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(54) **Control system and control device for luminaires and assembling system therefore**

Steuersystem und Steuergerät für Leuchten und Konfektionierungssystem dafür

Système de commande et dispositif de commande pour luminaires et son système d'assemblage

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Description

[0001] The invention relates to a control device for luminaires, in particular furniture luminaires, comprising at least one connector for a luminaire, comprising at least one connector for a control member, and comprising a control unit that is adapted for controlling a connected luminaire in response to received control signals from a connected control member.

[0002] For example, control devices for furniture luminaires are known, which have a connector for a luminaire and a connector for a push button, wherein the control device controls the connected luminaire in accordance to an actuation of the push button by a user. For example, an output voltage of the luminaire connector can be switched on or off when the push button is actuated.

[0003] There are also known control devices for furniture luminaires that allow to control a luminaire by means of a control member in the form of a motion detector, so that, for example, the luminaire is switched on for a certain duration when a motion is detected within the detection range of the motion detector.

[0004] DE 102007048341 A1 relates to an operating device for light-emitting means, having a control input for a motion detector. Two different signal states may be assumed at the control input, i.e. one signal state, in which the control input is connected to an AC current phase, in the case that the motion detector detects a motion; and another, different signal state, in which the control input is unconnected, in the case that the motion detector does not detect a motion. Depending on corresponding output signal states of the motion detector, a first light dimming level may be applied when a motion is detected, or a second light dimming level may be applied when no motion is detected.

[0005] DE 102010039613 A1 relates to a circuit for driving a light source provided with a voltage divider, wherein a dividing ratio of the voltage divider is adjustable by a switch, and wherein the light source is controllable through the divider ratio of the voltage divider.

[0006] DE 19603875 A1 relates to control of lighting brightness through keys or switches, which directly or via a resistor connect a control input to a conductor of a voltage feed.

[0007] DE 4141844 A1 relates to an installation arrangement for power control of loads connected to mains, which arrangement has a phase angle controller.

[0008] It is an object of the invention to provide a control device for luminaires, in particular furniture luminaires, which allows to connect different control members such as, e.g., push buttons and/or sensors, in a particularly simple way.

[0009] The invention is indicated in the independent claim. Further embodiments are indicated in the dependent claims.

[0010] According to the invention, the problem is solved by a control device of claim 1, comprising an identification unit adapted for identifying an identification signal

received from a connected control member and selecting a control behavior of the control unit based on the identified identification signal.

[0011] The connector for a control member comprises a signal line for control signals and for an identification signal of a connected control member, wherein the identification signals, which are identifiable by the identification unit, differ from the control signals.

[0012] The identification signals that are identifiable by the identification unit are identification signals each in the form of a respective identification signal voltage, and the control signals are control signals each in the form of a respective control signal voltage, wherein the identification signals that are identifiable by the identification unit differ from each other and from the control signals at least by their respective control signal voltage.

[0013] For example, control members, types of control members, or operation modes of control members may identify themselves by means of a respective control signal, whereupon the identification unit may select a control behavior of the control unit that is adapted to the control member, the type of the control member, and/or the operation mode of the control member. For example, push buttons and/or sensors, such as motion sensors or the like may output the same or similar control signals, which then may be interpreted differently depending on the connected control member. Thereby, it is possible to use the same control device for different types of control members, without having to manually adapt the control device to the connected control member. In particular, it is already advantageous that the same control device may be used for different types of control members. This allows flexibility when assembling luminaire systems and, thus, simplifies furnishing different furnitures with different luminaire control systems.

[0014] The invention makes it possible that different types of control members may use the same control signals when they are activated or when a detection of a situation is triggered, such as a motion, wherein the control behavior, which is selected based on the identified identification signal of the control member, defines the interpretation of the control signals by the control unit. For example, while it will always be desired to switch a connected luminaire on or off upon a control signal of a push button that corresponds to an actuation of the push button, it may be desirable, for example when having a control member in form of a motion sensor, to always effect a switching on of the connected luminaire upon a control signal, and wherein a switching off occurs, if there is no control signal received again during a predetermined duration.

[0015] For example, the identification signal of a control member may identify a type of a control member and/or one of several operation modes of the respective control member.

[0016] The connector for the control member comprises a signal line for control signals and for an identification signal of a connected control member, i.e., one and the

same signal line for the control signals and for the at least one identification signal, wherein the identification signals that are identifiable by the identification unit differ from the control signals. Preferably, the control unit is adapted for controlling a connected luminaire in response to control signals of the connected control member that are received on the signal line, and the identification unit is adapted for identifying an identification signal of the control member that is received on the same signal line, and for selecting a control behavior of the control unit based on the identified identification signal. This allows for a particularly simple structure of the connectors of the respective control members and of the control devices, which are to be connected with each other, because only a single signal line is required at the connector for transmitting the identification signals and the control signals.

[0017] The identification signal of the control member is an identification signal in the form of an identification voltage, in particular an identification direct current voltage, and the received control signals have a control signal voltage, in particular a control signal direct current voltage that is different from the identification signal. In other words, the identification signals and the control signals each consist of a voltage level that is maintained for some duration. The durations of the control signals may have different lengths, and/or control signal pulses of a specific duration may be used.

[0018] Further useful details and embodiments of the invention are indicated in the dependent claims.

[0019] A control system for at least one luminaire, in particular a furniture luminaire, comprising a control device of the above mentioned kind and comprising at least one control member for being connected to the control device is also a subject matter of the invention.

[0020] An assembling system for control systems for luminaires is also a subject matter of the invention, comprising a control device of the described kind and comprising multiple control members of different types, which are connectable to the control device, wherein said control members of different types are adapted for outputting an identification signal, which is different from the identification signals of the respective other types of the control members. For example, said types of control members may at least comprise one, or may at least comprise two of:

- a control member (14-1) that is mechanically actuable by a user;
- a control member (14-2) comprising a motion sensor; and
- a control member (14-3) comprising a reflection sensor.

[0021] It is particularly preferred that the types of control members comprise the three mentioned types. In particular, the term of assembling a control system refers to factory-producing, and here, in particular, composing and connecting the components (control device and con-

trol members) of the control system. For example, the assembling system may consist of a set of the control device and the control members.

[0022] In the following, an embodiment of the invention will be described in conjunction with the drawings, in which:

Fig. 1 is a schematic block diagram of a control system for a luminaire having three control members;

Fig. 2 is a schematic diagram of a control member in the form of a push button;

Fig. 3 is a schematic diagram of a control member in the form of a motion sensor; and

Fig. 4 is a simplified diagram of a control member in the form of an active IR reflection sensor.

[0023] Fig. 1 schematically shows a control device 10 for controlling a connected luminaire 12 alternatively by one of three connected control members 14. For example, the control system may be installed in a cabinet, for example a three-door wardrobe, a kitchen furniture or other furniture. For example, the luminaire 12 forms a furniture interior lighting, such as an interior lighting of a cupboard.

[0024] The luminaire 12 is connected to the control device 10 via a connector 16, which serves for supplying power to the luminaire 12. The connector 16 is switchable, and the luminaire 12 is dimmable by controlling the connector 16, e.g., by controlling the output voltage of the connector 16. For example, the luminaire 12 is a LED luminaire, that is, a luminaire having at least one illuminant in the form of a light emitting diode (LED). Instead of a luminaire 12, multiple luminaires 12 may be provided, which are jointly controllable via the connector.

[0025] The control members 14 are connected to the control device 10 each via a respective connector 18. The number of three connectors 18 is only chosen as an example and is particularly suited for cupboards with three partitions.

[0026] For example, the connectors 16, 18 are designed in the form of plug connectors, directly on a casing of the control device 10, or on a cable connected to the control device 10.

[0027] For example, the connector 16 is a two-pole connector and is adapted for safety-low voltage, for example for outputting a direct current voltage of up to 12 volts or, for example, up to 24 volts.

[0028] For example, the respective connector 18 is a three-pole connector and comprises a signal line 20 for control signals of the connected control member 14, a ground line (not shown), and a power supply voltage line (not shown) for supplying power to possible electronics of a control member 14. For example, the connector 16 can be designed as a jack for a phone plug, wherein the

separate poles of the connector are arranged one after the other in the inserting direction, such that a corresponding plug of a connecting cable of the control member 14 may simply be plugged in in any rotational position. For example, the supply voltage for the control members 14 is 5 volts direct current.

[0029] The control members 14, different examples of which are explained further below with reference to Figs. 2 to 4, are, for example, adapted for outputting a control signal when operated or for triggering a switching operation, which control signal consists of a control signal voltage. The control signal voltage is a direct current voltage, and, for example, may assume at least one of two values, in particular, for example, 0 V and the supply voltage of +5 V.

[0030] The control device 10 comprises a control unit 22 for controlling the connected luminaire 12 in response to control signals of a control member 14 received on the signal line 20. For example, the control member 14 may be a push button, which, when operated, sets the signal line 20 to the control signal voltage of 0V during the duration of the operating. For example, the control unit 22 alternately switches the connected luminaire 12 on and off at each new operating of the push button.

[0031] The control device 10 further comprises an identification unit 24 for identifying a type of a connected control member 14. Again, it may be assumed as an example, that a control member 14 in the form of a push button is connected. As it is further explained below with reference to Fig. 2, the control member 14 is configured such that, in the non-operated state, i.e. in the time between the outputting of control signals, an identification signal in the form of a direct current voltage is output, the voltage level of which differs from the voltage levels of the control signals. The identification unit 24 is adapted for identifying the identification signal of the connected control member 14 received on the signal line 20, and for selecting, based on the identified identification signal, a control behavior S of the control unit 22, in particular a control behavior S that is suitable for the respective type of the control member 14. In the case of an identification signal that identifies a push button indented to effect an alternating switching on and switching off of a connected luminaire 12, the identification unit 24 selects the corresponding control behavior S described above. The control unit 22 controls the connected luminaire 12 in response to the received control signals from the control member 14 according to the selected control behavior S.

[0032] The control device 10 further comprises a memory 26 for storing the last selected control behavior S and/or the last control state of the control unit 22, in case of an interruption of the power supply of the control device 10. For example, when the control device 10 is switched off and is switched on again, the control unit 22 may assume the same control behavior S as before the switching off, and/or the output voltage of the connector 16 may be set to the same value as before the switching off. This is not only advantageous in case of unwanted interruptions

of the power supply, but also, when a state of the connected luminaire 12 once set, for example a brightness setting, remains stored at a furniture presentation in a furniture store during switching off of the power supply in the night time.

[0033] For example, the control device 10 is adapted to the control members 14 of Figs. 2 to 4, which are exemplarily described in the following. The control members 14, and a possible operation mode of a control member 14, may be identified by the identification unit 24 by means of respective different identification voltages, so that the control unit 22 assumes a respective assigned control behavior. The respective control behavior defines the interpretation of the control signals by the control unit 22. In the following, the control behaviors are explained together with the control members 14.

[0034] Figs. 2 to 4 show simplified diagrams of different control members 14 for explaining the functional principle.

[0035] Fig. 2 schematically shows a simplified diagram of a first control member 14-1 in the form of a push button having two operating modes "on/off" and "dimming".

[0036] The control member 14-1 comprises a mechanical push button 28 adapted for setting a signal line 30 of the control member 14-1 to the signal level of 0V when mechanically operated, corresponding to a connection of the signal line 30 to a ground line 32 of the control member 14-1. The push button 28 is closed when operated.

[0037] The control line 30, the ground line 32, and a supply voltage line 34 form three poles of a three-pole connector 36 of the control member 14-1 for connecting to a connector 18 of the control device 10.

[0038] The control member 14-1 further comprises a voltage divider 38, in particular a voltage divider composed of passive components, in particular a resistive voltage divider made of Ohmic resistors 40. In the example shown, the control member 14-1 comprises a switchable voltage divider 38 having a selector switch 42, for example, in the form of a dip (dual in-line package) switch that is accessible on the outside of the control member 14.

[0039] In a respective switch position of the selector switch 42, the voltage divider 38 sets the signal line 30, in the non-operating state of the control member 14-1, to a respective identification signal voltage in the range greater than 0V and less than the supply voltage. In different switch positions of the selector switch 42, different identification signal voltages are generated. For example, the identification signal voltages differ by a minimum value of, for example, 0.3V from each other and from 0 Volt, as well as from the supply voltage of +5V. Different operating modes of the control member 14-1 are selected by the switch 42. In the non-operating stage, i.e. when the mechanical push button 28 is not operated, an identification signal voltage corresponding to the operating mode is output on the signal line 30, therefore. The latter is identified by the identification unit 24 of the control de-

vice 10 on the basis of its voltage level, and the identification unit 24 selects an assigned control behavior of the control unit 22.

[0040] When the mechanical push button 28 is operated, the voltage divider 38 is bridged, for example by the push button 28 directly setting the signal line 30 to the ground line 32. The corresponding control signal voltage is not interpreted by the identification unit 24, because it does not correspond to any of the scheduled identification signal voltages. Rather, the control unit 22 identifies the corresponding control signal. Conversely, control signals are not interpreted by the identification signal unit 24, because they do not correspond to any of the identification signals.

[0041] In the operating mode "on/off", a control signal pulse of the push button control member 14-1 causes the control unit 22 to alternately switch the output voltage of the connector 16 on and off. This corresponds to a switching function of the control member 14-1.

[0042] In the control device 10, the signal lines 20 of the respective connectors 18 of the three same control members 14-1 connected to the control device 10 are a logically or physically connected in parallel. For example, the connected luminaire 12 may be switched on using a first push button, and may be switched off again using the same or a further push button.

[0043] In the operating mode "dimmer", the identification unit 24 identifies the operating mode on the basis of the corresponding identification signal voltage. All connected control members 14-1 are set to the same operating mode. A control behavior of the control unit 22 is selected that corresponds to the operating mode "dimmer". In this operating mode, the connected luminaire 12 is switched on by a short actuation of the push button 28. A long actuation of the push button 28 starts the dimming function of the control unit 22, in which the control unit 22 slowly dims the brightness up and down in the course of time until the push button 28 is released, corresponding to an end of the control signal pulse. The current brightness setting is then maintained by the control unit 22. The current brightness setting is, for example, stored in the memory 26.

[0044] The switching on or switching off of the connected luminaire 12 may be a soft switching on or off, respectively, wherein the control unit 22 lets the output voltage smoothly approach the target value over a short period of time. This is also referred to a "soft on/soft off".

[0045] For example, a control system having the push buttons 14-1 also is suitable as a selective switch for a loom luminaire 12, wherein the control members 14-1 are arranged on the left side and the right side of a bed headboard.

[0046] Fig. 3 schematically shows a simplified diagram of a second control member 14-2 in the form of a motion sensor having only a single operating mode. The differences from the control member 14-1 are explained in the following. The same or corresponding parts are denoted with the same reference signs.

[0047] The motion sensor 14-2 comprises a sensor unit 44 having a passive IR sensor of a type known in the art, which, for example, comprises multiple sensor segments and which detects a motion in the detection range of the motion sensor on the basis of detected intensity differences between the sensor segments. For example, when a motion is detected for the first time, the control unit 44 outputs a first control signal pulse on the signal line 30, the control signal voltage of which is, for example, 0V or +5V corresponding to the power supply voltage. If there is no further motion detected within a follow-up time of e.g. 10 seconds by the sensor unit 44, the sensor unit 44 outputs a second control signal pulse having the other control signal voltage, i.e. +5V or 0V, after the expiration of the follow-up time. If a further motion is detected during the current follow-up time, the follow-up time is restarted.

[0048] The control member 14-2 also comprises a voltage divider 38, which provides for outputting an identification signal voltage on the signal line 30 in the non-operating state of the control member 14-2, i.e. in the meantime between the outputting of control signal pulses. The identification signal voltage differs from the control signal voltages of the push button 14-1, as well as from 0V and from the supply voltage of +5V, by the above minimum value of 0.3V.

[0049] In a control system with the device 10 and three connected control members 14-2 in the form of the motion sensors, the identification unit 24 identifies the type of the control member 14-2 based on the identification signal voltage in the non-operating state of the motion sensors, and selects an appropriate control behavior of the control unit 22. For example, when the first control signal pulse of 0V is received on the signal line 20, the control unit 22 switches on the connected luminaire 12, and switches off the luminaire 12 again when the second control signal pulse of +5V is received. According to this control behavior, in case of an interruption of the voltage supply, the luminaire 12 is not switched on after the restart of the voltage supply as long as no switching-on control signal is received from the motion sensor. For example, a switching off may be effected after an expiration of a predetermined period, when no second control signal pulse has been received.

[0050] As an alternative to the described motion sensor 14-2, it is also possible that the sensor unit 44 merely outputs a continuous control signal of, for example, 0V, as long as a last detected motion is not longer ago than the duration of the follow-up time. In this case, the control unit 22 is adapted for switching on the luminaire 12 at the beginning of the control signal of the motion sensor 14-2 and for letting the luminaire switched on as long as the control signal is received from the motion sensor. If the control unit 44 has detected no further motion at least for the duration of the follow-up time, the control signal is stopped, and the control unit 22 switches off the luminaire 12.

[0051] Fig. 4 schematically shows a simplified diagram of a third control member 14-3 in the form of a reflection

sensor, in particular an active IR reflection sensor. The differences from the control member 14-2 are explained in the following. The same or corresponding parts are denoted with the same reference signs. The reflection sensor has two operating modes "push button" and "switch", which are again selectable by a selective switch 42 and a corresponding voltage divider 38, and which lead to corresponding different identification signal voltages on the signal line 30.

[0052] The reflection sensor comprises a sensor unit 46 known as such, having a transmitter 48 and a receiver 50 for infrared radiation, in particular modulated infrared radiation, in order to avoid interaction with other infrared signals.

[0053] In the operating mode "push button", the control member 14-3 and the control unit 22 operate as follows. When the sensor unit 46 detects a transition from a state with reflection to a state without reflection, for example based on an internal threshold value being exceeded or underrun, the control unit 46 effects the output of a control signal having a control signal voltage of e.g. 0V on the signal line 30. Thereupon, the control unit 22 switches on the luminaire 12. The control signal continues, until the sensor unit 46 detects a transition back to a state with reflection. Then, the control signal is terminated, and the control unit 22 switches off the luminaire 12, again.

[0054] In the application, for example, in a cupboard having three doors, a respective control member 14-3 is arranged at each door or behind each door, such that the door in its closed state forms an object 52 that reflects, for example diffusely reflects, the signal from the transmitter 48 into the receiver 50. As long as one of the three connected reflection sensors detects a state without reflection, corresponding to an opened door, at least one of the control members 14-3 outputs the control signal voltage of 0V, and the control signal is detected on the signal line 20, accordingly. Not until all doors are closed again, the control signal is terminated, and the control unit 22 switches off the luminaire 12, again.

[0055] In the operating mode "switch", the sensor unit 46 and the control unit 22 operate as follows. On a transition from a state without reflection to a state with reflection, the sensor unit 46 outputs a control signal having a control signal voltage of e.g. 0V, as long as the state with reflection continues. If no reflection is detected anymore, outputting of the control signal is terminated. In this operating mode, a control signal may be output by means of a wiping motion of a hand in front of the reflection sensor 14-3, i.e. by means of a non-contact actuation. When control signals are received sequentially, the control unit 22 alternately switches on and off the luminaire 12. In this way, a respective wiping in front of the reflection sensor causes a switching of the luminaire 12 between the switched on and the switched off state.

[0056] In this example, the selective switch 42 also acts on the sensor unit 46, as the control signal is output in the operating mode "push button" as long as no reflection is detected, whereas in the operating mode "switch", the

control signal is output as long a reflection is detected.

[0057] The compilation of the control device 10 and the control members 14-1, 14-2 and 14-3 forms an assembling system for the described control system. For example, the control device may be alternatively equipped with multiple control members 14-1, or with multiple control members 14-2, or with multiple control members 14-3. Of course, there is also a configuration possible in which only a single control member 14 is connected.

[0058] Further, other control members 14 are possible, for example touch sensors that are actuated by touching them, inductive sensors, magnet sensors, capacitive sensors, radar sensors, acceleration sensors or gyro sensors. For example, the sensors may interact with elements on other furniture parts that are to be detected.

[0059] The described examples of control signals, the triggering thereof and the duration thereof are only to be understood as examples.

[0060] The described identification signals of different identification voltages are in a particular simple manner generated by resistive voltage dividers, and they may be superposed by the control signals on the same line. However, differing from the described examples, there are also identification signals possible in the form of modulated signals, for example alternating current signals. For example, identification signals may differ from each other by having different modulation frequencies. For example, the identification signals may be modulated onto control signals on the same line and/or may be output in between the outputting of control signals.

Claims

1. Control device for luminaires, in particular furniture luminaires, comprising at least one connector (16) for a luminaire (12), comprising at least one connector (18) for a control member (14), comprising a control unit (22) adapted for controlling a connected luminaire (12) in response to received control signals of a connected control member (14), and **characterised by:**

comprising an identification unit (24) adapted for identifying a received identification signal of the control member (14) and selecting a control behavior of the control unit (22) based on the identified identification signal, wherein the connector (18) for the control member (14) comprises a single signal line (20) for control signals and for an identification signal of the connected control member (14), and wherein the identification signals that are identifiable by the identification unit (24) are each in the form of a respective direct current voltage,

- and the control signals are each in the form of a respective direct current voltage, wherein the identification signals differ from each other and from the control signals by their respective direct current voltage levels.
2. Control device according to the preceding claim, wherein the control unit (22) comprises at least two different control behaviors having different assigned control signals.
 3. Control device according to any one of the preceding claims, wherein a respective control behavior of the control unit (22) defines a switching on, a switching off, and/or a dimming function of a connected luminaire (12) in response to received control signals.
 4. Control device according to any one of the preceding claims, wherein the at least one connector (18) for a control member (14) is a three-pole connector comprising:
 - the signal line (20) for control signals and for an identification signal of a connected control member (14),
 - a ground line, and
 - a power supply line for the connected control member (14).
 5. Control system for at least one luminaire, in particular furniture luminaire, comprising a control device (10) according to any one of claims 1 to 4, and comprising at least one control member (14), which comprises an actuation member (28) for being actuated by a user and/or comprises a sensor unit (44; 46).
 6. Control system according to claim 5, wherein the control member (14) is at least one of:
 - a control member (14-1) for being mechanically actuated by a user;
 - a control member (14-2) comprising a motion sensor; and
 - a control member (14-3) comprising a reflection sensor.
 7. Control system according to claim 5 or 6, wherein the at least one control member (14) comprises a resistive voltage divider for providing an identification signal voltage in the non-operating state of the control member (14), which identification signal voltage is between 0 volts and a supply voltage of the control member (14).
 8. Control system according to any one of claims 5 to 7, wherein the control member (14) comprises a selective switch (42) for selecting an operation mode of the control member (14), wherein different identi-

fication signals of the control member (14) are provided by the selective switch (42) depending on the position of the switch.

9. Control system according to any one of claims 5 to 8, wherein the control member (14) is adapted for outputting an identification signal in the non-operating state and/or in between the outputting of control signals.
10. Assembling system for control systems for luminaires, in particular for a control system according to any one of claims 5 to 9, comprising a control device (10) according to any one of claims 1 to 4, and comprising multiple control members (14-1; 14-2; 14-3) of different types, which are connectable to the control device (10), wherein said control members (14-1; 14-2; 14-3) of different types are adapted for outputting an identification signal that is different from the identification signals of the respective other types of control members.
11. Assembling system according to claim 10, wherein the types of control members (14-1; 14-2; 14-3) comprise at least one of:
 - a control member (14-1) for being mechanically actuated by a user;
 - a control member (14-2) comprising a motion sensor; and
 - a control member (14-3) comprising a reflection sensor.

Patentansprüche

1. Steuergerät für Leuchten, insbesondere Möbelleuchten, aufweisend wenigstens einen Anschluss (16) für eine Leuchte (12), aufweisend wenigstens einen Anschluss (18) für ein Steuerelement (14), aufweisend eine Steuereinheit (22), die dazu eingerichtet ist, eine angeschlossene Leuchte (12) in Reaktion auf empfangene Steuersignale eines angeschlossenen Steuerelements (14) zu steuern, und **dadurch gekennzeichnet, dass:**

das Steuergerät eine Erkennungseinheit (24) aufweist, die dazu eingerichtet ist, ein empfangenes Kennungssignal des Steuerelements (14) zu erkennen und basierend auf dem erkannten Kennungssignal ein Steuerverhalten der Steuereinheit (22) auszuwählen, wobei der Anschluss (18) für das Steuerelement (14) eine einzige Signalleitung (20) für Steuer-

- signale und für ein Kennungssignal des angeschlossenen Steuerelements (14) aufweist, und wobei die von der Erkennungseinheit (24) erkennbaren Kennungssignale jeweils in Form einer jeweiligen Gleichspannung sind, und die Steuersignale jeweils in Form einer jeweiligen Gleichspannung sind, wobei die Kennungssignale sich untereinander und von den Steuersignalen durch ihre jeweiligen Gleichspannungspegel unterscheiden.
2. Steuergerät nach dem vorstehenden Anspruch, bei dem die Steuereinheit (22) wenigstens zwei unterschiedliche Steuerverhalten mit unterschiedlichen zugeordneten Steuersignalen aufweist.
3. Steuergerät nach einem der vorstehenden Ansprüche, bei dem ein jeweiliges Steuerverhalten der Steuereinheit (22) ein Einschalten, Ausschalten und/oder eine Dimmfunktion einer angeschlossenen Leuchte (12) in Reaktion auf empfangene Steuersignale definiert.
4. Steuergerät nach einem der vorstehenden Ansprüche, bei dem der wenigstens eine Anschluss (18) für ein Steuerelement (14) ein dreipoliger Anschluss ist, aufweisend:
- die Signalleitung (20) für Steuersignale und für ein Kennungssignal eines angeschlossenen Steuerelements (14),
 - eine Masseleitung, und
 - eine Spannungsversorgungsleitung für das angeschlossene Steuerelement (14).
5. Steuersystem für wenigstens eine Leuchte, insbesondere Möbelleuchte, aufweisend ein Steuergerät (10) nach einem der Ansprüche 1 bis 4, und aufweisend wenigstens ein Steuerelement (14), welches ein von einem Benutzer zu betätigendes Betätigungselement (28) und/oder eine Sensoreinheit (44; 46) aufweist.
6. Steuersystem nach Anspruch 5, bei dem das Steuerelement (14) wenigstens eines ist von:
- einem von einem Benutzer mechanisch betätigbaren Steuerelement (14-1);
 - einem Steuerelement (14-2), welches einen Bewegungssensor aufweist; und
 - einem Steuerelement (14-3), welches einen Reflexionssensor aufweist.
7. Steuersystem nach Anspruch 5 oder 6, bei dem das wenigstens eine Steuerelement (14) einen Widerstands-Spannungsteiler zur Bereitstellung einer Kennungssignalspannung im Ruhezustand des Steuerelements (14) aufweist, welche Kennungssignalspannung zwischen 0 Volt und einer Versorgungsspannung des Steuerelements (14) liegt.
8. Steuersystem nach einem der Ansprüche 5 bis 7, bei dem das Steuerelement (14) einen Umschalter (42) zur Wahl einer Betriebsart des Steuerelements (14) aufweist, wobei durch den Umschalter (42) je nach Schalterstellung unterschiedliche Kennungssignale des Steuerelements (14) zur Verfügung gestellt werden.
9. Steuersystem nach einem der Ansprüche 5 bis 8, bei dem das Steuerelement (14) dazu eingerichtet ist, im Ruhezustand und/oder in der Zwischenzeit zwischen der Ausgabe von Steuersignalen ein Kennungssignal auszugeben.
10. Konfektionierungssystem für Steuersysteme für Leuchten, insbesondere für ein Steuersystem nach einem der Ansprüche 5 bis 9, aufweisend ein Steuergerät (10) nach einem der Ansprüche 1 bis 4, und aufweisend mehrere Steuerelemente (14-1; 14-2; 14-3) unterschiedlicher Typen, die an das Steuergerät (10) anschließbar sind, wobei die besagten Steuerelemente (14-1; 14-2; 14-3) unterschiedlicher Typen dazu eingerichtet sind, ein Kennungssignal auszugeben, das sich von den Kennungssignalen der jeweils anderen Typen von Steuerelementen unterscheidet.
11. Konfektionierungssystem nach Anspruch 10, wobei die Typen von Steuerelementen (14-1; 14-2; 14-3) wenigstens eines aufweisen von:
- einem von einem Benutzer mechanisch betätigbaren Steuerelement (14-1);
 - einem Steuerelement (14-2), welches einen Bewegungssensor aufweist; und
 - einem Steuerelement (14-3), welches einen Reflexionssensor aufweist.
- ### Revendications
1. Dispositif de commande pour luminaires, en particulier des luminaires de meubles, comprenant au moins un connecteur (16) pour un luminaire (12), comprenant au moins un connecteur (18) pour un élément de commande (14), comprenant une unité de commande (22) adaptée pour commander un luminaire connecté (12) en réponse à des signaux de commande reçus d'un élément de commande connecté (14), et **caractérisé en ce que** :
- il comprend une unité d'identification (24) adap-

- tée pour identifier un signal d'identification reçu de l'élément de commande (14) et sélectionner un comportement de commande de l'unité de commande (22) en fonction du signal d'identification identifié,
- dans lequel le connecteur (18) pour l'élément de commande (14) comprend une ligne de signaux unique (20) pour des signaux de commande et pour un signal d'identification de l'élément de commande connecté (14), et
- dans lequel les signaux d'identification qui sont identifiables par l'unité d'identification (24) sont chacun sous la forme d'une tension continue respective, et les signaux de commande sont chacun sous la forme d'une tension continue respective, les signaux d'identification différant les uns des autres et des signaux de commande par leurs niveaux de tension continue respectifs.
2. Dispositif de commande selon la revendication précédente, dans lequel l'unité de commande (22) comprend au moins deux comportements de commande différents ayant des signaux de commande attribués différents.
 3. Dispositif de commande selon l'une quelconque des revendications précédentes, dans lequel un comportement de commande respectif de l'unité de commande (22) définit une commutation en service, une commutation hors service, et/ou une fraction d'atténuation d'un luminaire connecté (12) en réponse à des signaux de commande reçus.
 4. Dispositif de commande selon l'une quelconque des revendications précédentes, dans lequel le connecteur au nombre d'au moins un (18) pour un élément de commande (14) est un connecteur à trois pôles comprenant :
 - la ligne de signaux (20) pour des signaux de commande et pour un signal d'identification d'un élément de commande connecté (14),
 - une ligne de masse, et
 - une ligne d'alimentation pour l'élément de commande connecté (14).
 5. Système de commande pour au moins un luminaire, en particulier un luminaire de meuble, comprenant un dispositif de commande (10) selon l'une quelconque des revendications 1 à 4, et comprenant au moins un élément de commande (14), qui comprend un élément d'actionnement (28) destiné à être actionné par un utilisateur, et/ou qui comprend une unité de capteur (44 ; 46).
 6. Système de commande selon la revendication 5, dans lequel l'élément de commande (14) est au moins l'un parmi :
 - un élément de commande (14-1) destiné à être actionné mécaniquement par un utilisateur ;
 - un élément de commande (14-2) comprenant un capteur de mouvement ; et
 - un élément de commande (14-3) comprenant un capteur de réflexion.
 7. Système de commande selon la revendication 5 ou 6, dans lequel l'élément de commande au nombre d'au moins un (14) comprend un diviseur de tension résistif pour délivrer une tension de signal d'identification dans l'état de non fonctionnement de l'élément de commande (14), cette tension de signal d'identification étant comprise entre 0 volt et une tension d'alimentation de l'élément de commande (14).
 8. Système de commande selon l'une quelconque des revendications 5 à 7, dans lequel l'élément de commande (14) comprend un commutateur sélectif (42) pour sélectionner un mode de fonctionnement de l'élément de commande (14), des signaux d'identification différents de l'élément de commande (14) étant délivrés par le commutateur sélectif (42) en fonction de la position du commutateur.
 9. Système de commande selon l'une quelconque des revendications 5 à 8, dans lequel l'élément de commande (14) est adapté pour délivrer en sortie un signal d'identification dans l'état de non fonctionnement et/ou entre la délivrance en sortie de signaux de commande.
 10. Système d'ensemble pour systèmes de commande pour luminaires, en particulier pour un système de commande selon l'une quelconque des revendications 5 à 9, comprenant un dispositif de commande (10) selon l'une quelconque des revendications 1 à 4, et comprenant de multiples éléments de commande (14-1 ; 14-2 ; 14-3) de types différents, qui peuvent être connectés au dispositif de commande (10), dans lequel lesdits éléments de commande (14-1 ; 14-2 ; 14-3) de types différents sont adaptés pour délivrer en sortie un signal d'identification qui est différent des signaux d'identification des autres types respectifs d'éléments de commande.
 11. Système d'ensemble selon la revendication 10, dans lequel les types d'éléments de commande (14-1 ; 14-2 ; 14-3) comprennent au moins l'un parmi :
 - un élément de commande (14-1) destiné à être actionné mécaniquement par un utilisateur ;
 - un élément de commande (14-2) comprenant un capteur de mouvement ; et
 - un élément de commande (14-3) comprenant un capteur de réflexion.

Fig. 1

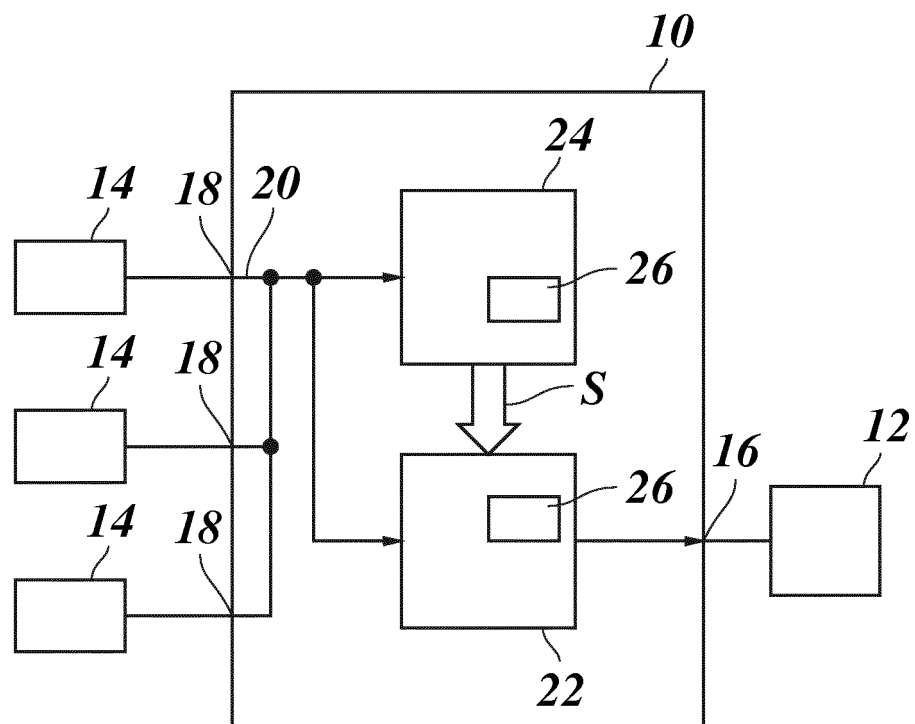


Fig. 2

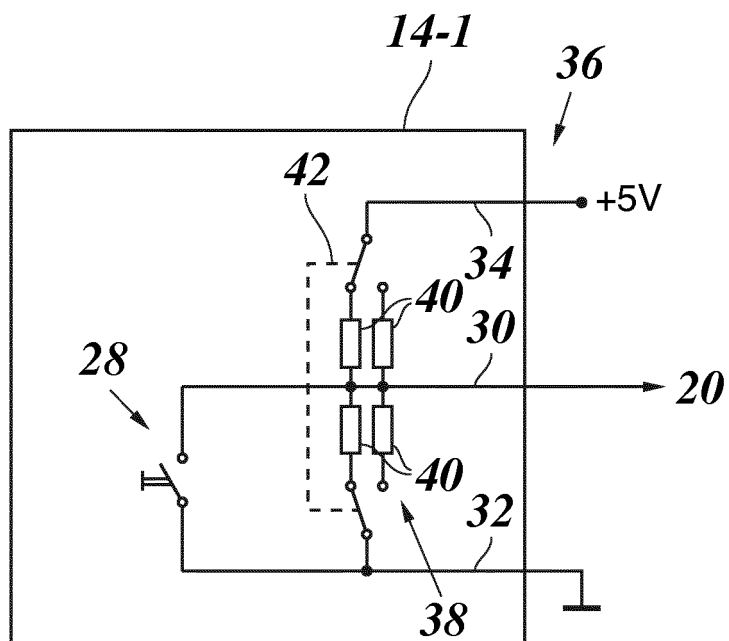


Fig. 3

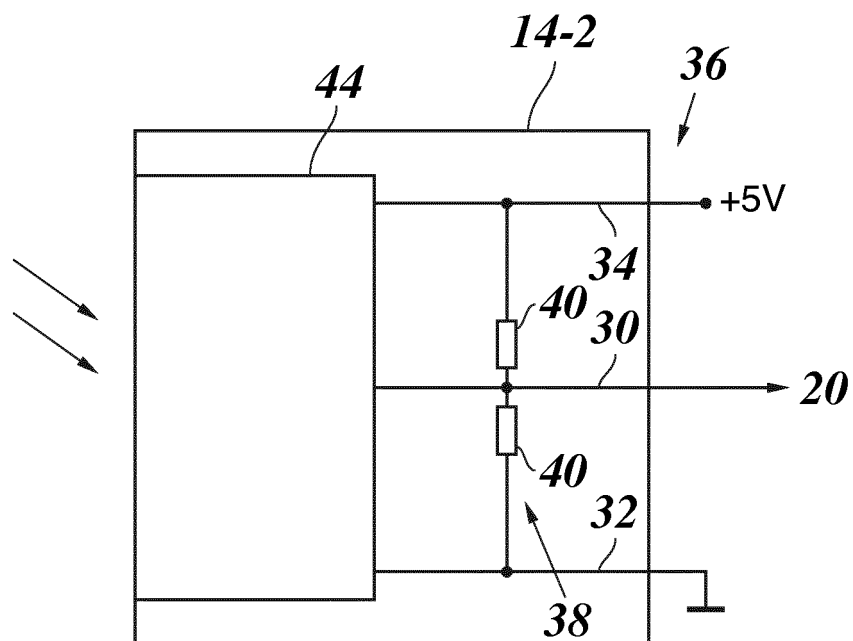
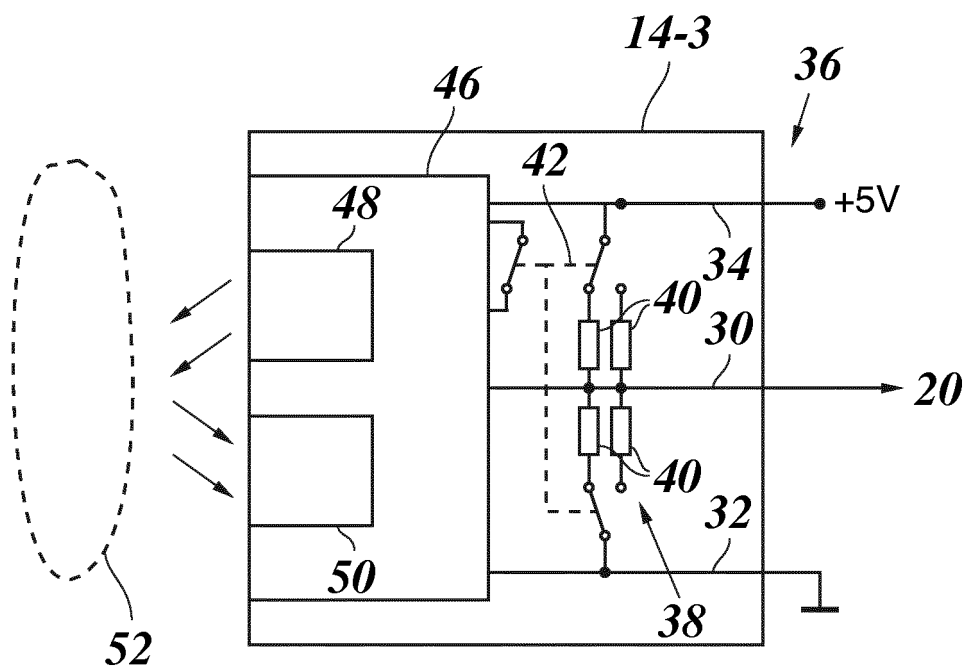


Fig. 4



REFERENCES CITED IN THE DESCRIPTION

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