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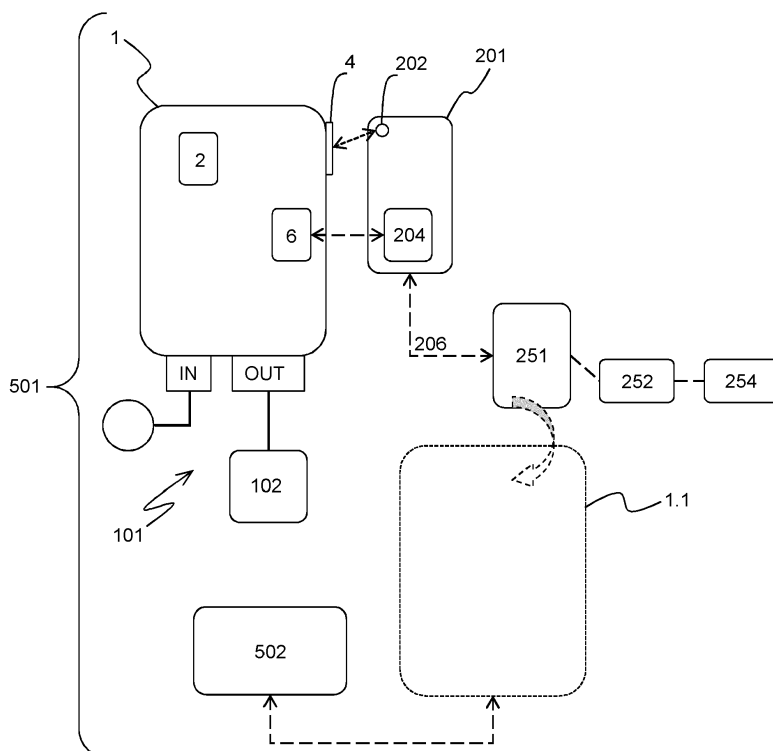
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(54) DRIVING MODULE AND LED LIGHTING ASSEMBLY

(57) The driving module (1) is configured for driving a drivable circuit (102) in a LED lighting assembly (101). The driving module (1) comprises:
- a code representation (4) configured to be read out optically by a handheld telecommunication device (201)

so as to retrieve static information from the code (4), and
- an NFC module (6) configured to be read out by the handheld telecommunication device (201) so as to retrieve dynamic information from the NFC module (6).

FIG.1

Description

1. Field of the invention

[0001] The present invention is directed to a driving module for driving a drivable circuit in a LED lighting assembly. The invention is further directed to a LED lighting assembly comprising such a driving module. The present invention is also directed to a method for configuring a replacement driving module. Further, the present invention is directed to a method and a system for replacing an installed driving module in a LED lighting assembly.

2. Technical background

[0002] A LED lighting assembly can fail to produce proper lighting when a LED driver or another driver becomes faulty. To fix the LED lighting assembly, an operator (usually an electrician) must carry out a servicing operation, usually by disposing of the faulty driver and replacing it by a replacement driver.

[0003] However, the failure of the faulty driver may have been caused by a defect that is present in or around the LED lighting assembly and that can persist after the servicing operation. For example, there may be a damage to another equipment beside the faulty driver, a defective wiring or an improper power supply. If the defect is still present, the replacement driver might become defective prematurely, thus unnecessarily increasing the costs and wastes if the faulty drivers are simply disposed of.

[0004] Besides, as the LED lighting assemblies come in a variety of designs and configurations to meet individual needs, the replacement driver must be provided with the same characteristics as the faulty driver. An operator must carefully retrieve and store all the configuration parameters of the faulty driver, and then enter these configuration parameters in the replacement driver, in order to ensure the same lighting functions. Both the equipment and the configuring time can make the servicing operation relatively expensive.

3. Summary

[0005] It is thus an object of the present invention to provide a driving module for driving a drivable circuit in a LED lighting assembly, the driving module comprising:

- A code representation configured to be read out optically by a handheld telecommunication device so as to retrieve static information from the code, and
- a NFC module configured to be read out by the handheld telecommunication device so as to retrieve dynamic information from the NFC module.

[0006] Thus, after retrieval from the NFC (Near-Field Communication) module, dynamic information, in parti-

cular about usage and history of the driving module in the LED lighting assembly, can be collected and analyzed by the manufacturer or a service partner, e.g. a wholesaler, in order to determine the configuration of the driving module and possibly the cause of its failure. In case a persistent defect is found, like undesired surges in the current supply, the manufacturer or the service partner can warn the owner of the building where the LED lighting assembly is installed.

[0007] Typically, static information may be generated and stored in the code before the first-ever start of the driving module. Dynamic information may be generated and stored after the first-ever start of the driving module, thus encompassing usage and history of the driving module.

[0008] Preferably, the code may be arranged to be readable from outside the driving module. Thus, the operator does not need to dismantle the driving module in order to gain access to the code.

[0009] In some implementations, the code may be located on an outer face of the driving module and be oriented outwards. Preferably, the code may be arranged on a housing of the driving module. In particular, the code may be located under a transparent layer, the transparent layer being for example made of a film or a window. Thus, the code can be read from outside the driving module, directly or through the transparent layer.

[0010] In some implementations, the code may be located under a cover, said cover being displaceable between a covering position, in which the cover covers the code, and an uncovering position, in which the cover uncovers the code. Thus, the code can be read from outside the driving module at least when the cover is in the uncovering position.

[0011] In some implementations, the code may be designed to trigger the downloading and installation of a web-script, for instance a JavaScript, on the handheld telecommunication device. Said downloading and installation may be carried out using Web-NFC or an equivalent interface. The Web-NFC is a low-level API (Application Programming Interface) that enables reading and writing to a nearby NFC interface. The Web-NFC allows starting up a scan of the nearby field and can inform when an NFC tag has been tapped for reading.

[0012] The web-script may be designed to instruct an NFC interface of the handheld telecommunication device to read out part or all of the dynamic information from the NFC module, preferably usage data (lifetime data) and/or blackbox data, i.e., data relating to operation conditions, including for example changes in frequency or amplitude of supply voltage, overshoot voltages at input, temperatures inside and/or outside the driver, dimming modes and levels selected by the user etc. Then, the handheld telecommunication device may be made to send said dynamic information over an available cellular network or equivalent back to the manufacturer or a service partner.

[0013] Further, the web-script may activate the displaying of information on the handheld telecommunication

device for the operator to view i) how and to whom a faulty driving module can be returned, and ii) how and, preferably, when a replacement driving module may be delivered. Preferably, dynamic information may also be displayed to indicate the type of error or defect that might have caused the failure of a faulty driving module, in case such information is already available.

[0014] According to an embodiment, the code may have a size smaller than or substantially equal to 2 cm x 2 cm, preferably to 1,5 cm x 1,5 cm, more preferably to 1 cm x 1 cm.

[0015] Thus, the code can be small while having the minimum size for being scanned as recommended in standard ISO 18004:2015. Due to the small size of the code, the user or operator must bring the handheld telecommunication device, e.g. a smartphone, close to the code, hence close to the driving module. As the handheld communication device is close enough to the driving module, NFC data and power can be transferred, such that dynamic information can be retrieved quickly.

[0016] In some implementations, the code may be selected in the group comprising: a onedimensional barcode, a two-dimensional barcode, a quick response (QR) code, a dataform, an alphanumeric text, an image, or any other symbol that is optically machine-readable.

[0017] According to an embodiment, the static information may include at least one of:

- contact data, for example an address and/or phone number, of a repairing service and/or of a replacement or shipment service,
- a unique identification number, and
- an instruction to read out the NFC-module with the handheld telecommunication device.

[0018] Thus, a user or operator coming near the driving module can easily read the NFC module out with e.g. a smartphone in order to quickly initiate a servicing operation. The unique identification number can serve to identify the driving module, for example a LED driver and/or a LED module.

[0019] According to an embodiment, the dynamic information may include at least one of:

- a version number of a firmware installed in the driving module,
- a name of a software stack activated to control the driving module,
- an operation temperature,
- an environmental temperature around the driving module,
- a dimming level,

- a color temperature, e.g. of a LED included in the LED lighting assembly,
- overall duration of operation,
- number of starts,
- energy consumption,
- a set of control parameters, which may include: maximum allowable dimming range, maximum allowable light intensity of the at least one LED, maximum allowable electrical energy for the at least one LED, and maximum allowable current for the at least one LED.
- minimum and/or maximum value of a physical quantity corresponding to the nominal service of the driving module, for example i) a minimal and/or maximum value of a nominal current through at least one LED or ii) a lower limit for a dimming parameter of a driving module,
- usage history data, preferably the typical operation time like a day schedule, and
- number of switch-on and switch-off events.

[0020] The dynamic information may include preferably several, more preferably all, of the afore-listed information.

[0021] According to an embodiment, the driving module may further comprise a control unit configured to control a driving current to be supplied to the drivable circuit.

[0022] Preferably, the control unit may comprise an integrated circuit, for example an ASIC.

[0023] According to an embodiment, the driving module may be selected in the group comprising:

- a LED driver configured for driving a LED module comprising at least one LED,
- a dimming driver configured for driving a dimmer, and
- a driver configured for controlling one or more other driver(s), e.g. connected to a sensor and forwarding the sensed information or reactions to it for controlling the other driver(s).

[0024] Preferably, the LED driver may be configured for driving a LED module comprising string of LEDs.

[0025] According to an embodiment where the driving module includes the LED driver, the driving module may further comprise an output terminal and an input terminal, the output terminal being configured to be directly con-

nected with the LED module, the input terminal being configured to be indirectly or directly connected with a power supply, for example the mains grid.

[0026] Thus, as the output terminal is directly connected with the LED module, there is no electrical component between the output terminal and the LED module, which enables a quick control of the LED module.

[0027] In a variation of this embodiment, the output terminal may be only indirectly connected with the LED module.

[0028] According to an embodiment, the control unit may be configured to control at least one of: voltage, intensity, frequency, pulse width and/or phase of a driving current to be supplied to the drivable circuit.

[0029] Thus, as the driving module may control at least one parameter of the driving current, the driving module can indirectly control the light emission by the LED module of the LED lighting assembly.

[0030] The control unit may be configured to control at least two, preferably several, more preferably all, of these parameters.

[0031] It is also an object of the present invention to provide a LED lighting assembly for producing light, the LED lighting assembly comprising i) a drivable circuit and ii) a driving module as described hereinbefore, wherein the driving module is connected to drive the drivable circuit, the drivable circuit including preferably at least one of: a LED module comprising at least one LED, a dimmer, and a communication module for a wired or wireless network, e.g. for a digital dimming network.

[0032] Preferably, the at least one LED may include inorganic LED or organic LED (OLED). Preferably, the LED module may comprise a LED string having at least two LEDs.

[0033] In some implementations, the driving module and the drivable circuit may be detachably coupled to one another. Likewise, other components or modules of the LED lighting assembly may be detachably coupled with one another. Alternatively, the LED lighting assembly, or a portion thereof, may form an assembly in which some components or modules are integral with one another.

[0034] It is a further object of the present invention to provide a configuration method for configuring a replacement driving module, the configuration method comprising:

- identifying an installed driving module, which is installed for driving a drivable circuit in a LED lighting assembly, the installed driving module comprising a code and a NFC module,
- optically reading out the code by a handheld telecommunication device so as to retrieve static information from the code,
- reading out the NFC module by the handheld telecommunication device so as to retrieve dynamic information from the NFC module,

- wirelessly transferring said dynamic information to a remote server,

- retrieving, from the remote server, configuration data corresponding to said dynamic information,

- providing the replacement driving module, and

- implementing said configuration data in the replacement driving module, such that the replacement driving module substantially emulates the installed driving module.

[0035] Thus, the replacement driving module can be configured to replace the installed, faulty driving module, that is, to provide a similar configuration and fulfill similar functions.

[0036] Further, dynamic information, in particular about usage and history of the driving module in the LED lighting assembly, can be collected and analyzed by the manufacturer or a service partner, e.g. a wholesaler, in order to determine the configuration of the driving module and the cause of its failure. In case a persistent defect is found, like undesired surges in the current supply, the manufacturer or the service partner can warn the owner of the building where the LED lighting assembly is installed.

[0037] Preferably, the handheld telecommunication device may be a smartphone, a tablet, a laptop, or a personal digital assistant. The handheld telecommunication device may be equipped with an optical sensor, preferably a camera, for reading the code out. The handheld telecommunication device may be equipped with a NFC interface for reading the dynamic information out.

[0038] According to an embodiment, said retrieving of configuration data may comprise searching for said dynamic information in a databank containing configuration files.

[0039] In some implementations, said retrieving of configuration data may further comprise: selecting a configuration file, and writing the selected configuration file as a function of said dynamic information.

[0040] In some implementations, the handheld telecommunication device may be designed to upload and install, upon triggering by the code, a web-script, for instance a JavaScript, using Web-NFC or an equivalent interface. The handheld telecommunication device may comprise an NFC interface for receiving the web-script. The handheld telecommunication device may be designed to execute the web-script so as to read out part or all of the dynamic information from the NFC module, preferably usage data (lifetime data) and/or blackbox data, i.e., data relating to operation conditions. Then, the handheld telecommunication device may be made to send said dynamic information over an available cellular network or equivalent back to the manufacturer or a service partner.

[0041] The configuration method may further comprise

the activation of the web-script to display information on the handheld telecommunication device for the operator to view i) how and to whom a faulty driving module can be returned, and ii) how and, preferably, when a replacement driving module may be delivered. The handheld telecommunication device may further display dynamic information may also be displayed to indicate the type of error or defect that might have caused the failure of a faulty driving module, in case such information is already available. The handheld telecommunication device may also display a prediction of service life for the LED lighting assembly, or even for an overall lighting installation.

[0042] In some implementations, the configuration method may further comprise analyzing said dynamic information to determine whether an operating parameter has caused the failure of the installed driving module. Depending on this determination, said implementing of configuration data may include changing the value of said operating parameter. Thus, a repetition of the same failure due to the same cause may be avoided. So the service life of the driving module and of the LED lighting assembly may be extended.

[0043] According to an embodiment, said providing of the replacement driving module may comprise selecting, as the replacement driving module, a generic driving module capable of emulating various driving modules including the installed driving module.

[0044] Thus, the number of driving modules to be stored and made available for replacement can be relatively small.

[0045] According to an embodiment, the generic driving module may be configured to emulate several, preferably all, service parameters of the installed driving module.

[0046] Thus, the installed, possibly faulty, driving module can be replaced by a replacement driving module providing the same configuration, hence fulfilling the same functions.

[0047] It is another object of the present invention to provide a replacement method for replacing an installed driving module in a LED lighting assembly, the replacement method comprising:

- configuring a replacement driving module by performing a configuration method as described hereinbefore,
- shipping the replacement driving module to the work-site where the installed driving module is installed, and
- installing the replacement driving module in lieu of the installed driving module.

[0048] Thus, an operator performing this replacement method can easily replace an installed, faulty driving module by a replacement driving module.

[0049] In particular, said installing of the replacement

driving module may include disconnecting the installed driving module at least from the drivable circuit and connecting the replacement driving module with the drivable circuit.

[0050] Said configuring and said shipping of the replacement driving module may be carried out by the manufacturer or the service partner.

[0051] Thus, the operator, e.g. an electrician, can easily install the replacement driving module on site in the LED lighting assembly. For example, if the installed, faulty driving module was a LED driver, then the replacement LED driver only needs to be mechanically coupled and electrically connected with the corresponding LED module and, possibly, a dimmer assigned to the LED module. Then, the operator may reuse the shipment package to send the replaced, faulty driving module back to the manufacturer or to the service partner.

[0052] Thus, the manufacturer or to the service partner can recycle, refurbish or re-manufacture the driving module sent back by the operator. This enhances the sustainability of the activities associated with the LED lighting assembly.

[0053] It is yet another object of the present invention to provide a system for replacing an installed driving module in a LED lighting assembly, the system comprising:

- a replacement driving module which is a driving module as described hereinbefore,
- a handheld telecommunication device, preferably equipped with a camera,
- a remote server suitable for receiving said dynamic information from the handheld telecommunication device, the remote server being configured to retrieve, from a databank, configuration data corresponding to said read-out dynamic information, and
- a configuration unit configured for implementing said configuration data in the replacement driving module, such that the replacement driving module emulates the installed driving module.

[0054] Thus, an operator using this system can easily replace an installed, faulty driving module by a replacement driving module.

[0055] In the present disclosure, the words "comprise", "include", "have" and their derivatives are to be interpreted inclusively rather than exclusively. The term "and/or" used in the context of "X and/or Y" should be interpreted as "X," or "Y," or "X and Y."

4. Brief description of drawings

[0056] Further features, details and advantages of the present invention are described hereinafter, in particular in relation to the appended figures, which illustrate some of the afore-described objects, embodiments and imple-

mentations thereof, and in which:

Fig.1 is a symbolic representation showing i) a LED lighting assembly according to an embodiment and comprising a driving module according to an embodiment, and showing ii) a system, according to an embodiment, for replacing an installed driving module;

Fig.2 shows a schematic flowchart of a configuration method according to an embodiment; and

Fig.3 shows a schematic flowchart of a replacement method according to an embodiment.

5. Detailed description

[0057] Fig.1 shows a driving module 1 that is part of a LED lighting assembly 101. The driving module 1, which may for example be a LED driver, is configured for driving a drivable circuit 102, which may for example be a LED module having a string of several LEDs.

[0058] The driving module 1 is configured for controlling some parameters of a driving current that is supplied to the drivable circuit 102. For example, the driving module 1 may control the voltage, intensity, frequency, pulse width and/or phase of the driving current. For controlling the driving current, the driving module 1 may comprise a control unit 2, for example an integrated circuit.

[0059] The driving module 1 may further comprise an output terminal OUT, which may be connected with the drivable circuit 102, and an input terminal IN, which may be connected with the mains grid.

[0060] The driving module 1 comprises a physical code representation 4 accessible from external, which is configured to be read out optically by a smartphone 201. The physical code representation 4 may be a QR code of about 1 cm x 1 cm and arranged on a housing of the driving module 1. The smartphone 201 may be equipped with a camera 202, which is configured for reading out the code representation 4. The smartphone 201 can retrieve static information from the code 4.

[0061] The driving module 1 further comprises an NFC module 6 configured to be read out by the smartphone 201 so as to retrieve dynamic information from the NFC module 6. The smartphone 201 may be equipped with an NFC interface 204, which is configured for reading out the dynamic information.

[0062] The static information encoded in the (physical) code representation 4 may include: contact data, a unique identification number identifying the driving module 1, and/or an instruction to read out the NFC-module 4 with the smartphone 201.

[0063] The dynamic information may include one or more of:

- a version number of a firmware installed in the driving

module 1,

- a name of a software stack activated to control the driving module 1,
- an operation temperature,
- an environmental temperature around the driving module,
- a dimming level,
- a color temperature, e.g. of a LED included in the LED lighting assembly,
- overall duration of operation,
- number of starts,
- energy consumption,
- a set of control parameters,
- minimum and/or maximum value of a physical quantity corresponding to the nominal service of the driving module 1,
- usage history data, preferably the typical operation time like a day schedule, and
- number of switch-on and switch-off events.

[0064] When the LED lighting assembly 101 ceases functioning properly, the driving module 1 might be faulty. A user or operator approaching the smartphone 201 near the driving module 1 can easily retrieve the static information by reading out the code 4 and then the NFC module 6, which can quickly initiate a servicing operation.

[0065] The code 4 may trigger downloading and installation of a JavaScript on the smartphone 201 via a Web-NFC API. The JavaScript may instruct an NFC interface 204 of the smartphone 201 to read out the dynamic information from the NFC module 6.

[0066] The smartphone 201 may be designed to execute the JavaScript to read the dynamic information, for example usage data, from the NFC module 6. The smartphone 201 executing the JavaScript may send said dynamic information over an available cellular network 206 back to the manufacturer 251.

[0067] The JavaScript may activate the displaying of following information on the smartphone 201 for the operator:

- i) how and to whom the faulty driving module 1 can be returned,
- ii) how and when a replacement driving module 1 will be delivered, and

iii) type of error or defect that might have caused the failure of the driving module 1.

[0068] Besides, the manufacturer 251 may collect and analyze the dynamic information about usage and history of the LED lighting assembly 101 to determine the configuration of the driving module 1 and the cause of its failure, which the manufacturer 251 can transmit to the user of the LED lighting assembly 101.

[0069] The LED lighting assembly 101 comprises the drivable circuit 102 and the driving module 1. In service, the drivable circuit 102 and the driving module 1 are electrically connected to one another. The driving module 1 and the drivable circuit 102 may be detachably coupled to one another, such that the operator may easily "unplug" and remove the drivable circuit 102 if deemed faulty.

[0070] When the driving module 1 is deemed faulty, a configuration method 301 may be performed for configuring a replacement driving module 1.1. The configuration method 301 comprises:

- 302) identifying the installed driving module 1,
- 304) optically reading out the code representation 4 by the smartphone 201 so as to retrieve static information from the code representation 4,
- 306) reading out the NFC module 6 by the smartphone 201 so as to retrieve dynamic information from the NFC module 6,
- 308) wirelessly transferring said dynamic information to a remote server 252, which is preferably owned by or at least accessible to the manufacturer 251,
- 310) retrieving, from the remote server 252, configuration data corresponding to said dynamic information,
- 312) providing the replacement driving module 1.1, and
- 314) implementing said configuration data in the replacement driving module 1.1, such that the replacement driving module 1.1 substantially emulates the installed driving module 1.

[0071] Thus, the replacement driving module 1.1 can be configured to replace the installed, faulty driving module 1, that is, to provide a similar configuration and fulfill similar functions.

[0072] The retrieving 310 of configuration data may comprise 316) searching for said dynamic information in a databank 254 containing configuration files. The databank 254 may be owned by or at least accessible to the manufacturer 251.

[0073] The retrieving 310 of configuration data may

further comprise: selecting a configuration file, and writing the selected configuration file as a function of said dynamic information.

[0074] The configuration method 301 may further comprise analyzing said dynamic information to determine whether an operating parameter has caused the failure of the installed driving module 1. Depending on this determination, said implementing 314 of configuration data may include changing the value of said operating parameter, with a view to avoiding a repetition of the same failure.

[0075] The provision 312 of the replacement driving module 1 may comprise 318) selecting, as the replacement driving module 1.1, a generic driving module capable of emulating various driving modules including the installed driving module 1. The generic driving module may be configured to emulate the service parameters of the installed driving module 1.

[0076] When an installed driving module 1 needs to be replaced, an operator, preferably an electrician, may easily carry out a replacement method 401 for replacing the faulty installed driving module 1 in the LED lighting assembly 101. The replacement method 401 comprises:

- 402) configuring, by the manufacturer 251, a replacement driving module 1.1 by performing the configuration method 301,
- 404) shipping, by the manufacturer 251, the replacement driving module 1.1 to the worksite where the installed driving module 1 is installed, and
- 406) installing the replacement driving module 1.1 in lieu of the installed driving module 1.

[0077] Then, the operator may reuse the shipment package to send the replaced, faulty driving module 1 back to the manufacturer 251. The manufacturer 251 can recycle, refurbish or re-manufacture the faulty driving module 1.

[0078] For carrying out the replacement method 401, the operator preferably uses a system 501 for replacing the installed driving module 1 in the LED lighting assembly 101. The system 501 comprises:

- the replacement driving module 1.1,
- the smartphone 201,
- the remote server 252 configured to retrieve, from the databank 254, configuration data corresponding to the read-out dynamic information, and
- a configuration unit 502 configured for implementing said configuration data in the replacement driving module 1.1, such that the replacement driving module 1.1 emulates the installed driving module 1.

[0079] Thus, an operator using this system can easily replace an installed, faulty driving module 1 by the replacement driving module 1.1.

[0080] The invention defined in the appended claims is not limited to the afore-described objects, aspects, embodiments and implementations, most of which may be combined.

Claims

1. Driving module (1) for driving a drivable circuit (102) in a LED lighting assembly (101), the driving module (1) comprising:

- a code representation (4) configured to be read out optically and from external by a handheld telecommunication device (201) so as to retrieve static information from the code representation (4), and
- an NFC module (6) configured to be read out by the handheld telecommunication device (201) so as to retrieve dynamic information from the NFC module (6).

2. Driving module (1) according to any one of the preceding claims, wherein the code representation (4) has a size smaller than or substantially equal to 2 cm x 2 cm, preferably to 1,5 cm x 1,5 cm, more preferably to 1 cm x 1 cm.

3. Driving module (1) according to claim 1, wherein the static information includes at least one of:

- contact data, for example an address and/or phone number, of a repairing service, and/or of a replacement or shipment service,
- a unique identification number, and
- an instruction to read out the NFC-module with the handheld telecommunication device (201).

4. Driving module (1) according to any one of the preceding claims, wherein the dynamic information includes at least one of:

- a version number of a firmware installed in the driving module (1),
- a name of a software stack activated to control the driving module (1),
- an operation temperature,
- an environmental temperature around the driving module,
- a dimming level,
- a color temperature, e.g. of a LED included in the LED lighting assembly,
- duration of operation,
- number of starts,
- energy consumption,

- a set of control parameters,
- minimum and/or maximum value of a physical quantity corresponding to the nominal service of the driving module (1),
- for example i) a minimal and/or maximum value of a nominal current through at least one LED or
- ii) a lower limit for a dimming parameter of a driving module (1),
- usage history data, preferably the typical operation time like a day schedule, and
- number of switch-on and switch-off events.

5. Driving module (1) according to any one of the preceding claims, wherein the driving module (1) further comprises a control unit (2) configured to control a driving current to be supplied to the drivable circuit (102).

6. Driving module (1) according to any one of the preceding claims, wherein the driving module (1) is selected in the group comprising:

- a LED driver configured for driving a LED module comprising at least one LED,
- a dimming driver configured for driving a dimmer, and
- a driver configured for controlling one or more other driver(s), e.g. connected to a sensor and forwarding the sensed information or reactions to it for controlling the other driver(s).

7. Driving module (1) according to claim 6, wherein the driving module (1) includes the LED driver, wherein the driving module (1) further comprises an output terminal (OUT) and an input terminal (IN), the output terminal (OUT) being configured to be directly connected with the LED module, the input terminal (IN) being configured to be indirectly or directly connected with a power supply, for example the mains grid.

8. Driving module (1) according to any one of the preceding claims, wherein the control unit (2) is configured to control at least one of: voltage, intensity, frequency, pulse width and/or phase of a driving current to be supplied to the drivable circuit (102).

9. LED lighting assembly (101) for producing light, the LED lighting assembly (101) comprising i) a drivable circuit (102) and ii) a driving module (1) according to any one of the preceding claims, wherein the driving module (1) is connected to drive the drivable circuit (102), the drivable circuit (102) including preferably at least one of: a LED module comprising at least one LED, a dimmer, and a communication module for a wired or wireless network, e.g. for a digital dimming network.

10. Configuration method (301) for configuring a replacement driving module (1), the configuration method comprising:

- (302) identifying an installed driving module (1), which is installed for driving a drivable circuit (102) in a LED lighting assembly (101), the installed driving module (1) comprising a code representation (4) and a NFC module (6), 5
- (304) optically reading out the code representation (4) by a handheld telecommunication device (201) so as to retrieve static information from the code (4), 10
- (306) reading out the NFC module (6) by the handheld telecommunication device (201) so as to retrieve dynamic information from the NFC module (6), 15
- (308) wirelessly transferring said dynamic information to a remote server (252),
- (310) retrieving, from the remote server (252), configuration data corresponding to said dynamic information, 20
- (312) providing the replacement driving module (1), and
- (314) implementing said configuration data in the replacement driving module (1), such that the replacement driving module (1) substantially emulates the installed driving module (1). 25

11. Configuration method (301) according to claim 10, wherein said retrieving of configuration data comprises: 316) searching for said dynamic information in a databank (254) containing configuration files. 30

12. Configuration method (301) according to any one of claims 10 to 11, wherein said providing of the replacement driving module (1) comprises: 318) selecting, as the replacement driving module (1), a generic driving module capable of emulating various driving module (1)s including the installed driving module (1). 35 40

13. Configuration method (301) according to claim 12, wherein the generic driving module is configured to emulate several, preferably all, service parameters of the installed driving module (1). 45

14. Replacement method (401) for replacing an installed driving module (1) in a LED lighting assembly (101), the replacement method comprising: 50

- (402) configuring a replacement driving module (1.1) by performing the method according to any one of claims 10 to 13,
- (404) shipping the replacement driving module (1.1) to the worksite where the installed driving module (1) is installed, and 55
- (406) installing the replacement driving module

(1.1) in lieu of the installed driving module (1).

15. System (501) for replacing an installed driving module (1) in a LED lighting assembly (101), the system (501) comprising:

- a replacement driving module (1.1) which is a driving module according to any one of claims 1 to 8,
- a handheld telecommunication device (201), preferably equipped with a camera,
- a remote server (252) suitable for receiving said dynamic information from the handheld telecommunication device (201), the remote server (252) being configured to retrieve, from a databank (254), configuration data corresponding to said read-out dynamic information, and
- a configuration unit (502) configured for implementing said configuration data in the replacement driving module (1), such that the replacement driving module (1.1) emulates the installed driving module (1).

FIG.1

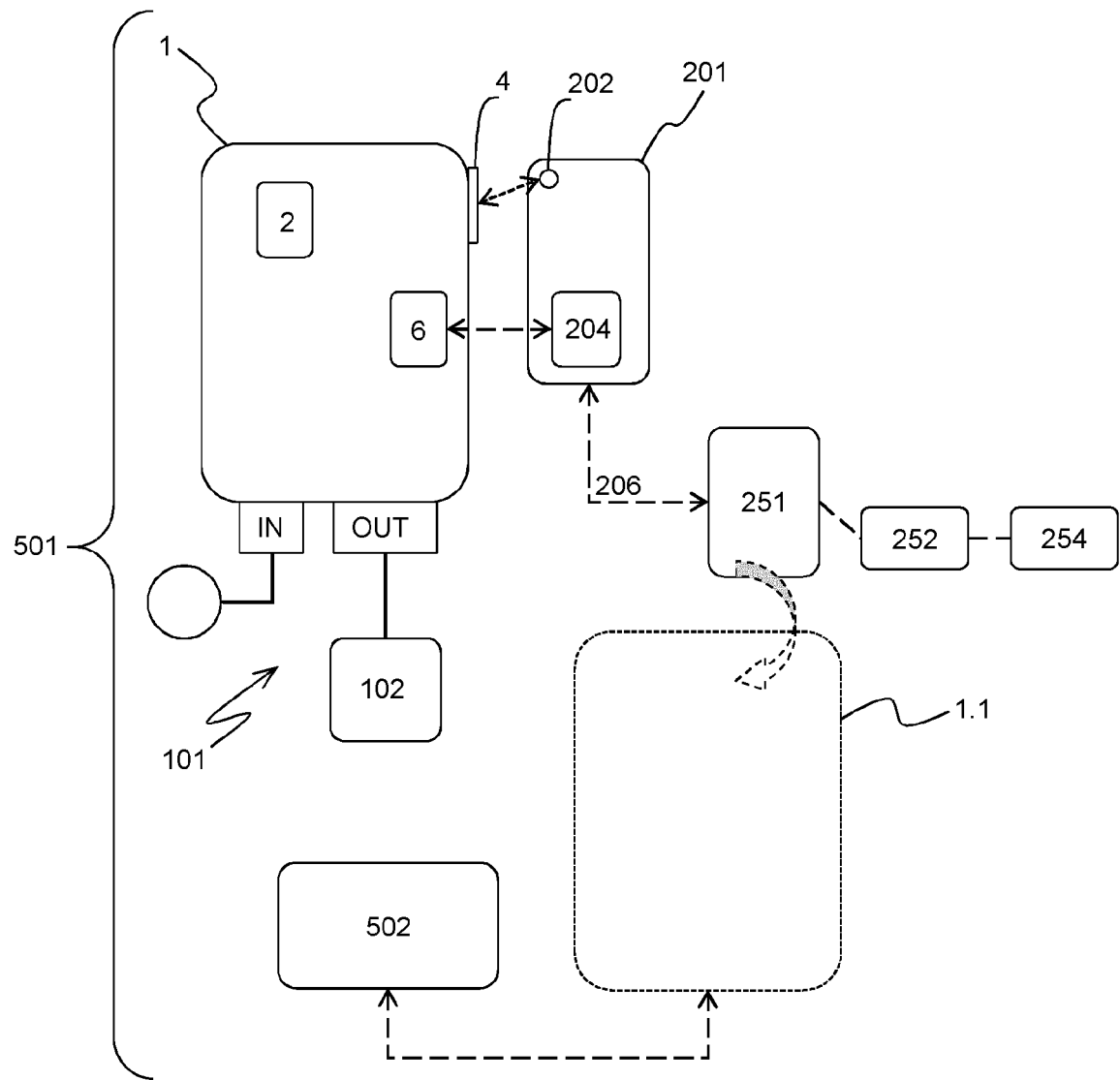


FIG.2

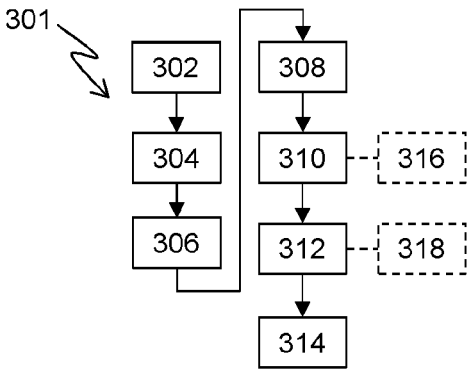
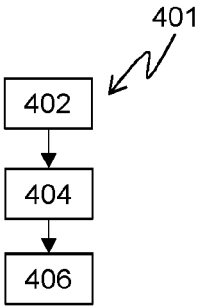


FIG.3





EUROPEAN SEARCH REPORT

Application Number

EP 23 19 2047

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			H05B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		2 February 2024	Beaugrand, Francois
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
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