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(54) AUTHENTICATION AND MANAGEMENT SYSTEM OF REMOTE CONTROL CODING

AUTHENTIFIZIERUNGS -UND VERWALTUNGSSYSTEM ZUR FERNBEDIENUNGSKODIERUNG
SYSTEME D'AUTHENTIFICATION ET DE GESTION DE CODAGE DE COMMANDE A DISTANCE

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Description

Field of the Invention

[0001] This invention concerns the remote control of automated systems and appliances in general, such as closing of accesses, lighting systems, irrigation systems, alarm devices, etc., and refers in particular to an improved authentication and management system of remote control codings.

State of the Technique

[0002] For remote control of automated equipment in general, control systems based on portable radio frequency transmitters (commonly called remote controllers) and radio receiver devices in the zone where the controlled system is located, are known and already widely used.

[0003] In order to carry out remote control, a signal is sent by a remote control to a radio receiver that is able to recognise said signal. In order to guarantee adequate immunity of the system against interference from remote controls not belonging to the system and adequate protection against unauthorised duplication of authorised remote controls, the signal transmitted can also contain a safety coding.

[0004] In fact, according to the state of the art, a remote control system may use codings of varying complexity, which ranges from the use of a single fixed preset code, a technically simple and economic solution, but not very protective, to the use of coding based on variable codings (the so called rolling codes) or a combination of several codes.

[0005] The use of rolling codes or several codes codings has, however, practical drawbacks, stemming from the fact that the need arises to re-programme or anyway to carry out maintenance on the coding used, especially on an already installed device. In these cases, the use of equipment that is not always the best possible, is used to carry out the required operations on a system already installed, and furthermore the equipment needed is often bulky, requires an external source of power and elaborate setting programmes.

Objects and Summary of the Invention

[0006] One object of this invention is to provide an innovative and reliable, extremely simple, economic, versatile, safe and difficult to reproduce by unauthorised persons, authentication and management system of the codings of remote controls.

[0007] Another object of this invention is to provide a management and authentication system of the codings easy to programme, use, maintain and re-programme.

[0008] These objects are reached, according to the invention, with a management and authentication system of the radio transmission codings in remote control ap-

pliance using radio frequency transmitters that dialogue with fixed radio receiver equipment. which system includes in essence a personal computer loaded with a programme for storing at least the codings of said remote controllers, a portable electronic device (Memory Box) for storing and programming, connectable to the personal computer, the transfer of the remote control codings stored by the personal computer to the memory box and from the memory box to the radio receivers to be configured, the memory box having at least one interface for a selective connection to the personal computer and to the radio receivers.

[0009] Furthermore, the system can include a device for authentication or loyalty of codings, called a "Master", connectable to radio receivers to activate/deactivate the storing/cancelling functions of the codes.

Brief description of drawings

[0010] More details regarding the invention will become more evident from the following description made in reference to the enclosed indicative but not limitative drawing, in which the only figure shows a block diagram of the proposed management system.

Detailed Description of the Invention

[0011] As shown, the system described here includes in essence a personal computer 11, a portable device 12 for storing and programming the remote control codes, called a "Memory Box", and a code authentication device 13, called a "Master". This system is applied, for example, to a radio transmission system which use a set coding, a variable coding or both, and is composed of one or more, single or multi-channel radio frequency radio transmitters 14 (remote controllers), designed to dialogue with at least one radio receiver single or multi-channel device 15.

[0012] The personal computer (PC) 11 contains a dedicated programme which enables several transmission system setting operations to be carried out; among which, loading into the PC the codes of several remote controllers 14 and their transfer directly to a receiver device 15 or, as an alternative, to the removable storing and programming device 12, using a USB connection interface.

[0013] By means of the personal computer 11 it is possible to carry out at least: the complete management with display of the setting of the remote controls involved 14; the change of the codes of said remote controls 14; duplication of the codes with channel change to programme the other receiver devices 15 positioned on the same appliance and operated by the same remote control 14; the cancellation of a single code in the case of theft or loss of a remote control 14; the management of a data base containing personal descriptive data associated with the different remote controls 14 of the system.

[0014] The Memory Box device 12 consists in an elec-

tronic device, limited in size and user friendly, capable of memorising, permanently and without the need for batteries, one item or several items of data from a multitude of remote controls 14 and to transfer, even autonomously, this data to the receiver device 15 simply by pressing a key and using a RJ11 interface. Advantageously, the Memory Box 12 device uses the respective interfaces as power sources when it is connected either to the personal computer 11 through the USB interface or to the radio receiver device 15 through the RJ11 interface.

[0015] The correct or incorrect result of the programming of the receiver device 15 is signalled by a series of different coloured illuminated indicators (LED) located on the Memory Box device 12.

[0016] The Master transmitter is also a portable device, equipped with a RJ11 connector and able to carry out both a loyalty and authentication procedure of the codes of the remote controls once stored in the radio receiver device 15 both to add or remove the codes in some remote controls associated with the receiver device 15.

[0017] The personal computer can be connected and used directly to programme one or several receiver devices, transferring the codings of the transmitters. But, in a typical application, first the programming of the remote controls 14 with relative specific codes, and any personal data and/or identifying data is stored on the personal computer 11. The codes can be transferred later, using the USB connection, to the Memory Box device 12. This can be disconnected from the personal computer 11, transported and connected, using the RJ11 interface, directly to an installed receiver device 15 to be used as an autonomous programming unit.

[0018] Once the connection between the Memory Box device 12 and the radio receiver device 15 has been established, all that is required is to press a key on said device 12 to programme the radio receiver 15 with the remote control codes, and the result of the operation is signalled by the illuminated indicators (LEDs) present on the Memory Box device 12 itself.

[0019] The "Master" loyalty transmitter can also be, easily and immediately connected to the receiving device 15 which, will carry out the authentication enabling it to dialogue with the respective remote controls 14.

Claims

1. A management and authentication system of radio transmission codings of remote control devices (14), which use radio frequency transmitters to dialogue with fixed radio receivers (15), **characterised in that** it includes a personal computer (11) loaded with a programme for changing and at least storing the codings of said remote control devices (14) and a portable electronic device, further referred to as Memory Box (12), connectable to the personal computer (11) and being arranged to store the codings of the remote control devices (15), said codings being trans-

ferred from the personal computer (11), transfer the stored codings and program the radio receivers (15) to be configured, the Memory Box (12) having at least an interface for a selective connection to the personal computer and to the radio receivers.

2. The management and authentication system of the radio transmission codings according to claim 1, including also a codings authentication and loyalty device further referred to as Master (13), connectable to the radio receivers and able to manage some modifying or erasing functions of the codings loaded in the radio receivers (15).
3. The management and authentication system of the radio transmission codings according to claims 1 and 2, in which the portable storage and programming Memory Box (12) has an interface of USB type for connecting to the personal computer and an interface of RJ11 type for connecting to the radio receiver, each interface being usable both as a communication port and as a power source, said Memory Box (12) maintaining the loaded data in it's memory without the need for buffer batteries.

Patentansprüche

1. System zur Authentifizierung und Verwaltung der Funkübertragungskodierungen von Fernbedienungen (14), welche zur Verständigung mit ortsfesten Funkempfängern (15) Radiofrequenzsender benutzen, **dadurch gekennzeichnet, dass** es einen Personalcomputer (11) mit einem Programm zur Änderung oder mindestens zur Speicherung der Kodierungen jener Fernbedienungen (14), sowie eine tragbare, als Memory Box bezeichnete und an den Personalcomputer (11) anzuschließende elektronische Vorrichtung zur Speicherung der Kodierungen der Fernbedienung (15), umfasst, und dass jene gespeicherten Kodierungen, ausgehend vom Personalcomputer (11), zur Kodierung und Programmierung der zu konfigurierenden Funkempfänger (15) übertragen werden, und die Memory Box mindestens eine Schnittstelle für einen selektiven Anschluss an den Personalcomputer und an die Funkempfänger hat.
2. System zur Authentifizierung und Verwaltung der Funkübertragungskodierungen gemäß Patentanspruch 1, mit einer Vorrichtung zur Authentifizierung und Fidelisierung der Codes, als Master (13) bezeichnet, sowie an Funkempfänger anschließbar und in der Lage, Funktionen zur Änderung oder Löschung der im Funkempfänger (15) gespeicherten Codes zu verwalten.
3. System zur Authentifizierung und Verwaltung der

Funkübertragungskodierungen gemäß den Ansprüchen 1 und 2, bei dem die an den Personalcomputer anzuschließende Memory Box (12) zur Speicherung und Programmierung eine USB-Schnittstelle für den Anschluss an den Personalcomputer und eine RJ11-Schnittstelle für den Anschluss an den Funkempfänger hat, wobei jede Schnittstelle sei es als Kommunikationsport, sowie auch als Stromquelle benutzt werden kann, und die genannte Memory Box (12) in ihrem Speicher die geladenen Daten, ohne die Notwendigkeit von Pufferbatterien, konserviert.

Revendications

1. Un système d'authentification et gestion des codages de transmissions radio d'appareils de contrôle à distance (14) qui utilisent des transmetteurs à radiofréquence pour dialoguer avec des récepteurs radio fixes (15), **caractérisé en ce qu'il** comprend un ordinateur personnel (11) chargé avec un programme pour changer et au moins mémoriser les codages desdits appareils de contrôle à distance (14) et un dispositif électronique portable, appelé également Memory Box, connectable à l'ordinateur personnel (11) et prédisposé pour mémoriser les codages des dispositifs de contrôle à distance (15), lesdits codages mémorisés étant transférés à partir de l'ordinateur personnel (11) pour codifier et programmer les récepteurs radio (15) à configurer, la Memory Box ayant au moins une interface pour une connexion sélective à l'ordinateur personnel et aux récepteurs radio.
2. Le système d'authentification et gestion des codages de transmissions radio selon la revendication 1, incluant aussi un dispositif d'authentification des codes et de fidélisation, appelé également Master (13), connectable aux récepteurs radio et en mesure de gérer certaines fonctions de modification ou d'annulation des codes chargés dans les récepteurs radio.
3. Le système d'authentification et gestion des codages de transmissions radio selon les revendications 1 et 2, dans lequel la Memory Box portable (12) de mémorisation et de programmation a un type d'interface USB pour la connexion à l'ordinateur personnel et a un type d'interface RJ11 pour la connexion au récepteur radio, chaque interface étant utilisable tant comme porte de communication que comme source d'alimentation, ladite Memory Box (12) conservant les données chargées dans sa mémoire sans nécessité de batteries tampons.

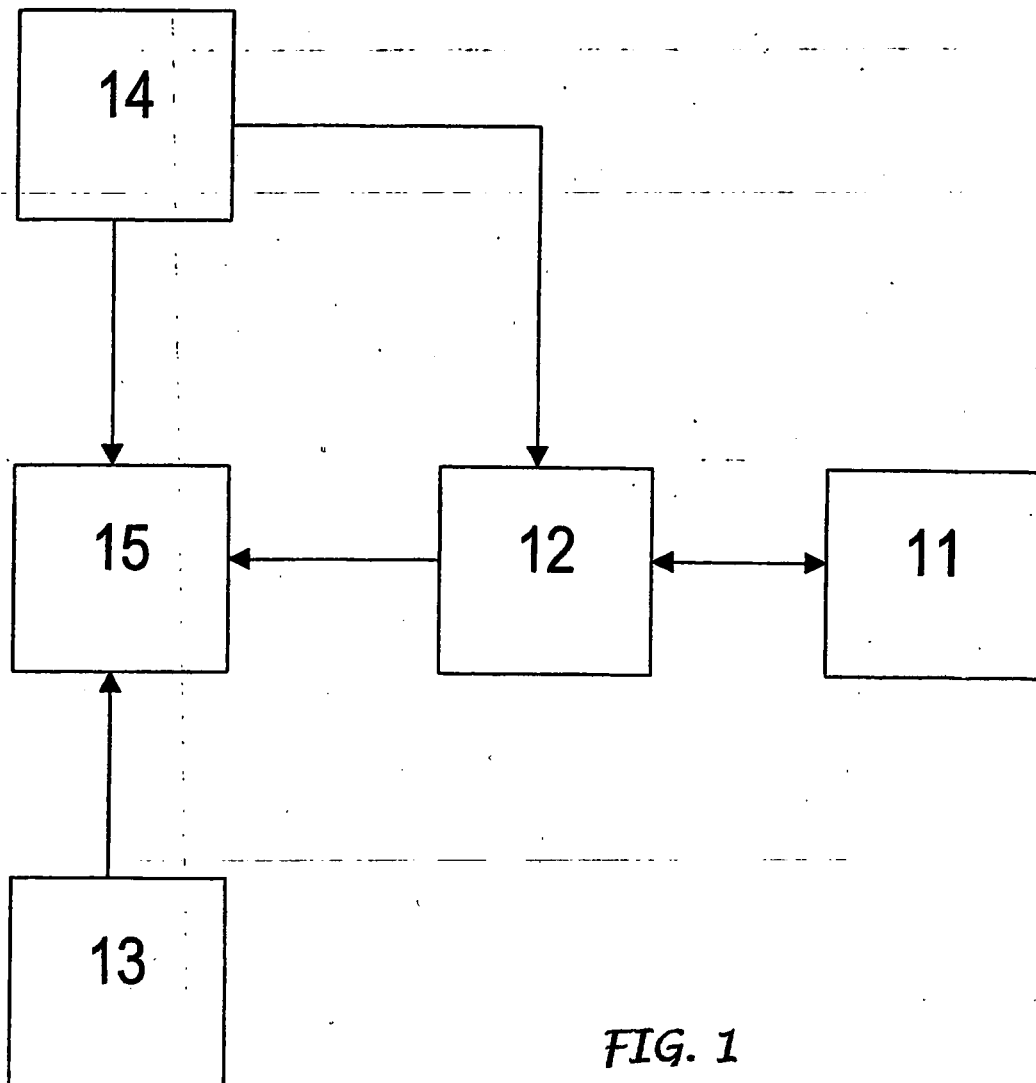


FIG. 1