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"Device and its process for automatically managing the flow of digital data from a host between a common interface and its associated modules"

The invention has for its object a device automatically to manage the switching of the flow of digital data from a host to a common interface using at least two connectors for modules.

The modules can be of the PCCARD or DVB-CI type.

The host can be for example a decoder, a digital television, a card contained in a computer, each host being adapted to be connected to one or several networks (satellite, cable or hertzian).

The invention has for its object a device and its process automatically to control the flow and to recognize the level of priority of a module inserted in any manner in

one of the connectors of an electronic apparatus called a host.

A universal receiver or host using two or more modules does not permit using in the same way a module inserted in slot A or connector A and a module B in slot or connector B. Thus, the positioning of the connectors A and B corresponding to the two modules A and B are not interchangeable. It is necessary, according to the state of the art, that the module A be emplaced in the connector A and that the module B be emplaced in the connector B.

The flow from the demodulator between the first module A if it is present or else a controlled digital switch, will permit the flow to remain in the decoder by means serving as a shunt or branch circuit. If the first module A is in place, the flow between the second module B if it is present, or else in the same manner if there will be a controlled digital switch which will permit the flow to remain in the decoder by a shunt or branch circuit. After having passed to the module B if the latter is in place in the connector B, the flow enters the demultiplexer.

On the other hand, if by error, the user has wrongly inserted these modules and the module B has been emplaced in connector A, the apparatus can be incapable of functioning.

The invention thus has for its object to solve this problem and to permit any user to use the slots or connectors in any way for all the modules that the user wishes to use and without having to give thought to what is the order of introduction of the modules and what is their exact positioning.

To this end, the device according to the invention is of the type using, in a host, a demodulator, a demultiplexer, a pilot for the common interface, a processor, at least two connectors for two modules, automatic recognition means of the modules once they are inserted in each connector, and switching control means which will interchange the movement of the flows within the host and the modules.

Similarly between the demodulator and the demultiplexer and the processor is inserted an electric component (ASIC) designated 6, or any other system which automatically recognizes each module inserted into its connector and permits interchanging the movement of the flow.

The accompanying drawings are given by way of indicative example and are not limiting. They represent one embodiment according to the invention. They permit easy comprehension of the invention.

Figure 1 is a diagram showing the state of the art in a host of the present type using two modules.

Figure 2 is a diagram showing the use of the device and process according to the invention with two modules in place in a host according to the invention.

According to the state of the art shown in Figure 1, the host 3 using two modules, module A and module B, the module A being emplaced in the connector A and the module B being emplaced in the connector B, it is evident, when considering the movement of the flow 1, that when a module has not been emplaced in its proper connector, the electronic apparatus cannot function. Thus the flow 1 from the demodulator enters the first module A which is present, then it enters the second module B if it is present and will enter the demultiplexer 4. Of course, if one of the modules is not present, a control digital switch will permit the flow to remain in the decoder by branch circuit or shunt means. The flow will thus enter the second module if it is present and then will enter the demultiplexer 4.

According to the host shown in Figure 1, the use for example of a module serving as a tuner (receiver for frequency modulation) is not possible in the position B or connector if the latter is not dedicated explicitly to an emplacement or a module connector serving as a tuner.

Thus, the flow from the tuner module cannot be decoded if needed in the module A. The introduction of the module A and B, in the connectors A and B, must therefore correspond to the nature of the modules (access control, tuner, etc.). This choice thus requires moreover of the user a high level of technical knowledge.

The embodiment shown in Figure 2 uses, in the host 5, an electronic component ASIC designated 6 or any other system which permits automatic recognition of each module A and/or B and will permit, in association with the electronic multiplexer, to interchange the movement of the flow 7 and 8 within the host and modules A and B, with a pilot for the common interface 11. Thus the flow from the demodulator 12 will enter the module A, the flow from the module A will be immediately and automatically identified in the electronic component (ASIC) or any other system. Similarly, the flow from module B will be immediately and automatically identified in the electronic component (ASIC) or any other system which, if necessary, interchanges the movement of the flow.

The assembly of the whole of the flow can return to the multiplexer 13. The electronic component (ASIC) or any other system 6 will thus automatically identify in the host the modules no matter what their position in the connectors

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A or B. The electronic component (ASIC) or any other system 6 and the pilot for the common interface will determine an order of priority of the flow within the two modules A and B, and this whether the latter are disposed in connector A or in connector B.

The connectors are hence indistinguishable and interchangeable as to the modules.

As a practical matter, the user no longer need take care when inserting modules in their connector.

REFERENCES

1. FLOW
2. DEMODULATOR
3. HOST
4. DEMULTIPLEXER
5. HOST
6. ELECTRONIC COMPONENT (ASIC or any other system)
7. MOVEMENT OF THE FLOW
8. MOVEMENT OF THE FLOW
10. PROCESSOR
11. PILOT FOR THE COMMON INTERFACE
12. DEMODULATOR
13. DEMULTIPLEXER

A MODULE A, CONNECTOR A

B MODULE B, CONNECTOR B

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CLAIMS

1. Device for automatically managing the flow of digital data from a host constituted by a decoder for the reception of digital television between a common interface and its associated modules, of the type using, in a host, a demodulator (12), a multiplexer (13), a pilot for the common interface (11), a processor (10), at least two connectors (A, B) for two modules (A, B), characterized by the fact

that it comprises automatic recognition means of the modules once they are inserted in each connector (A-B) and means for controlling the switching to interchange the movements of the flow (1) within the host (3) and the modules (A-B).

2. Device according to claim 1, characterized by the fact

that between the demodulator (12) and the demultiplexer (13) and the processor (10) is inserted an electronic component (ASIC) which automatically recognizes each module (A-B) inserted in its connector (A-B) and permits interchanging the movement of the flow (1).

3. Process for using the device according to invention 1, to manage automatically the flows of digital data from a host constituted by a decoder for the reception of digital television between a common interface and its associated modules, characterized by the fact

that it uses automatic recognition means for the modules once they are inserted in each connector (A-B) and switching control means which interchange the movements of the flow (1) within the host (3) and the modules (A-B).