing device" as used herein includes computers, consoles, personal computers, video gaming consoles, gaming machines and other computing and electronic devices which operate to transmit electronic signals to and/or receive such signals from an external controller.

The term "controller" as used herein includes game and joy pads, and any electronic device connectable to a computing device and operable to transmit a stream of electronic data to and/or receive such data from the computing device.

The term "interface device" as used herein includes any device connectable between data stream carrying cables linking a computing device and a controller, and capable of responding to particular electronic signals within the data stream to transmit signals to an electronic ancillary device to operate the same. Interface devices include signal splitters which transmit data signals to both the ancillary device and the controller, and switching mechanisms which operate to detect and divert particular electronic signals to the ancillary device.

Computers operated by remote controllers are, of course, well known. It is also known to connect such controllers via cabling to some form of motor which is activated by particular signal sequences present within a data stream to cause a housing within which the motor is located to vibrate or "rumble". Thus, vibrations can be transmitted to a user through the housing in response to an event created visually on the monitor screen of the computer, for example, a car making contact with a wall or other object.

The present invention sets out to provide a similar responding device which is remote from both the computer and the controller and which could, for example, form part of a wrist strap worn by a user.

According to the present invention in one aspect, there is provided apparatus comprising an interface device connectable electronically between a computing device, a controller and an ancillary electronic device, the interface operating to receive data from the computing device and to transmit electronic signals representative of that data stream (or a part thereof) to the ancillary device to operate the same.

In another aspect, the invention provides an electronic interface device connectable electronically between a computing device, a controller and an ancillary device, the interface device operating to interrupt the data stream transmitted by the computing device and to transmit operating signals to the ancillary device in response to particular signals or sequences of signals present in the data stream.

The interface device may comprise a signal splitting device operating to direct separate data streams to both the controller and the ancillary device. Alternatively, the interface device may operate to detect particular signals or signal sequences present in the data stream and transmit actuating signals to the ancillary device in response to such particular signals or signal sequences.

The ancillary device may be carried by or form part of or be embedded in an elasticated band to be worn by a user of the apparatus.

The invention will now be described by way of example only with reference to the accompanying diagrammatic drawings, in which:-

Figure 1 schematically illustrates a first embodiment of the invention;

Figure 2 schematically illustrates a second embodiment of the invention; and

Figures 3A, 3B and 3C illustrate three alternative embodiments of the invention.

As shown in Figure 1, a computer console 1 is connected by a cable 2 to an interface device 3, and then by a cable 4 to a controller 5. The cables 2, 4 transmit streams of electronic data between the console 1 and controller 5, the electronic data passing through the interface device 3. Sockets and plugs are provided to facilitate the interconnections between the console, interface device and controller. The interface device 3 has one or more additional outlets to receive connecting cabling 6 to a transducer in the form of a vibrating or rumble device 7. Additional vibrating or other ancillary devices 8 may be connected to the interface device 3 via additional cabling 9. The or each vibrating device may include attachments 10.

In use, a stream of electronic data passes through the interface device 3 as this data is transmitted between the console 1 and the controller 5. Particular signals or signal sequences are recognised by the device 3, converted to electronic signals and transmitted via the cable 6 to the vibrating device 7. The device 7 includes one or more motors which are activated by the signals to cause the device 7 to vibrate or rumble. Thus, electronic signals representative of particular images created on the console

screen are used to impart vibrational movements to the device 7. For example, an image of a vehicle making contact with an object can be reinforced by vibrations transferred to a game user through the device 7.

In the arrangement illustrated in Figure 2, a computer or gaming device 11 is connected through an input-output connection 12 carrying a data stream between a controller 14 and the device 11 and via an input-output interface device 15. The device 15 is connected via a communications channel 16 to an actuator/transducer 17.

The interface device 15 intercepts the data stream passing between the computer 11 and the controller 14 and inteprets the data selectively to activate the transducer 17. Control signals may be transmitted via one of many communications media, these including cabling, fibre optics, infrared signalling, radio tranmissions and ultrasonic sound waves.

As will be seen from Figure 3A, the transducer 17 (equivalent to the vibrating device 7 of Figure 1) is carried by an elasticated band 18 which may, for example, be worn on the wrist of a user. In Figure 3B, the device is embedded in the band 18. In Figure 3C, the device is physically mounted on the controller 14.

The apparatus described may be powered by the host system or by its own power supply whether internal or external. The apparatus will not interfere with or modify the data stream between the host system and its input-output controller.

It will be appreciated that the foregoing is merely exemplary of apparatus in accordance with the invention and that modifications can readily be made thereto without departing from the true scope of the invention.

CLAIMS

1. An electronic interface device connectable electronically between a computing device, a controller and an ancillary device, the interface device operating to interrupt the data stream transmitted by the computing device and to transmit operating signals to the ancillary device in response to particular signals or sequences of signals present in the data stream.

2. A device as claimed in claim 1 wherein the interface device comprises a signal splitting device which operates to direct separate data streams to both the controller and the ancillary device.

3. A device as claimed in claim 1 wherein the interface device operates to detect particular signals or signal sequences present in the data stream and transmit actuating signals to the ancillary device in response to such particular signals or signal sequences.

4. A device as claimed in any one of the preceding claims wherein the ancillary device is carried by an elasticated band to be worn by a user of the device.

5. A device as claimed in any one of claims 1 to 3 wherein the ancillary device forms part of an elasticated band to be worn by a user of the device.

6. A device as claimed in any one of claims 1 to 3 wherein the ancillary device is embedded in an elasticated band to be worn by a user of the device.

7. An electronic interface device substantially as herein described and as

described with reference to Figures 1 to 3 of the accompanying diagrammatic drawings.

Application No:	GB 9801429.3	**Examiner:**	David Keston
Claims searched:	1-7	**Date of search:**	3 June 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): G4A (AFGN, AKS, AUXS)

Int Cl (Ed.6): G06F 3/00

Other: Selected publications and Online: COMPUTER, EDOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	WO 97/28847 A1	(MATTEL) - see whole document	1-3
X, Y	WO 96/09695 A1	(THORNER) - see abstract, figure 2	X: 1-3,7 Y: 4-6
X	WO 96/09617 A1	(THORNER) - see abstract, page 5 line 26	1-7
X	WO 96/07965 A2	(PHILIPS) - see abstract	1-3
X, Y	US 5669818	(THORNER) - see abstract, column 1 and figures 4-6 especially.	X: 1-3,7 Y: 4-6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.