(54) **EFFICIENT LOGICAL ASSIGNMENT OF DALI-2 PUSHBUTTONS OR ANALOG INPUTS**

(57) A Method and an arrangement for commissioning a DALI network for control lighting in a building, the DALI network comprising a DALI application controller, control gears, and input devices, wherein the DALI application controller provides a set of discovered, unassigned input devices and a set of engineered input devices, wherein a commissioning tool provides access to the respective sets of discovered, unassigned input devices, and engineered input devices. The method and the arrangement are in in particular applicable to commission DALI-2 pushbutton or analog input devices.
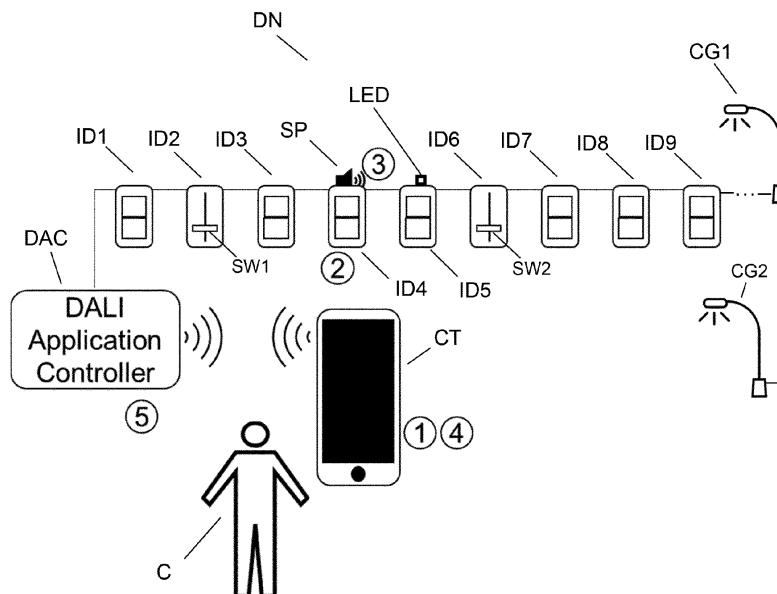
FIG 2

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Description

FIELD OF THE INVENTION

[0001]   The present invention relates generally to the technical field of building management systems or building automation systems comprising a plurality of building devices, e.g. BACnet devices. In particular the present invention relates to a method for commissioning a DALI network (e.g. DALI bus) for control lighting in a building, the DALI network comprising a DALI application controller, control gears (e.g. lamps, LED, dimmer), and input devices.

BACKGROUND

[0002]   Building automation systems are used to control devices in a building such as HVAC equipment, blind actuators, and lighting actuators. Building automation systems provide communication between and control of devices in a building. The DALI standard provides a protocol for digital communication between components of a lighting installation. In installations, a DALI control unit organizes and manages the information flow and the access of all components to the data line. DALI offers functionality that goes beyond the switching and dimming of individual DALI devices. For example, constant light control can be achieved via constant light control circuits can be set up via brightness sensors and complex light scenes can be compiled, stored and recalled.

[0003]   Each DALI system contains at least one Application Controller (Master Device), up to 64 gears (e.g. lamps) and up to 64 input devices (pushbuttons defined in IEC 62386-301, analog input devices defined in IEC 62386-302, or others).

[0004]   DALI system commissioning requires two basic steps:

>   1st step: each physical device needs to get a network address (so called DALI short address).
>   2nd step: each physical device must be localized and assigned to a logical device of the DALI Application Controller (device engineered in the building plan).

[0005]   IEC 62386-102 defines the address assignment and localization procedures for gears and IEC 62386-103 for input devices.
For input devices the DALI standard defines a random address allocation procedure and a specific IDENTIFY DEVICE command to trigger a blink or beep function to support the localization of an input device. This way the commissioner can request one after another a device to blink/beep until the wanted device answers and can be assigned. There are several problems with this setup for input devices:

>   1. Having to blink or beep every device one by one

to find a specific device is very time-consuming and inefficient. Especially for large projects totaling hundreds of input devices.
2. In many cases using IDENTIFY DEVICE command on every device is error-prone, because multiple pushbuttons or dimming devices can be mounted close together in a wall, so a beep sound from these devices is hard to distinguish. Blinking LEDs are often small and covered by a transparent housing and difficult to see.

SUMMARY OF THE INVENTION

[0006]   The object of the invention is to provide an efficient method for commissioning a DALI network for control lighting in a building.

[0007]   A first aspect of the invention is a method for commissioning a DALI network (e.g. DALI bus) for control lighting in a building, the DALI network comprising a DALI application controller, control gears (e.g. lamps, LED, dimmer), and input devices (e.g. sensors, pushbuttons), the method comprising the steps:

>   providing a set (e.g. a list) of discovered, unassigned input devices and a set (e.g. separate list) of engineered input devices by the DALI application controller, wherein access to the respective sets is provided by a suitable commissioning tool;
>   selecting a DALI input device from the set of engineered devices displayed by the commissioning tool by a commissioner, wherein this selection is triggering a message from the commissioning tool to the DALI Application Controller which starts monitoring the event messages from not-yet-assigned input devices on the DALI network which type correspond to the type of the input device selected by the commissioner;
>   activating a switch on the selected DALI input device by the commissioner within a defined time period (e.g. 3 seconds), wherein activating the switch is triggering a DALI event message to the DALI application controller;
>   sending the DALI IDENTIFY DEVICE command to the DALI input device which triggered the DALI event message by the DALI application controller;
>   wherein after receiving the DALI IDENTIFY DEVICE command the DALI input device is outputting a visual signal (e.g. blinking or flashing) and/or an audio signal (e.g. beeping or sounding) to indicate that the correct DALI input device is selected;
>   confirming that the correct DALI input device is selected by the commissioner via the commissioning tool;
>   assigning a logical address within the DALI network to said correct DALI input device in the DALI application controller.

[0008]   A second aspect of the invention is an arrange-

ment for commissioning a DALI network (e.g. DALI bus) for control lighting in a building, the DALI network comprising a DALI application controller, control gears (e.g. lamps, LED, dimmer), and input devices (e.g. sensors, pushbuttons),

wherein the DALI application controller provides a set (e.g. a list) of discovered, unassigned input devices and a set (e.g. separate list) of engineered input devices,

wherein a commissioning tool provides access to the respective sets of discovered, unassigned input devices, and engineered input devices;

wherein a DALI input device from the set of engineered devices is displayed by the commissioning tool to be selected by a commissioner, wherein this selection is triggering a message from the commissioning tool to the DALI Application Controller which starts monitoring the event messages from not-yet-assigned input devices on the DALI network which type of input devices correspond to the type of the input device selected by the commissioner;

wherein activating a switch on the selected DALI input device by the commissioner within a defined time period (e.g. 3 seconds) is triggering a respective DALI event message to the DALI application controller;

wherein the DALI application controller is configured to send the DALI IDENTIFY DEVICE command to the DALI input device which triggered the DALI event message;

wherein the DALI input device is configured after receiving the DALI IDENTIFY DEVICE command to output a visual (e.g. blinking or flashing) and/or an audio signal (e.g. beeping or sounding) to indicate that the correct DALI input device is selected;

wherein the commissioning tool is configured to confirm that the correct DALI input device is selected by the commissioner;

wherein a logical address within the DALI network is assigned to said correct DALI input device in the DALI application controller.

[0009] A third aspect of the invention is a DALI application controller, configured to perform a method for commissioning a DALI network (e.g. DALI bus) for control lighting in a building, the DALI network comprising a DALI application controller, control gears (e.g. lamps, LED, dimmer), and input devices (e.g. sensors, pushbuttons), the method comprising the steps:

providing a set (e.g. a list) of discovered, unassigned input devices and a set (e.g. separate list) of engineered input devices by the DALI application controller, wherein access to the respective sets is provided by a suitable commissioning tool;
selecting a DALI input device from the set of engineered devices displayed by the commissioning tool

by a commissioner, wherein this selection is triggering a message from the commissioning tool to the DALI Application Controller which starts monitoring the event messages from not-yet-assigned input devices on the DALI network which type of input devices correspond to the type of the input device selected by the commissioner;
activating a switch on the selected DALI input device by the commissioner within a defined time period (e.g. 3 seconds), wherein activating the switch is triggering a DALI event message to the DALI application controller; sending the DALI IDENTIFY DEVICE command to the DALI input device which triggered the DALI event message by the DALI application controller;
wherein after receiving the DALI IDENTIFY DEVICE command the DALI input device is outputting a visual (e.g. blinking or flashing) and/or an audio signal (e.g. beeping or sounding) to indicate that the correct DALI input device is selected;
confirming that the correct DALI input device is selected by the commissioner via the commissioning tool;
assigning a logical address within the DALI network to said correct DALI input device in the DALI application controller.

[0010] Further aspects of the invention are a computer program product and a computer-readable storage medium comprising instructions which, when the program is executed by a computer, cause the computer to carry out the steps of the inventive method for commissioning a DALI network for control lighting in a building.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The above-mentioned and other concepts of the present invention will now be addressed with reference to the drawings of the preferred embodiments of the present invention. The shown embodiments are intended to illustrate, but not to limit the invention. The drawings contain the following figures, in which like numbers refer to like parts throughout the description and drawings and wherein:

FIG 1   illustrates an exemplary flowchart of method for commissioning a DALI network for control lighting in a building; and

FIG 2   illustrates an exemplary arrangement for commissioning a DALI network for control lighting in a building.

DETAILED DESCRIPTION

[0012] Figure 1 illustrates an exemplary flowchart of a method for commissioning a DALI network (e.g. DALI bus) for control lighting in a building, the DALI network

comprising a DALI application controller, control gears (e.g. lamps, LED, dimmer), and input devices (e.g. sensors, pushbuttons), the method comprising the steps:

(ST1) providing a set (e.g. a list) of discovered, unassigned input devices and a set (e.g. separate list) of engineered input devices by the DALI application controller, wherein access to the respective sets is provided by a suitable commissioning tool;

(ST2) selecting a DALI input device from the set of engineered devices displayed by the commissioning tool by a commissioner, wherein this selection is triggering a message from the commissioning tool to the DALI Application Controller which starts monitoring the event messages from not-yet-as-signed input devices on the DALI network, wherein the type of input devices corresponds to the type of the input device selected by the commissioner;

(ST3) activating a switch on the selected DALI input device by the commissioner within a defined time period (e.g. 3 seconds or 15 seconds), wherein activating the switch is triggering a DALI event message to the DALI application controller;

(ST4) sending the DALI IDENTIFY DEVICE command to the DALI input device which triggered the DALI event message by the DALI application controller;

(ST5) wherein after receiving the DALI IDENTIFY DEVICE command the DALI input device is outputting a visual signal (e.g. blinking or flashing) and/or an audio signal (e.g. beeping or sounding) to indicate that the correct DALI input device is selected;

(ST6) confirming that the correct DALI input device is selected by the commissioner via the commissioning tool;

(ST7) assigning a logical address within the DALI network to said correct DALI input device in the DALI application controller. Advantageously the DALI Application Controller provides a list (e.g. a spreadsheet or csv-list) of discovered, unassigned input devices and a list (e.g. a separate list) of engineered input devices. This information is accessible by the commissioning tool. Advantageously the commissioning tool is implemented or realized on a laptop or a tablet computer). Advantageously activating the switch corresponds to a process-signal having a changed analog value.

[0013] According to an advantageous embodiment, activating the switch on the selected DALI input device is performed by pressing a pushbutton on the selected DALI input device.

[0014] According to an advantageous embodiment, activating the switch on the selected DALI input device can also be performed by moving a slider on the selected DALI input device.

[0015] According to an advantageous embodiment, activating the switch on the selected DALI input device can be performed by moving a rotary knob on the selected DALI input device.

[0016] According to an advantageous embodiment, activating the switch on the selected DALI input device is performed by moving the current position of a measured value by more than 50%. A rotary knob or slider delivers to the controller its position that can be interpreted as a range 0% - 100%. The current position is the "measured value". We need to assig a device that was moved from one side to another one (i.e. it delivers a significant change in measured value: higher than 50%). This way we can safely ignored for example an accidently touched device delivering change of let's say 3%.

[0017] According to an advantageous embodiment, the set of discovered and unassigned input devices and the set of engineered input devices are updated accordingly. Advantageously the update of the lists is performed automatically if a change of the sets is discovered.

[0018] According to an advantageous embodiment, an output device (monitor, display) of the commissioning tool is presenting a successful assigning of a logical address.

[0019] According to an advantageous embodiment, providing the set (e.g. a list) of discovered, unassigned input devices and the set (e.g. separate list) of engineered input devices is performed automatically by the DALI application controller. Advantageously the update of the lists is performed automatically if a change of the sets is discovered.

[0020] Advantageously step (ST2) "selecting a DALI input device from the set of engineered devices displayed by the commissioning tool by a commissioner, wherein this selection is triggering a message from the commissioning tool to the DALI Application Controller which starts monitoring the event messages from not-yet-assigned input devices on the DALI network" further comprises starting a timer, which defines the starting point of the defined time period. Advantageously the timer is integrated or implemented in the DALI Application Controller or in the commissioning tool.

[0021] Step (ST3) "activating a switch on the selected DALI input device by the commissioner within a defined time period, wherein activating the switch is triggering a DALI event message to the DALI application controller" has to be performed before the timer expires.

[0022] This means feedback must be provided to the selected DALI input device by the commissioning engineer until the defined time period (e.g. 3 seconds or 5 seconds or 10 seconds or 15 seconds or 20 seconds) or a defined time out (e.g. 3 seconds or 5 seconds or 10 seconds or 15 seconds or 20 seconds) expires. The defined time period or the defined time out can be determined or configured by the commissioner with the commissioning tool and/or the DALI application controller.

[0023] The length or the span of the defined time period has to be chosen so that the commissioner can actually perform the operation "activating the switch". This can be done individually by each respective commissioner.

[0024] If the defined time period is too short and the timer expires before activating the switch, the DALI Application Controller can not find the selected input device. Advantageously a corresponding information is displayed to the commissioner on the commissioning tool.

[0025] The commissioning tool and the DALI application controller comprise suitable processor means, memory means, input/output means, and communications means.

[0026] This reliably prevents faulty connections, especially if many devices are set up simultaneously by several commissioning engineers.

[0027] The proposed workflow provides a significant efficiency advantage compared to IEC 62386-103 workflow, where for every input device up to 64 interactions are required. Shorter commissioning time translates to lower cost of commissioning.

[0028] The proposed workflow with the visual/auditive feedback of the selected device prevents nearly all types of erroneous assignment. Not having to find and correct such errors further reduces the required commissioning time and cost.

[0029] Advantageously a DALI application controller and a commissioning device are configured to perform the method steps described above and illustrated in figure 1.

[0030] Further aspects of the invention are a computer program product and a computer-readable storage medium or data carrier (e.g. USB stick, CD, optical disc) comprising instructions which, when the program is executed by a computer, cause the computer to carry out the steps of the inventive method for commissioning a DALI network for control lighting in a building described above. The computer (e.g. laptop, smartphone) comprises suitable software and hardware means (processor, storage media, communication means, I/O means) to perform the method. The computer program product is implemented in a suitable programming language.

[0031] The computer program product can comprise instructions which can be executed on a processor of the DALI application controller to perform the inventive method for commissioning a DALI network. A further computer program product can comprise instructions which can be executed on a processor of the commissioning tool (e.g. smartphone or tablet computer) to perform the inventive method for commissioning the DALI network. The DALI application controller and the commissioning tool are communicating and cooperating to perform the inventive method for commissioning the DALI network. The further computer program product for the commissioning tool can be an App. The App can be provided for the commissioning tool by a download from an Appstore.

[0032] Figure 2 illustrates an exemplary arrangement for commissioning a DALI network DN for control lighting in a building,

wherein the DALI network DN comprising a DALI application controller DAC, control gears CG1, CG2 (e.g. lamps, LED, dimmer), and input devices ID1 - ID9 (e.g. sensors, pushbuttons),

wherein the DALI application controller DAC provides a set (e.g. a list) of discovered, unassigned input devices and a set (e.g. separate list) of engineered input devices,

wherein a commissioning tool CT provides access to the respective sets of discovered, unassigned input devices, and engineered input devices;

wherein a DALI input device ID1 - ID9 from the set of engineered devices is displayed by the commissioning tool CT to be selected by a commissioner C, wherein this selection is triggering a message from the commissioning tool C to the DALI Application Controller DAC which starts monitoring the event messages from not-yet-assigned input devices on the DALI network DN, wherein the type of input devices corresponds to the type of the input device selected by the commissioner C;

wherein activating a switch SW1, SW2 on the selected DALI input device ID1 - ID9 by the commissioner C within a defined time period (e.g. 3 seconds or 5 seconds or 10 seconds or 20 seconds) is triggering a respective DALI event message to the DALI application controller DAC;

wherein the DALI application controller DAC is configured to send the DALI IDENTIFY DEVICE command to the DALI input device ID1 - ID9 which triggered the DALI event message;

wherein the DALI input device ID1 - ID9 is configured after receiving the DALI IDENTIFY DEVICE command to output a visual (e.g. blinking or flashing) and/or an audio signal (e.g. beeping or sounding) to indicate that the correct DALI input device ID1 - ID9 is selected;

wherein the commissioning tool CT is configured to confirm that the correct DALI input device ID1 - ID9 is selected by the commissioner C;

wherein a logical address within the DALI network DN is assigned to said correct DALI input device ID1 - ID9 in the DALI application controller DAC. The commissioning tool CT and the DALI application controller DAC comprise respective suitable processor means, memory means, input/output means, and communications means. Advantageously the commissioning tool CT is implemented on a portable device, e.g. a laptop or a tablet computer.

[0033] DALI is specified by a series of technical standards in IEC 62386. This ensures that equipment from different manufacturers will interoperate in DALI systems (DALI networks) DN.

[0034] A DALI network DN typically comprises at least one DALI application controller DAC, a network (e.g. bus) power supply, input devices ID1 - ID9 (e.g. sensors and push-buttons), control gear (e.g. LED drivers or dimmers) with DALI interfaces. A DALI application controller DAC can control, configure or query each network device by means of a bi-directional data exchange. The DALI pro-

tocol allows addressing the network devices individually, in groups or via broadcast.

[0035] Each device in a DALI network DN is assigned a unique short address between 0 to 63, making up to 64 control gear devices CG1, CG2 in a basic DALI system. Address assignment to devices in a DALI network DN is accomplished over the bus using a "commissioning" protocol, usually after all hardware of the DALI system (DALI network DN) is installed. In a DALI network DN data is transferred between devices by means of an asynchronous, half-duplex, serial protocol over a two-wire bus with a fixed data transfer rate of 1200 bit/s. A DALI network DN can be arranged in bus or star topology, or a combination of these. Each device on a DALI network DN can be addressed individually.

[0036] The exemplary illustration according to figure 2 shows lamps CG1, CG2 as exemplary control gears. A DALI network DN can comprise a plurality of control gears (e.g. lamps, LED, dimmer), also control gears of different types.

[0037] Advantageously activating the switch SW1, SW2 on the selected DALI input device ID1 - ID9 is performed by pressing a pushbutton on the selected DALI input device.

[0038] Optionally or additionally activating the switch SW1, SW2 on the selected DALI input device ID1 - ID9 can be performed by moving a slider on the selected DALI input device.

[0039] Optionally or additionally activating the switch SW1, SW2 on the selected DALI input device ID1 - ID9 is performed by moving a rotary knob on the selected DALI input device.

[0040] Advantageously activating the switch SW1, SW2 on the selected DALI input device ID1 - ID9 is performed by moving the current position of a measured value by more than 50%. For instance, a rotary knob or slider delivers to the controller its position that can be interpreted as a range 0% - 100%. The current position is the "measured value". It is secured to assign a device that was moved from one side to another one (i.e. it delivers a significant change in measured value: higher than 50%). This way for example an accidently touched device delivering change of let's say 3% can be safely ignored.

[0041] Advantageously the feature "wherein a DALI input device ID1 - ID9 from the set of engineered devices is displayed by the commissioning tool CT to be selected by a commissioner C, wherein this selection is triggering a message from the commissioning tool C to the DALI Application Controller DAC which starts monitoring the event messages from not-yet-assigned input devices on the DALI network DN" further comprises "wherein this selection is also starting a timer, which defines the starting point of a defined time period". Advantageously the timer is integrated or implemented in the DALI Application Controller DAC or in the commissioning tool CT.

[0042] The feature "wherein activating a switch SW1, SW2 on the selected DALI input device ID1 - ID9 by the commissioner C within a defined time period (e.g. 3 sec-

onds or 5 seconds or 10 seconds or 20 seconds) is triggering a respective DALI event message to the DALI application controller DAC" has to be performed before the timer expires.

[0043] This means feedback must be provided to the selected DALI input device by the commissioning engineer until the defined time period (e.g. 3 seconds or 5 seconds or 10 seconds or 15 seconds or 20 seconds) or a defined time out (e.g. 3 seconds or 5 seconds or 10 seconds or 15 seconds or 20 seconds) expires. The defined time period or the defined time out can be determined or configured by the commissioner with the commissioning tool and/or the DALI application controller.

[0044] Advantageously the length or the span of the defined time period is chosen so that the commissioner can actually perform the operation "activating the switch". This can be done individually by each respective commissioner.

[0045] If the defined time period is too short and the timer expires before activating the switch, the DALI Application Controller can not find the selected input device. Advantageously a corresponding information (e.g. a message) is displayed to the commissioner on the commissioning tool.

[0046] Advantageously the set (e.g. list) of discovered and unassigned input devices and the set of engineered input devices is updated accordingly. Advantageously the update of the lists is performed automatically if a change of the sets is discovered.

[0047] According to an advantageous embodiment, an output device (monitor, display) of the commissioning tool CT is presenting a successful assigning of a logical address.

[0048] According to an advantageous embodiment, providing the set (e.g. a list) of discovered, unassigned input devices and the set (e.g. separate list) of engineered input devices is performed automatically by the DALI application controller DAC. Advantageously the update of the lists is performed automatically if a change of the sets is discovered.

Advantageously the DALI application controller DAC is commissioned with a handheld device as a commissioning tool CT (e.g. tablet, smartphone, laptop, mobile or desktop computer). Prior to the logical device assignment, advantageously the DALI application controller DAC performs random address allocation as defined in IEC 62386-103 section 9.14.2.

[0049] The DALI application controller provides a list of discovered, unassigned input devices and a separate list of engineered input devices. This information is accessible by the commissioning tool CT via suitable communication means (e.g. WLAN, radio communication, IP communication).

[0050] In the arrangement as illustrated in figure 2 the exemplary input device ID4 comprises an exemplary speaker SP for sending an audio signal (e.g. beeping or sounding). Optionally the audio signal can also be replaced by a visual signal (e.g. by a flasher or blinker send-

ing unit). Optionally the audio signal and the visual signal can be outputted together (means simultaneously) by the exemplary input device ID4.

[0051] In the arrangement as illustrated in figure 2 the exemplary input device ID5 comprises an exemplary lamp LED as output-unit to output a visual signal. The output-unit LED to output a visual signal can be a flasher or a blinker sending unit or an indicator light).

[0052] The exemplary input devices ID1 to ID9 can comprise in each case an exemplary speaker SP and/or an exemplary light-output-unit LED.

[0053] The arrangement as illustrated in figure 2 is configured to perform a logical assignment of input devices ID1 - ID9 to control gears CG1, CG2 by performing the following workflow of actions (steps, points) 1 to 5:

> 1. The commissioner C selects a DALI input device ID1 - ID9 from the list of engineered devices displayed by the commissioning tool CT. This triggers a message from the commissioning tool CT to the DALI application controller DAC which starts monitoring the event messages from not-yet-assigned input devices on the DALI bus DN.
> 2. The commissioner C presses the physical push-button (for input devices of type IEC 62386-301) or changes the measured value by more than 50% within 3 seconds (by moving the slider or the rotary knob for analog input devices of type IEC 62386-302). This triggers a DALI event message(s) that the DALI Application Controller DAC receives.
> 3. The DALI Application Controller DAC sends the IDENTIFY DEVICE command to the input device which triggered the event message. The addressed input devices blinks or beeps.
> 4. The commissioner C gets the visual or audible confirmation that the correct device is selected. This can be confirmed via the commissioning tool CT.
> 5. After the confirmation the DALI Application Controller DAC completes the logical assignment. The list of discovered & unassigned input devices and the separate list of engineered input devices is updated accordingly. And the screen on the commissioning tool CT is updated to indicate the successful assignment. The commissioner C can continue with the logical assignment of the next input device from point 1.

[0054] Should someone else interact with another not-yet-assigned input device during the logical assignment sequence, the DALI Application Controller DAC detects events from multiple input devices and the sequence is interrupted to prevent erroneous assignment. The commissioning tool CT displays an error message for the logical assignment, and the commissioner C can restart the logical assignment sequence.

[0055] The proposed workflow provides a significant efficiency advantage compared to IEC 62386-103 workflow, where for every input device up to 64 interactions

are required. Shorter commissioning time is also a reduction of costs.

[0056] The proposed workflow with the visual/auditive feedback of the selected device prevents nearly all types of erroneous assignment. Not having to find and correct such errors further reduces the required commissioning time and cost.

[0057] The binary search workflow for gears CG1, CG2 reduces the assignment speed as well (interacting up to 6 times to assign one of 64 devices instead of iterating up to 64 times). The proposed workflow triggers the IDENTIFY DEVICE command only once removing the risk of errors. Moreover, the proposed workflow reduces assignment time even further (the input device is assigned after single interaction).

[0058] A Method and an arrangement for commissioning a DALI network for control lighting in a building, the DALI network comprising a DALI application controller, control gears, and input devices, wherein the DALI application controller provides a set of discovered, unassigned input devices and a set of engineered input devices, wherein a commissioning tool provides access to the respective sets of discovered, unassigned input devices, and engineered input devices. The method and the arrangement are in in particular applicable to commission DALI-2 pushbutton or analog input devices.

Reference Signs

[0059]

DN	DALI Network
ID1 - ID9	Input Device
SW1, SW2	Switch
DAC	DALI Application Controller
CG1, CG2	Control Gear
SP	Speaker
LED	Lamp
CT	Commissioning Tool
C	Commissioner
ST1 - ST7, 1 - 5	Step

Claims

1. A method for commissioning a DALI network (DN) for control lighting in a building, the DALI network (DN) comprising a DALI application controller (DAC), control gears (CG1, CG2), and input devices (ID1 - ID9), the method comprising the steps:

> (ST1) providing a set of discovered, unassigned input devices and a set of engineered input devices (ID1 - ID9) by the DALI application controller (DAC), wherein access to the respective sets is provided by a suitable commissioning tool (CT) ;
> (ST2) selecting a DALI input device (ID1 - ID9)

from the set of engineered devices displayed by the commissioning tool (CT) by a commissioner (C), wherein this selection is triggering a message from the commissioning tool (CT) to the DALI Application Controller (DAC), wherein the DALI Application Controller (DAC) starts monitoring the event messages from not-yet-assigned input devices on the DALI network (DN) which type corresponds to the type of the input device selected by the commissioner;

(ST3) activating a switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) by the commissioner (C) within a defined time period, wherein activating the switch (SW1, SW2) is triggering a DALI event message to the DALI application controller (DAC);

(ST4) sending the DALI IDENTIFY DEVICE command to the DALI input device (ID1 - ID9) which triggered the DALI event message by the DALI application controller (DAC);

(ST5) wherein after receiving the DALI IDENTIFY DEVICE command the DALI input device (ID1 - ID9) is outputting a visual and/or an audio signal to indicate that the correct DALI input device (ID1 - ID9) is selected;

(ST6) confirming that the correct DALI input device is selected by the commissioner (C) via the commissioning tool (CT) ;

(ST7) assigning a logical address within the DALI network (DN) to said correct DALI input device (ID1 - ID9) in the DALI application controller (DAC).

2. The method according to claim 1, wherein activating the switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) is performed by pressing a push-button on the selected DALI input device.

3. The method according claim 1 or claim 2, wherein activating the switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) is performed by moving a slider on the selected DALI input device.

4. The method according to one of the preceding claims, wherein activating the switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) is performed by moving a rotary knob on the selected DALI input device.

5. The method according to claim 3 or 4, wherein activating the switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) is performed by moving the current position of a measured value by more than 50%.

6. The method according to one of the preceding claims, wherein the set of discovered and unassigned input devices and the set of engineered input

devices is updated accordingly.

7. The method according to one of the preceding claims, wherein an output device of the commissioning tool (CT) is presenting a successful assigning of a logical address.

8. The method according to one of the preceding claims, wherein providing the set of discovered, unassigned input devices and the set of engineered input devices is performed automatically by the DALI application controller (DAC).

9. An arrangement for commissioning a DALI network (DN) for control lighting in a building, the DALI network (DN) comprising a DALI application controller (DAC), control gears (CG1, CG2), and input devices (ID1 - ID9),

    wherein the DALI application controller (DAC) is configured to provide a set of discovered, unassigned input devices and a set of engineered input devices,
    wherein a commissioning tool (CT) is configured to provide access to the respective sets of discovered, unassigned input devices, and engineered input devices;
    wherein a DALI input device (ID1 - ID9) from the set of engineered devices is displayed by the commissioning tool (CT) to be selected by a commissioner (C), wherein this selection is triggering a message from the commissioning tool (CT) to the DALI Application Controller (DAC), wherein the DALI Application Controller (DAC) starts monitoring the event messages from not-yet-assigned input devices on the DALI network (DN) which type of input devices corresponds to the type of the input device selected by the commissioner (C);
    wherein activating a switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) by the commissioner (C) within a defined time period is triggering a respective DALI event message to the DALI application controller (DAC);
    wherein the DALI application controller (DAC) is configured to send the DALI IDENTIFY DEVICE command to the DALI input device (ID1 - ID9) which triggered the DALI event message;
    wherein the DALI input device (ID1 - ID9) is configured after receiving the DALI IDENTIFY DEVICE command to output a visual and/or an audio signal to indicate that the correct DALI input device (ID1 - ID9) is selected;
    wherein the commissioning tool (CT) is configured to confirm that the correct DALI input device is selected by the commissioner (C);
    wherein a logical address within the DALI network (DN) is assigned to said correct DALI input

device in the DALI application controller (DAC).

10. The arrangement according to claim 9, wherein activating the switch (SW1, SW2) on the selected DALI input device is performed by pressing a pushbutton on the selected DALI input device.

11. The arrangement according claim 9 or claim 10, wherein activating the switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) is performed by moving a slider on the selected DALI input device.

12. The arrangement according to one of the preceding claims, wherein activating the switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) is performed by moving a rotary knob on the selected DALI input device.

13. The arrangement according to claim 11 or 12, wherein activating the switch (SW1, SW2) on the selected DALI input device (ID1 - ID9) is performed by moving the current position of a measured value by more than 50%.

14. The arrangement according to one of the preceding claims 9 to 13, wherein the set of discovered and unassigned input devices and the set of engineered input devices is updated accordingly.

15. A DALI application controller (DAC), configured to perform a method according to one of the claims 1 to 8.

16. A Computer program product comprising instructions which, when the program is executed by a computer, cause the computer to carry out the steps of the method of one of the claims 1 to 8.

17. A computer-readable data carrier having stored thereon the computer program product of claim 16.

providing a set (e.g. a list) of discovered, unassigned input devices and a set (e.g. a separate list) of engineered input devices by the DALI application controller, wherein access to the respective sets is provided by a suitable commissioning tool ST1

selecting a DALI input device from the set of engineered devices displayed by the commissioning tool by a commissioner, wherein this selection is triggering a message from the commissioning tool to the DALI Application Controller which starts monitoring the event messages from not-yet-assigned input devices on the DALI network which type of input devices is corresponding to the type of the input device selected by the commissioner ST2

activating a switch on the selected DALI input device by the commissioner within a defined time period (e.g. 3 seconds or e.g. 10 seconds), wherein activating the switch is triggering a DALI event message to the DALI application controller ST3

sending the DALI IDENTIFY DEVICE command to the DALI input device which triggered the DALI event message by the DALI application controller ST4

wherein after receiving the DALI IDENTIFY DEVICE command the DALI input device is outputting a visual and/or an audio signal to indicate that the correct DALI input device is selected ST5

confirming that the correct DALI input device is selected by the commissioner via the commissioning tool ST6

assigning a logical address within the DALI network to said correct DALI input device in the DALI application controller ST7

FIG 1

FIG 2

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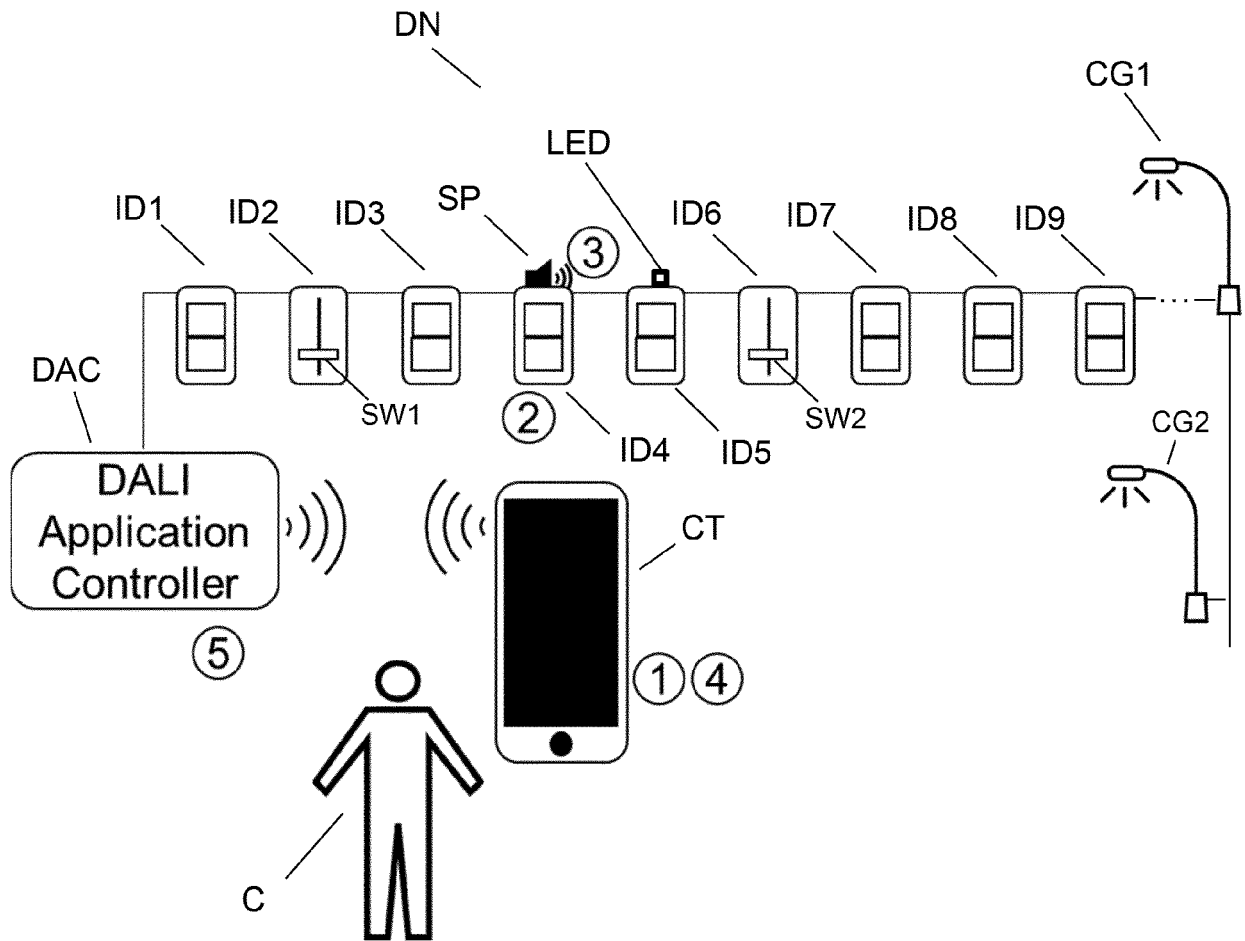**EUROPEAN SEARCH REPORT**

Application Number

EP 21 19 2276

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X	EP 3 790 363 A1 (TRIDONIC GMBH & CO KG [AT]) 10 March 2021 (2021-03-10) * column 1, paragraph 1-4; figures 1-10 * * column 1, paragraph 6 - column 5, paragraph 27 * * column 5, paragraph 30 - column 8, paragraph 50 * * esp. pars. [0001], [0004], [0009]-[0012], [0017], [0019], [0021]-[0024], [0030]-[033], [0036], [0038], [0040]-[0042], [0045], [0049]; Figs. 1-3, 7, 8 * -----	1-17	INV. H05B47/175
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Place of search	Date of completion of the search	Examiner
Munich	4 February 2022	Brosa, Anna-Maria

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