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(54) **Reception/management system for digital signals from electronic devices, capable of learning the zone configuration data, in particular for alarm systems**

Empfangs-Verwaltungssystem für von elektronischen Vorrichtungen stammende digitale Signale, die fähig sind, die Melderkonfiguration zu lernen, insbesondere für Alarmsysteme

Système de réception/gestion pour signaux numériques issus de dispositifs électroniques, et capables d'apprendre la configuration des capteurs, en particulier pour système d'alarme

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EP-A- 0 296 022 **EP-A- 0 485 878**
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Description

[0001] The present invention relates to a reception/management system for digital signals from electronic devices used, in particular, for alarm systems.

[0002] The present alarm systems, either of anti-intrusion type, or of technical type (for fires, gas leakages, water seepage), generally comprise an electronic control unit (referred to in the following, by the more common term "central unit"), alarm devices (such as sirens, warning horns, blinkers), specific sensors to the installed system type, telephone diallers, stabilized power supply units, which take the voltage from electrical power distribution mains, enabling or disabling devices, actuators or driver devices for motor units.

[0003] During the past years, such alarm systems have been installed with increasing frequency using, for the necessary connections, connecting lines of digital type (referred to in the following, as "buses"), which perform the main functions of transferring data and signals from device to device inside the system.

[0004] In particular, the installer must subdivide the area controlled by the alarm system into several zones each of which can be excluded from control independently from the other zones.

[0005] Such a configuration is normally accomplished by means of digital signals reception/management systems of traditional type, by connecting the central unit with one or more electrical networks constituted by sensor elements, other electronic devices for auxiliary functions and sound signalling devices (which start operating in the event of a fire) by means of a star-like connection pattern, using purposely designed point-to-point lines, i.e., one line per each zone.

[0006] In the reception/management systems for digital signals based on bus connection, the individual sensor element is suitably configured by setting purposely provided setting means said sensor element is equipped with (by acting, for example, on "DIP switches", rotary selectors, resistors).

[0007] EP-A-0 485 878 discloses a system according to the preamble of claim 17.

[0008] Each sensor element is defined as belonging to a well determined zone and an univocal correspondence is established between the sensor element and the zone it belongs to ("belonging zone").

[0009] In a similar way, the sensor elements can be supplied as already provided with an univocal code of their own in order to identify the zone they belong to.

[0010] The association between code and belonging zone is then carried out in the central unit by means of suitable application software commands.

[0011] One from the main drawback of the reception/management system for digital signals as disclosed above consists in the lack of flexibility of the connections and of the device installations. The sensor element connected with the connecting line of a determined zone can be re-assigned to another zone only by means of a

direct electrical connection with the corresponding peripheral unit.

[0012] In those systems which are based on locally obtained zone configuration (i.e., directly carried out on the sensor element), the major difficulty consists in that the installer must be supplied with complete information as to the operations to be performed, with the consequent and unavoidable possibilities of error in system setting (due to misunderstanding, information mistakes, staff absence) and long implementation times.

[0013] Furthermore, the confidentiality of such operations cannot be secured.

[0014] In those systems which are based on central unit programming the above drawbacks are avoided, but the difficulty remains of associating the codes (which define the sensor elements) with the belonging zone; also in this case, in fact, skill and care are necessary in code attribution operations, consequently resulting in long wait times and high error probability.

[0015] The purpose of the present invention is of providing a reception/management system for digital signals capable of learning the zone configuration data which solves the above cited problems, with a coordinated and flexible whole of the various electronic zone devices and a management methodology for the latter being provided.

[0016] Another purpose of the present invention is of providing a reception/management system for digital signals which is capable of learning the zone configuration data, using standard electric/electronic technologies, communication methodologies and univocal electrical solutions which allow the amount and size of connecting harness to be reduced and the devices to be installed and integrated with a high flexibility degree, with higher functionality of code/zone association and learning accuracy being accomplished as compared to the solution known from the prior art.

[0017] A not least purpose of the invention is of providing a reception/management system for digital signals which is easy and cheap to be manufactured, without having to resort to either complex or expensive technologies.

[0018] These, and still other purposes, are achieved by a system for receiving and managing digital signals coming from electronic devices and used in particular for alarm systems, according to Claim 1.

[0019] Advantageously, the system for receiving and managing digital signals according to the present invention uses one single bifilar digital bus with which the central unit, electronic devices, sound signalling devices and zone actuator apparatuses are connected.

[0020] In particular, using one single digital bifilar bus for connecting the electronic devices of an alarm system allows the amount of connecting harness to be substantially reduced and flexibility to be accomplished when installing said devices, which can be assigned to different zones of the system with no need for being electrically connected with the corresponding connecting line.

[0021] The expansion of the system is secured within the limits provided by bus capacity, it being enough, for installing further electronic devices, that both bus wires are accessed at a whatever point along the line.

[0022] Furthermore, no operations are required of zone attribution to be carried out on the individual electronic device with time wastes and error possibilities being thus avoided.

[0023] Finally, inside the central unit, the associations of each electronic device with its belonging zone are carried out automatically; therefore, for the installer it will be enough that (s)he selects the learning state operating mode and zone associations.

[0024] Further purposes and advantages of the present invention will be clear from the following disclosure and from the accompanying drawings, supplied for merely explanatory, exemplifying, non-limitative purposes, in which:

- Figure 1 displays a block diagram of an alarm system based on a system for receiving/managing digital signals coming from electronic devices and capable of learning the zone configuration data, according to the present invention;
- Figure 2 shows a schematic front view of the central unit provided in the alarm system of Figure 1, according to the present invention;
- Figure 3 illustrates a block diagram of one of sensor elements, which are connected with other auxiliary electronic devices of the alarm system of Figure 1, according to the present invention.

[0025] Referring to Figure 1, the reference numeral (60) generally indicates the alarm system as a whole, which comprises: a power supply unit (20), which feeds the system with a direct voltage comprised within the range of from 20 to 30 volts, encased inside a modular case for flush mount in accordance with the applicable DIN provisions and connected, at the one side, with the electrical power distribution mains (10) and, at its other side, with a bifilar bus (18), through a connection line (19); sensor element (40), appended to other auxiliary electronic devices, actuator and motor units and connected with the bus (18) through connecting lines (19), which acquire and transmit data and information through digital signals of communication with a central unit (30) of the system (60); a central unit (30), connected with the bus (18) through one of said connecting lines (19) and designed to encode the sensor elements (40) assigned to the different zones and to learn said associations; devices for sound signalling (50) connected with the bus (18) through connection line (19), which start operating following commands issued by the central unit (30), in the event of an alarm.

[0026] The central unit (30), the sensor elements (40) connected with the auxiliary electronic devices, the actuator devices and the motor units, the power supply unit (20) and the sound signalling devices (50) are all pro-

vided with terminals for connection with the bifilar bus (18) through the lines (19), and with mechanical elements for fastening to frames/brackets which are used to contain electrical devices for use in civil environment, of modular type for flush mount.

[0027] Referring to Figure 2, the reference numeral (21) indicates an electronic device suitable for receiving an identification code (typically, a LED diode sensible to I.R. wavelengths), the reference numeral (22) indicates an optical alarm display, the reference numeral (23) indicates an optical display which displays the operating state of the system applied to the alarm system (60) (i. e., switched on/off), the reference numeral (24) indicates optical indicators which indicate an enabled or selected zone in learning mode, and the reference numerals (26) indicates push-buttons used to enable a zone and for selecting the zone in learning mode.

[0028] The reference numeral (27) indicates a push-button which enables the learning mode and other auxiliary functions, (28) indicates an optical indicator signalling that electrical power is being supplied by the electrical power distribution mains, (29) indicates an optical indicator of sabotage alarm, (31) is an optical indicator of technical alarm, (32) is an optical indicator of learning mode or test mode, (33) is an optical indicator of identification codes programming mode.

[0029] The reference numeral (34) indicates an enabling push-button to be used for enabling the programming of the identification codes to be sent to the several electronic devices belonging to the system (60) and configured into selected zones.

[0030] Referring to Figure 3, (41) is the electronic/optoelectronic circuit of the sensor element (in particular, a movement sensor), (42) is a digital storage element (which is a programmable memory or a reading-only buffer memory), (43) is a LED diode for visual signalling the operating state of the sensor element (40), (46) is a push-button used for sending or requesting the identification codes, (47) is an electronic interface circuit connected with the bifilar bus (18) in order to transmit and/or receive digital signals.

[0031] All the devices disclosed hereinabove are connected, by means of connecting lines (19b), with a micro electronic control unit (44), which manages the overall operation of the sensor element (40) of Figure 1.

[0032] The step of association of each sensor element (40) with a zone consists in putting the central unit (30) in a particular learning operating state during which the sound signalling devices (50) are disabled.

[0033] During this time interval, the zone is selected with which the individual sensor elements (40) making a part of the system (60) must be associated, by acting on the push-buttons (26) for zone enabling selection in learning mode.

[0034] Suitable optical indicators (22, 23, 24, 28, 29, 31, 32, 33) (typically, LED diodes) visually indicate the selection and the learning operating state of the central unit (30).

[0035] Thereafter, the installer (physically) reaches each sensor element (40) to be associated with the zones of the system and actuates a push-button (46) mechanically sheltered inside said sensor element (40), in order to send an identification code to the central unit (30).

[0036] The central unit (30) associates the identification code of the device with the selected zone, storing the data in a digital storage element (42) (which is either non-volatile, or buffer-fed).

[0037] The installer repeats the above said operation for all of the devices to be associated with that particular zone and, then, selects another zone, by acting on the push-button (26) of the central unit (30); the process continues as indicated above, for all of the zone devices which the operator wishes to enable.

[0038] Instead of actuating the push-button (46), the identification code sending can be triggered, following a procedure of micro electronic control unit (44) resetting, by means of a physical connection of the sensor element (40) and/or the associated electronic devices, with the bifilar bus (18) and consequent supply with power (possibly preceded by a disconnection).

[0039] As further alternative operating ways (variants) to the preceding modalities for selection and attribution of identification codes, a manual pressure on push-button (46) or the connection with the bifilar bus (18) can generate on the individual device the transmission of the request for identification code to the central unit (30).

[0040] Then, the central unit (30) sends a specific identification code which the device stores inside its storage element (42) together with the indication of the belonging zone, or without such an indication.

[0041] The central unit (30) can now store, if so necessary, the association procedure of the generated identification code and the selected zone; such a storage operation takes always place inside the storage element (42).

[0042] From the above disclosure, the characteristics and features will be clear of the reception/management system for digital signals coming from electronic devices capable of learning the zone configuration data according to the present invention -- as well as the advantages thereof will be clear.

[0043] In particular, they are represented by:

- flexibility of installation of system devices;
- no operations of zone attribution to be performed on individual devices with consequent time saving and decrease in error probability;
- automation of the association procedure on the central unit with consequent simplification of the operations of selection of the learning operating mode and of the zone.

Claims

1. System for receiving and managing digital signals coming from electronic devices, of the type used in alarm systems (60) and capable of learning zone configuration data, comprising:

- at least one electrical power supply unit (20), designed for connection with the power distribution mains (10);
- a plurality of sensor elements (40) associated with other auxiliary electronic devices and enabling and disabling apparatuses and actuation and drive apparatuses, with each of said sensor elements (40) being provided with a univocal identification code of its own or being locally configured by means of devices provided on the same sensor element (40), so that said element (40) can be associated with a zone of the alarm system (60) controlled by the reception/management system;
- an electronic control unit (30), which receives data from the sensor elements (40) and manages the system by assigning said identification code of each sensor element (40) to said zone by means of application software commands;
- a plurality of sound signalling devices (50) which start operating on an alarm event occurring,

said power supply unit (20), said sensor elements (40) and said electronic control unit (30) being connected, through a plurality of connection lines (19), with one single bifilar bus (18) which secures the transmission of electrical power and digital data between said control unit (30) and all the sensor elements (40) said electronic control unit (30) predisposing the sensor elements (40) in a state of selection of at least one zone of the alarm system (60) controlled by the reception/management system and in a learning state for learning the association of said identification code of at least one of said sensor elements (40) with said selected zone,

characterized in that

said sound signalling devices (50) are also placed on the same bifilar bus (18) as the sensor elements (40).

2. System for receiving and managing digital signals according to claim 1, **characterized in that** said electronic control unit (30) is capable of prearranging in a state of selection of at least one zone of the alarm system (60) of said system and a programming state such that, following digital signals coming from said bifilar bus (18), above said electronic control unit (30) generates said identification codes designed for said sensor elements (40) accompanied, or not, by a signal which supplies an indica-

tion of the selected zone.

3. System for receiving and managing digital signals according to claim 1, **characterized in that** said electronic control unit (30) comprises at least one receiver device (21), a plurality of push-buttons (26, 27) for the selection (26) of at least one zone of the alarm system (60) and for learning (27) the association between the identification codes and said selected zone, a plurality of means (22, 23, 24, 28, 29, 31, 32) for the visual signalling of the selection (24) of said zone, of the learning (32) of the association between identification codes and said selected zone, of the alarm situations (22, 29, 31), of system (23) switching on, of the presence of electrical energy (28) at electrical power distribution mains (10).
4. System for receiving and managing digital signals according to claim 1, **characterized in that** said sensor elements (40) comprise a micro electronic control unit (44) with which through a plurality of connection lines (19b) there are connected an optoelectronic circuit (41), a non-volatile or buffered storage element (42), a visual signalling device (43), a push-button (46) suitable for sending at least one identification code to said electronic control unit (30), an electronic interface circuit (47) for transmitting and receiving the digital signals on said bifilar bus (18), an electronic circuit (48) for resetting said micro electronic control unit (44) and for power supply from said bifilar bus (18).
5. System for receiving and managing digital signals according to claim 1 **characterized in that** said sensor elements (40) are suitable for sending at least one identification code to said electronic control unit (30) after said sensor elements (40) being physically connected with said bifilar bus (18), said sensor elements (40) comprising a micro-electronic control unit (44) with which there are connected, through a plurality of connecting lines (19b), an optoelectronic circuit (41), a non-volatile or buffered storage element (42), a visual signalling device (43), an electronic interface circuit (47) with the bifilar bus (18) for transmitting and receiving digital signals on said bifilar bus (18), an electronic circuit (48) which resets said micro electronic control unit (44) and for power feed of said sensor elements (40) by said bifilar bus (18).
6. System for receiving and managing digital signals according to Claim 2, **characterized in that** said sensor elements (40) comprise a micro electronic control unit (44) with which there are connected, through a plurality of connecting lines (19b), an optoelectronic circuit (41), a visual signalling device (43), a push-button (46) suitable for sending digital signals for requesting at least one identification

code to said electronic control unit (30), an electronic circuit (47) which constitutes an interface with said bifilar bus (18) for transmitting and receiving said digital signals on said bifilar bus (18), an electronic circuit (48) for resetting said micro electronic control unit (44) and for power supply by said bifilar bus (18), a non-volatile, or buffered storage element (42) for storing said digital signals, which are accompanied, or not, by a signal which supplies an indication of the selected zone.

7. System for receiving and managing digital signals according to claim 2 **characterized in that** said sensor elements (40) are suitable for sending digital signals for requesting at least one identification code to said electronic control unit (30), during a time period following a physical connection of said sensor element (40) with said bifilar bus (18), said sensor elements (40) comprising a micro electronic control unit (44) with which there are connected, through a plurality of connecting lines (19b), an optoelectronic circuit (41), a visual signalling device (43), an electronic circuit which constitutes an interface (47) with the bifilar bus (18) for transmitting and receiving said digital signals on said bifilar bus (18), an electronic circuit (48) which resets said micro electronic control unit (44) and feeds said sensor element (40) with power through said bifilar bus (18), a non-volatile, or buffered, storage element (42) for storing said digital signals, which are accompanied, or not, by a signal which supplies an indication of the selected zone.

Patentansprüche

1. System zum Empfangen und Verwalten von von elektronischen Vorrichtungen kommenden digitalen Signalen von dem in Alarmsystemen (60) verwendeten Typ und in der Lage zum Lernen von Zonenkonfigurationsdaten, umfassend:
 - mindestens eine elektrische Netzanschlußeinheit (20), die zum Verbinden mit dem Stromverteilungsnetz (10) ausgebildet ist;
 - eine Mehrzahl von Sensorelementen (40), die mit anderen elektronischen Hilfsvorrichtungen und Freigabe- und Abschaltvorrichtungen und Betätigungs- und Antriebsvorrichtungen verbunden sind, wobei jedes der Sensorelemente (40) mit einem eigenen univokalen Kennungscode versehen ist oder lokal mittels Vorrichtungen konfiguriert ist, die auf demselben Sensorelement (40) vorgesehen sind, so daß das Element (40) einer Zone des Alarmsystems (60) entsprechend zugeordnet werden kann, welches durch das Empfangs-/ Verwaltungs-Sy-

stem gesteuert und/oder geregelt wird;

- eine elektronische Steuer- und/oder Regeleinheit (30), welche Daten von den Sensorelementen (40) empfängt und das System durch Zuordnen des Kennungscodes jedes Sensorelements (40) zu der Zone mittels Anwendungssoftware-Befehlen verwaltet;
- eine Mehrzahl Schall-signalisierender Vorrichtungen (50), welche auf ein auftretendes Alarmereignis in Betrieb gehen,

wobei die Netzanschlußeinheit (20), die Sensorelemente (40) und die elektronische Steuer- und/oder Regeleinheit (30) über eine Mehrzahl von Verbindungsleitungen (19) mit einem einzigen zweiadrigen Bus (18) verbunden sind, welcher die Übertragung von elektrischer Energie und digitalen Daten zwischen der Steuer- und/oder Regeleinheit (30) und sämtlichen Sensorelementen (40) sicherstellt, wobei die elektronische Steuer- und/oder Regeleinheit (30) die Sensorelemente (40) in einen Zustand der Auswahl von mindestens einer Zone des Alarmsystems (60), welches durch das Empfangs-/Verwaltungs-System gesteuert und/oder geregelt wird und in einen Lernzustand zum Lernen der Zuordnung des Kennungscodes von mindestens einem der Sensorelemente (40) zu der ausgewählten Zone voreinstellt, **dadurch gekennzeichnet, daß** die Schall-signalisierenden Vorrichtungen (50) auch auf dem gleichen zweiadrigen Bus (18) platziert sind wie die Sensorelemente (40).

2. System zum Empfangen und Verwalten digitaler Signale nach Anspruch 1, **dadurch gekennzeichnet, daß** die elektronische Steuer- und/oder Regeleinheit (30) voraktivierbar ist in einen Zustand der Auswahl von mindestens einer Zone des Alarmsystems (60) des Systems und einen Programmierungszustand, so daß nachfolgend digitalen Signalen, welche von dem zweiadrigen Bus (18) kommen, die elektronische Steuer- und/oder Regeleinheit (30) die Kennungscodes generiert, die für die zugehörigen Sensorelemente (40) entworfen sind, begleitet oder nicht begleitet durch ein Signal, welches eine Angabe der gewählten Zone bereitstellt.
3. System zum Empfangen und Verwalten digitaler Signale nach Anspruch 1, **dadurch gekennzeichnet, daß** die elektronische Steuer- und/oder Regeleinheit (30) mindestens eine Empfangsvorrichtung (21), eine Mehrzahl von Druckknöpfen (26, 27) für die Auswahl (26) von mindestens einer Zone des Alarmsystems (60) und zum Lernen (27) der Zuordnung zwischen den Kennungscodes und der ausgewählten Zone, eine Mehrzahl von Mitteln (22, 23, 24, 28, 29, 31, 32) zum visuellen Signalisieren der

Auswahl (24) der Zone, des Lernens (32) der Zuordnung zwischen Kennungscodes und der ausgewählten Zone, der Alarmsituationen (22, 29, 31), des Einschaltens des Systems (23), dem Vorliegen elektrischer Energie (28) am elektrischen Stromverteilungsnetz (10), umfaßt.

4. System zum Empfangen und Verwalten digitaler Signale nach Anspruch 1, **dadurch gekennzeichnet, daß** die Sensorelemente (40) eine mikroelektronische Steuer- und/oder Regeleinheit (44) umfassen, mit welcher über eine Mehrzahl von Verbindungsleitungen (19b) ein optoelektronischer Schaltkreis (41), ein nicht-flüchtiges oder gepuffertes Speicherelement (42), eine visuelle Signalisierungsvorrichtung (43), ein Druckknopf (46), mit welchem mindestens ein Kennungscodes zu der elektronischen Steuer- und/oder Regeleinheit (30) sendbar ist, ein elektronischer Schnittstellenschaltkreis (47) zum Übertragen und Empfangen der digitalen Signale auf dem zweiadrigen Bus (18), ein elektronischer Schaltkreis (48) zum Rücksetzen der mikroelektronischen Steuer- und/oder Regeleinheit (44) und zur Energieversorgung über den zweiadrigen Bus (18), verbunden sind.
5. System zum Empfangen und Verwalten digitaler Signale nach Anspruch 1, **dadurch gekennzeichnet, daß** die Sensorelemente (40) geeignet sind zum Senden mindestens eines Kennungscodes an die elektronische Steuer- und/oder Regeleinheit (30) nachdem die Sensorelemente (40) physikalisch mit dem zweiadrigen Bus (18) verbunden sind, wobei die Sensorelemente (40) eine mikroelektronische Steuer- und/oder Regeleinheit (44) umfassen, mit welcher über eine Mehrzahl von Verbindungsleitungen (19b) ein optoelektronischer Schaltkreis (41), ein nicht-flüchtiges oder gepuffertes Speicherelement (42), eine visuelle Signalisierungsvorrichtung (43), ein elektronischer Schnittstellenschaltkreis (47) mit dem zweiadrigen Bus (18) zum Übertragen und Empfangen digitaler Signale auf dem zweiadrigen Bus (18), ein elektronischer Schaltkreis (48), welcher die mikroelektronische Steuer- und/oder Regeleinheit (44) zurücksetzt und zur Energieversorgung der Sensorelemente (40) über den zweiadrigen Bus (18), verbunden sind.
6. System zum Empfangen und Verwalten digitaler Signale nach Anspruch 2, **dadurch gekennzeichnet, daß** die Sensorelemente (40) eine mikroelektronische Steuer- und/oder Regeleinheit (44) umfassen, mit welcher über eine Mehrzahl von Verbindungsleitungen (19b) ein optoelektronischer Schaltkreis (41), eine visuelle Signalisierungsvorrichtung (43), ein Druckknopf (46), mit welchem digitale Signale zum Anfordern mindestens eines Kennungscodes an die elektronische Steuer- und/oder Regeleinheit

(30) sendbar sind, ein elektronischer Schaltkreis (47), welcher eine Schnittstelle mit dem zweiadrigen Bus (18) bildet zum Übertragen und Empfangen der digitalen Signale auf dem zweiadrigen Bus (18), ein elektronischer Schaltkreis (48) zum Zurücksetzen der mikroelektronischen Steuer- und/oder Regeleinheit (44) und zur Energieversorgung über den zweiadrigen Bus (18), ein nicht-flüchtiges oder gepuffertes Speicherelement (42) zum Speichern der digitalen Signale, welche von einem Signal begleitet sind oder nicht, welches eine Angabe der ausgewählten Zone bereitstellt, verbunden sind.

7. System zum Empfangen und Verwalten digitaler Signale nach Anspruch 2, **dadurch gekennzeichnet, daß** die Sensorelemente (40) geeignet sind zum Senden digitaler Signale zum Anfordern mindestens eines Kennungscodes an die elektronische Steuer- und/oder Regeleinheit (30) während eines Zeitintervalls, das einer physikalischen Verbindung der Sensorelemente (40) mit dem zweiadrigen Bus (18) folgt, wobei die Sensorelemente (40) eine mikroelektronische Steuer- und/oder Regeleinheit (44) umfassen, mit welcher über eine Mehrzahl von Verbindungsleitungen (19b) ein optoelektronischer Schaltkreis (41), eine visuelle Signalisierungsvorrichtung (43), ein elektronischer Schaltkreis, welcher eine Schnittstelle (47) mit dem zweiadrigen Bus (18) bildet zum Übertragen und Empfangen der digitalen Signale auf dem zweiadrigen Bus (18), ein elektronischer Schaltkreis (48), welcher die mikroelektronische Steuer- und/oder Regeleinheit (44) zurücksetzt und die Sensorelemente (40) mit Energie über den zweiadrigen Bus (18) versorgt, ein nicht-flüchtiges oder gepuffertes Speicherelement (42) zum Speichern der digitalen Signale, welche von einem Signal begleitet sind oder nicht, welches eine Angabe des gewählten Bereichs bereitstellt, verbunden sind.

Revendications

1. Système pour la réception et la gestion de signaux numériques provenant de dispositifs électroniques, du type utilisé dans des systèmes d'alarme (60) et pouvant apprendre des données de configuration de zone, comprenant :
- au moins une unité d'alimentation en énergie électrique (20), conçue pour une connexion avec le réseau de distribution d'énergie (10) ;
 - une pluralité d'éléments formant capteur (40) associés à d'autres dispositifs électroniques auxiliaires et à des appareils de validation et d'invalidation et à des appareils d'actionnement et d'entraînement, chacun des éléments formant capteur (40) étant muni d'un code d'iden-

tification univoque de façon autonome ou étant configuré, de façon locale, au moyen de dispositifs prévus sur le même élément formant capteur (40) de telle façon que l'élément (40) puisse être associé à une zone du système d'alarme (60) commandée par le système de réception/gestion ;

- une unité de commande électronique (30) recevant des données à partir des éléments formant capteur (40) et gérant le système par assignation du code d'identification de chaque élément formant capteur (40) à la zone au moyen de commandes logicielles d'application ;
- une pluralité de dispositifs de transmission du son (50) commençant à fonctionner lors de l'apparition d'un événement d'alarme ;

l'unité d'alimentation en énergie (20), les éléments formant capteur (40) et l'unité de commande électronique (30) étant connectés par l'intermédiaire d'une pluralité de lignes de connexion (19), un bus unique bifilaire (18) sécurisant la transmission de l'énergie électrique et de données numériques entre l'unité de commande (30) et tous les éléments formant capteur (40) ;

l'unité de commande électronique (30) prédisposant les éléments formant capteur (40) dans un état de sélection d'au moins une zone du système d'alarme (60) commandée par le système de réception/gestion et dans un état d'apprentissage pour apprendre l'association du code d'identification d'au moins un des éléments formant capteur (40) avec la zone sélectionnée ;

caractérisé en ce que les dispositifs de transmission du son (50) sont placés, de même, sur le même bus bifilaire (18) que les éléments formant capteur (40).

2. Système pour la réception et la gestion de signaux numériques selon la revendication 1, **caractérisé en ce que** l'unité de commande électronique (30) est capable d'agencement, à l'avance, dans un état de sélection d'au moins une zone du système d'alarme (60) du système et dans un état de programmation tel que, suite à des signaux numériques provenant du bus bifilaire (18), l'unité de commande électronique ci-dessus (30) génère les codes d'identification conçus pour les éléments formant capteur (40) accompagnés ou non d'un signal fournissant une indication de la zone sélection.
3. Système pour la réception et la gestion de signaux numériques selon la revendication 1, **caractérisé en ce que** l'unité de commande électronique (30)

comprend au moins un dispositif formant récepteur (21), une pluralité de boutons poussoirs (26, 27) pour la sélection (26) d'au moins une zone du système d'alarme (60) et pour l'apprentissage (27) de l'association entre les codes d'identification et la zone sélectionnée, une pluralité de moyens (22, 23, 24, 28, 29, 31, 32) pour la signalisation visuelle de la sélection (24) de la zone, de l'apprentissage (32) de l'association entre les codes d'identification et la zone sélectionnée, des cas d'alarme (22, 29, 31), de la mise en service du système (23), de la présence de l'énergie électrique (28) sur le réseau de distribution d'énergie électrique (10).

4. Système pour la réception et la gestion de signaux numériques selon la revendication 1, **caractérisé en ce que** les éléments formant capteur (40) comprennent une micro-unité de commande électronique (44) à laquelle, par l'intermédiaire d'une pluralité de lignes de connexion (19b), sont connectés un circuit optoélectronique (41), un élément de stockage non volatil ou en mémoire tampon (42), un dispositif de signalisation visuelle (43), un bouton poussoir (46) prévu pour envoyer au moins un code d'identification à l'unité de commande électronique (30), un circuit d'interface électronique (47) pour émettre et recevoir les signaux numériques sur le bus bifilaire (18), un circuit électronique (48) pour réinitialiser la micro-unité de commande électronique (44) et pour fournir de l'énergie à partir du bus bifilaire (18).
5. Système pour la réception et la gestion de signaux numériques selon la revendication 1, **caractérisé en ce que** les éléments formant capteur (40) sont prévus pour l'envoi d'au moins un code d'identification à l'unité de commande électronique (30) après la connexion physique des éléments formant capteur (40) avec le bus bifilaire (18), les éléments formant capteur (40) comprenant une micro-unité électronique de commande (44) avec laquelle ils sont connectés, par l'intermédiaire d'une pluralité de lignes de connexion (19b), un circuit optoélectronique (41), un élément de stockage non volatil ou à mémoire tampon (42), un dispositif de signalisation visuelle (43), un circuit d'interface électronique (47) avec le bus bifilaire (18) pour l'émission et la réception de signaux numériques sur le bus bifilaire (18), un circuit électronique (48) réinitialisant la micro-unité de commande électronique (44) et pour alimenter en énergie les éléments formant capteur (40) à l'aide du bus bifilaire (18).
6. Système pour la réception et la gestion de signaux numériques selon la revendication 2, **caractérisé en ce que** les éléments formant capteur (40) comprennent une micro-unité de commande électronique (44) avec laquelle ils sont connectés, par l'in-

termédiaire d'une pluralité de lignes de connexion (19b), un circuit optoélectronique (41), un dispositif de signalisation visuelle (43), un bouton poussoir (46) prévu pour envoyer des signaux numériques pour la demande d'au moins un code d'identification à l'unité de commande électronique (30), un circuit électronique (47) constituant une interface avec le bus bifilaire (18) pour émettre et recevoir les signaux numériques sur le bus bifilaire (18), un circuit électronique (48) pour réinitialiser la micro-unité de commande électronique (44) et pour alimenter en énergie à l'aide du bus bifilaire (18) un élément de stockage non volatil ou à mémoire tampon (42) pour stocker les signaux numériques qui sont accompagnés ou non d'un signal fournissant une indication de la zone sélectionnée.

7. Système pour la réception et la gestion de signaux numériques selon la revendication 2, **caractérisé en ce que** les éléments formant capteur (40) sont prévus pour envoyer des signaux numériques pour la demande d'au moins un code d'identification à l'unité de commande électronique (30), lors d'une période de temps suivant une connexion physique des éléments formant capteur (40) avec le bus bifilaire (18), les éléments formant capteur (40) comprenant une micro-unité de commande électronique (44) avec laquelle ils sont connectés, par l'intermédiaire d'une pluralité de lignes de connexion (19b), un circuit optoélectronique (41), un dispositif de signalisation visuelle (43), un circuit électronique constituant une interface (47) avec le bus bifilaire (18) pour émettre et recevoir les signaux numériques sur le bus bifilaire (18), un circuit électronique (48) réinitialisant la micro-unité de commande électronique (44) et alimentant en énergie les éléments formant capteur (40) par l'intermédiaire du bus bifilaire (18), un élément de stockage non volatil ou à mémoire tampon (42) pour stocker les signaux numériques qui sont accompagnés ou non d'un signal fournissant une indication de la zone sélectionnée.

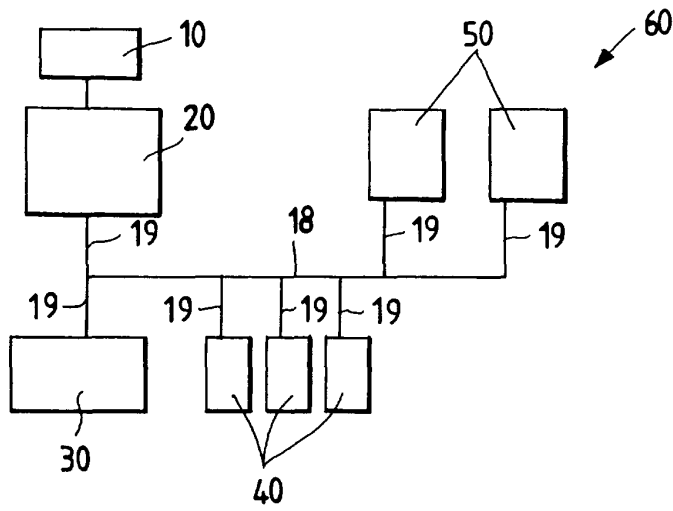


Fig.1

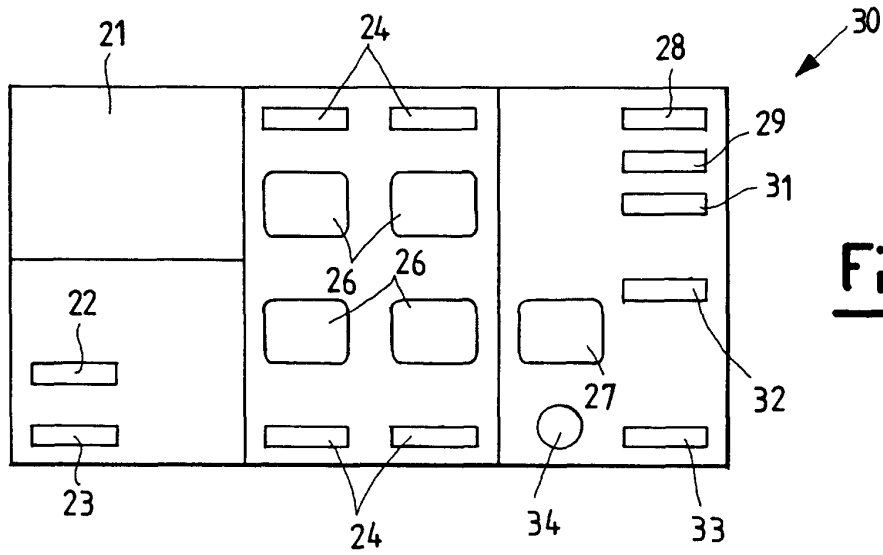


Fig.2

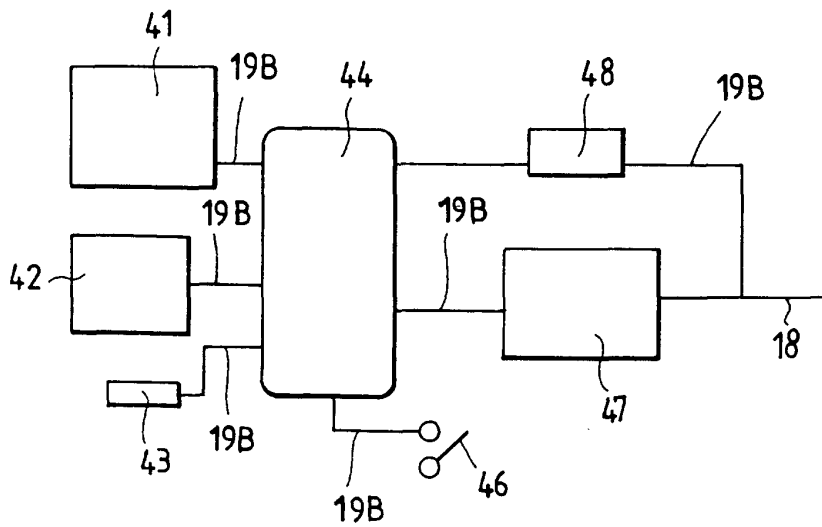


Fig.3