



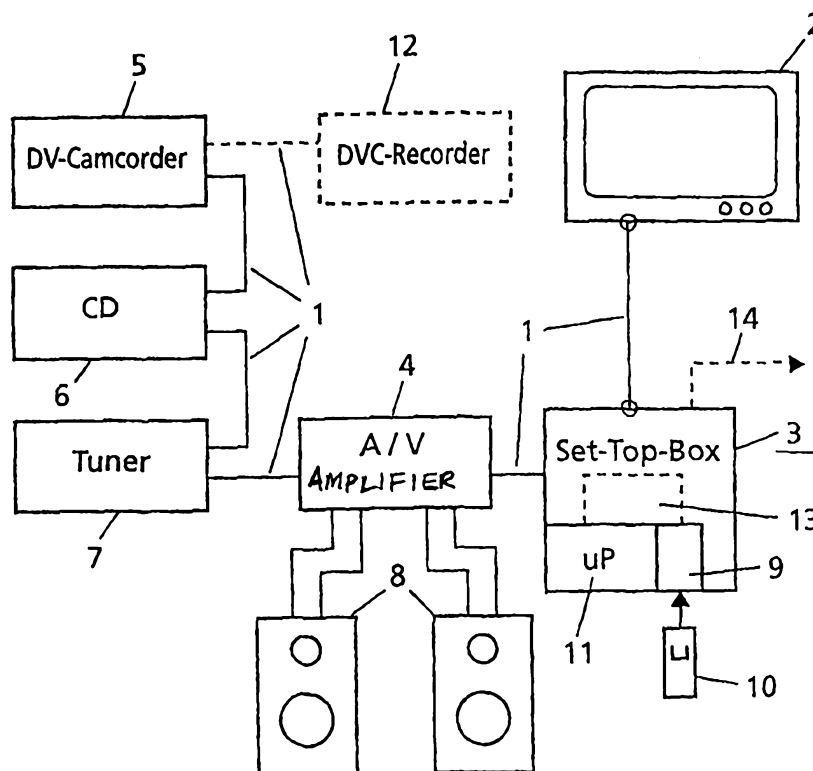
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<p>(21) International Application Number: PCT/EP99/07978 (22) International Filing Date: 21 October 1999 (21.10.99) (30) Priority Data: 198 50 574.4 2 November 1998 (02.11.98) DE (71) Applicant (for all designated States except US): DEUTSCHE THOMSON-BRANDT GMBH [DE/DE]; Hermann-Schwer-Strasse 3, D-78048 Villingen-Schwenningen (DE). (72) Inventor; and (75) Inventor/Applicant (for US only): SCHRÖDER, Ernst, F. [DE/DE]; Pinkenburger Strasse 25D, D-30655 Hannover (DE). (74) Agent: SCHÄFERJOHANN, Volker; Deutsche Thomson-Brandt GmbH, European Patent Operations, Karl-Wiechert-Allee 74, D-30625 Hannover (DE).</p>		<p>(81) Designated States: AL, AM, AU, AZ, BA, BB, BG, BR, BY, CA, CN, CU, CZ, EE, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, RO, RU, SD, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report.</p>

(54) Title: SYSTEM FOR STORING AND TRANSMITTING HOME NETWORK SYSTEM DATA

(57) Abstract

The invention specifies a system having a plurality of devices (2-7) which are connected to one another via an IEEE 1394 interface and one (3) of which contains a control unit (11) which, when operated appropriately by a user, polls system data for devices (2,4-7) in this system via the interface (1) and passes this system data to an output unit (9, 13, 14) of this device (3). The device having the output unit is, by way of example, a set-top box (3) having a microprocessor which a user uses to poll system data for the devices (2, 4-7), which contains, in particular the input and output characteristics of the latter, via the interface (1) and which the user can use to store this system data on a smart card (10) by means of a write/read device (9). Alternatively or at the same time, the system data can be shown on a display (13) or transmitted to a desired address via a modem connection (14). As a result, the user of the system can receive expert advice from a specialist dealer or a customer service point regarding which devices (12) he can best add to his system; or if a point of failure or faults arise.



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SYSTEM FOR STORING AND TRANSMITTING HOME NETWORK SYSTEM DATA

The invention relates to a system having a plurality of
5 devices connected to one another via digital interfaces.
Furthermore, the invention relates to a device for
writing to a mobile data medium for use in the system and
to a mobile data medium for use in the system.

10 Prior art

The invention is based on a system having a plurality of
devices connected to one another via an IEEE 1394
interface. Devices of this type are known for home
applications, for example, and it is expected that these
15 devices will become established on the market as mass-
produced products in connection with digital television
and digital recording methods.

Entertainment electronics devices are produced by many
20 manufacturers in a great variety of design forms widely
ranging in quality and price. Hence, users frequently
combine devices from different manufacturers for a music
and/or video system. What they often do not know,
however, is which devices go together best or whether the
25 devices are completely compatible with one another.

The digital interface IEEE 1394, also called "Firewire",
connects the devices to form a system via which, for
example, video data, audio data or system data is
30 transmitted. This system is able, amongst other things,
to configure itself when additional devices are
connected, even during continuous operation (hot
plugging). When a new device is connected to the IEEE
1394 interface, a reset is triggered, irrespective of the
35 particular state of the interface. After the reset, the
structure of the interface is determined again and
physical addresses are allocated for the purpose of self-
identification.

As a result, however, a user no longer has direct access to the configuration data, as this is generated internally. It is, of course, possible to show or print this configuration data, for example using a PC, but a user will frequently not know the configuration of his system precisely. Hence, he will not know what device supplements his system best if he wishes to add a further device.

Digital video devices having an IEEE 1394 interface are already known. Minicomputers (PC or laptop) can also have this interface fitted. An insight into the way in which the IEEE 1394 interface works and possibilities for its use is given in the brochure SPECSinternational, Vol. 10, No 4, July/August 1998 from Cable Television Laboratories, Inc., Louisville, USA. For the interface itself, the standard IEEE Std 1394-1995 was created, entitled "IEEE Standard for a High Performance Serial Bus", IEEE 1996.

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Invention

The object of the present invention, therefore, is to specify a system of the type mentioned above which gives a user the option of adding further devices to the system without difficulty.

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This object is achieved by the features of the invention which are specified in Claim 1. Advantageous developments of the system and devices in the system are specified in the further claims.

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With the system according to the invention, a user can poll the system data for devices in this system via the IEEE 1394 interface using a control unit arranged in one of the devices, and can pass this system data to an output unit of this device. The output unit is, by way of example, a device for writing to a mobile, digital data medium which stores the system data. The system data for

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a device contains, in particular, the input and output characteristics of the latter. As a result, the user can take the data medium with its system values to a specialist dealer or technical customer service point and hence receive very specific advice about his home system.

Instead of storing the system data on a digital data medium, it is alternatively also possible to transmit the system data via a modem or other analogue or digital telecommunication connection to an appropriate specialist dealer or customer service point, or to show it on a display, so that the owner can take note of it. A further advantage is that this system data can locate or at least isolate a point of failure or malfunction, so that these faults can be eliminated more quickly. In complex digital systems having a plurality of devices, it is frequently difficult to locate malfunctions or associate them with a particular device.

One of these devices contains, in particular, a control unit which, when operated appropriately by a user, polls relevant system data for connected devices via the interface and uses a device to store this system data on the data medium. Data media can be, in particular, a smart card or a chip card having a semiconductor memory. A suitable central device which can be used to retrieve and store the system data is, in particular, a set-top box or a digital satellite receiver, some of which are already equipped with write/read devices for a smart card.

Alternatively, a minicomputer, such as a PC or laptop, which can likewise be connected to the IEEE 1394 interface can also be used, however, so that the system data can be stored on a floppy disk, for example. Relevant system data and characteristic data for a device used in the system are, in particular, serial number,

manufacturer's mark, input and output characteristics, device class, software version and/or any error data.

Drawings

5 The invention is explained in more detail below by way of example and with the aid of a schematic drawing, in which:

10 Figure 1 shows a system having entertainment electronics devices connected to one another via an IEEE 1394 interface.

Detailed description of the invention

15 The system shown in the figure contains audio and video devices from the field of consumer electronics, which are connected to one another via an IEEE 1394 interface 1. In this case, a television set 2 is connected to a set-top box 3 by means of this interface 1 and to a digital camcorder 5 via an A/V amplifier 4. Other devices in this system are a CD player 6 and a tuner 7. The loudspeakers 20 8 are connected to the A/V amplifier 4.

The set-top box 3 contains a device 9 for reading and writing to a mobile digital data medium 10; in this 25 illustrative example, the device 9 is a smart-card reader for a corresponding smart card having a non-volatile memory. The set-top box 3 also contains a control unit 11, for example a microprocessor, which can be used by a user of the set-top box to retrieve system data from all 30 devices or from individual devices in this system via the interface 1. A set-top box is suitable for this since it already has a device 9 for writing to a smart card 10 anyway. The control unit 11 can be instructed [lacuna] keypad arranged above another set-top box 3, for example.

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Alternatively, other devices in the system can also be used for storing the system data, for example the A/V amplifier 4 if it has a write/read device for a suitable

chip card, or a digital satellite receiver if it is used instead of the set-top box 3.

If a user has stored his system data on the data medium 10, he can take this system data to a specialist dealer or to a customer service point, where it is read and the user can then be advised. If the user also wishes to buy a digital video recorder 12, for example, in order to transfer video recordings from the digital video camcorder 5, the specialist dealer can read out the system data on the data medium 10 and recommend to the customer a device matching the performance of the digital camcorder 5. Similarly, the user can be advised by a specialist dealer in the event of system faults, provided that system data can still be retrieved and stored on the data medium 10 via the interface 1.

The interface 1 also allows the devices in the system to be installed in different rooms, for example the digital camcorder 5 and the digital video recorder 12 can be installed in a work room and the other devices in the audio and video system 2 - 4, 6, 7 can be installed in a living room. Using the set-top box 3 and the control unit 11, the user can, in this case, too, ascertain the status of all connected devices at any time, or can monitor which devices are connected. In addition, a minicomputer in the work room can also be connected to the system via an IEEE 1394 interface, so that this computer can also retrieve the system data for the devices 2 - 7 and store it on a floppy disk, for example.

The invention has been explained using the example of a system of a plurality of devices connected to one another via the IEEE 1394 bus. Hence, it is expressly pointed out that the invention can also be used when a plurality of devices are connected using other communication bus systems. Examples are the USB, CAN, Interbus, Ethernet, IBM Token Ring etc. bus systems.

Alternatively or in addition, the device having the control unit 11, the set-top box 3 in this illustrative example, can have a display 13 which can show the polled system data when an appropriate command is given. A further refinement of the invention is for the polled system data to be transmitted to a desired address, for example to a specialist dealer or a customer service point, via an available modem connection 14 when an appropriate user command is given.

Patent claims

1. System having a plurality of devices connected to one another via a bus interface, in particular an IEEE 1394 bus interface, characterized in that one of the devices (3) contains a control unit (11) which, when operated appropriately by a user, polls system data for devices (2,4-7) in this system via the interface (1) and passes this system data to an output unit (9, 13, 14) of this device (3).
2. System according to Claim 1, characterized in that the system data for a device (2-7) contains the input and output characteristics of the latter.
3. System according to Claim 1 or 2, characterized in that the output unit (9, 13, 14) is a device (9) for writing to a mobile, digital data medium (10) which can store the system data.
4. System according to Claim 3, characterized in that the mobile data medium (10) is a smart card or a chip card having a memory, and in that, when operated appropriately by a user, the control unit (11) in the device (3) stores system data for connected devices (2,4-7) on the smart card or the chip card (10) using the device (9).
5. System according to Claim 3 or 4, characterized in that the device (3) having the device (9) for writing to the data medium (10) is a set-top box or a digital satellite receiver having a write/read device for a chip card or a smart card.
6. System according to Claim 3 or 4, characterized in that the device (3) having the device (9) for writing to the data medium (10) is a minicomputer

having a drive for a floppy disk or another data medium having a magnetic or optical storage medium.

- 5 7. System according to one of Claims 3 - 6, characterized in that the stored system data comprises characteristic data for this device (2, 4-7), e.g. a serial number, the manufacturer's mark, the device class, output and/or input characteristics, the software version and/or any error data.
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8. Device having a device for writing to a mobile, digital data medium for a system according to one of Claims 3 - 5, characterized in that the device (3) contains a control unit (11) which, when operated appropriately by a user, polls system data for connected devices (2,4-7) via the interface (1) and stores this system data on the data medium (10) using the device (9).
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- 20 9. Mobile data medium, characterized in that it (10) is used for storing digital system data for a system according to one of the preceding Claims 3 - 7.
- 25 10. Data medium according to Claim 8, characterized in that it (10) comprises a writable semiconductor memory or a magnetic or an optical storage medium.
- 30 11. System according to Claim 1 or 2, characterized in that the output unit (9, 13, 14) is a display (13) which, when operated appropriately by a user, shows the system data; or a modem or another telecommunication connection (14) which, when operated appropriately by a user, can send the system data to a desired address.
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12. Device for a system according to Claim 11, characterized in that it (3) contains a control unit

- 5 (11) which, when operated appropriately by a user, polls system data for connected devices (2,4-7), which contains input and output characteristics for these devices, via the interface (1) and shows this system data on a display (13).
- 10 13. Device for a system according to Claim 11, characterized in that it (3) contains a control unit (11) which, when operated appropriately by a user or when an appropriate remote polling code is received, polls system data for connected devices (2,4-7), which contains input and output characteristics for these devices, via the interface (1), and in that the output unit (9, 13, 14) is a modem or another telecommunication connection (14) which can send the system data to a desired address.
- 15 14. Device for a system according to Claim 13, characterized in that user operation corresponds to remote control in the context of a remote polling code transmitted via communication line or by radio.
- 20 15. Device for a system according to one of Claims 1 - 7 or 11, characterized in that the device (2,4-7) outputs its system data via the interface when an appropriate command is transmitted via the interface.
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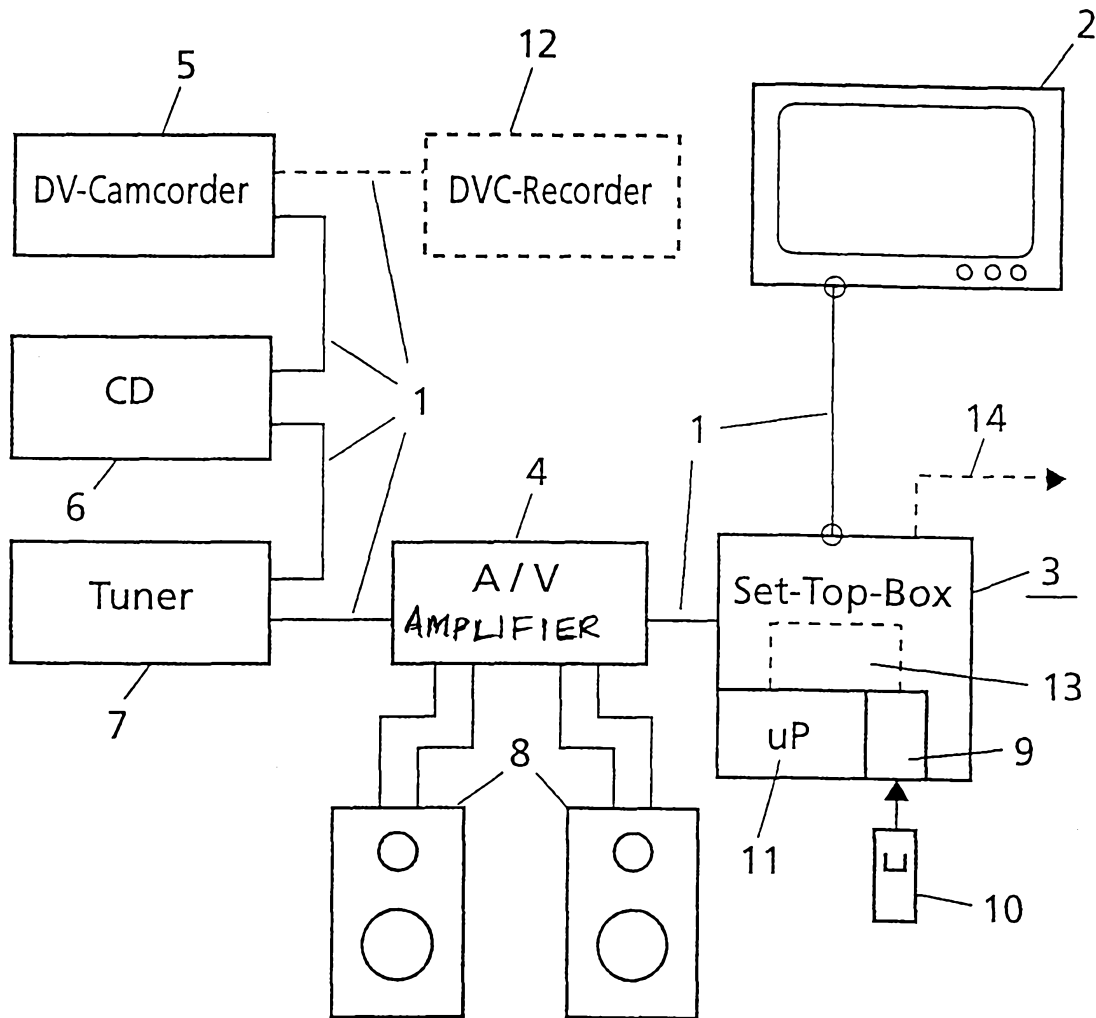


Fig.1