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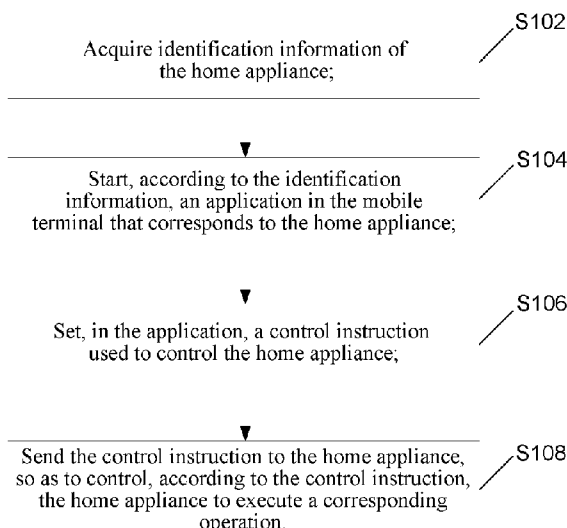


FIG. 1

(57) Abstract: The present invention discloses a home appliance control method and control system, which are applied to a mobile terminal. The mobile terminal establishes a communication connection to a home appliance by using NFC technologies. The control method includes: acquiring identification information of the home appliance; starting, according to the identification information, an application in the mobile terminal that corresponds to the home appliance; setting, in the application, a control instruction used to control the home appliance; and sending the control instruction to the home appliance, so as to control, according to the control instruction, the home appliance to execute a corresponding operation. With the present invention, problems of high costs and poor effects that exist when a user controls a home appliance by using a mobile terminal in the prior art are resolved, so that a user manages multiple home appliances with low costs and higher efficiency.



HOME APPLIANCE CONTROL METHOD AND CONTROL SYSTEM

BACKGROUND

5 **Technical Field**

The present invention relates to the field of device control, and in particular, to a home appliance control method and control system.

10 **Related Art**

Recently, the continuous development of near field communication (Near Field Communication, NFC) technologies allows electronic devices to perform non-contact point-to-point data exchange. A mobile terminal such as a cell phone offers NFC as a
15 standard transmission method. NFC has many advantages. NFC is convenient, authentication is not required, the transmission rate is high, the power consumption is low, and the costs are relatively low.

Networked smart home appliances become a current research hotspot. Some technical
20 solutions and products capable of implementing man-machine interaction between a user and a home appliance by using wireless communications technologies appear on the market, but operations of these technical solutions and products still have some deficiencies, for example, effects of traditional infrared-controlled communication are poor, and operation thereof is inconvenient; a WiFi wireless control solution is relatively
25 complex, is in demand of complex identity identification and connection establishment, and is of relatively high costs; and an appliance obtains data by using a mobile terminal and is dependent on the mobile terminal, and when the mobile terminal carries important information, it is inconvenient for different users to use the mobile terminal in a transferred manner. With regard to problems of high costs and poor effects that exist when a user controls a home appliance by using a mobile terminal in the prior art, currently, no effective solution is provided yet.

SUMMARY

It is an object of the present invention to provide a cheap and efficient method for controlling a home appliance and a corresponding home appliance control system.

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The object is accomplished by the subject-matter of the independent claims. The dependent claims specify preferred embodiments.

According to an aspect of the present invention, a method for controlling a home
10 appliance is provided, which is carried out using a mobile terminal. The mobile terminal establishes a communication connection to a home appliance by using NFC technologies. The control method includes: acquiring identification information of the home appliance; starting, according to the identification information, an application in the mobile terminal that corresponds to the home appliance; setting, in the application, a control instruction
15 used to control the home appliance; and sending the control instruction to the home appliance, so as to control, according to the control instruction, the home appliance to execute a corresponding operation. An NFC module is added to a home appliance, so that the home appliance has an NFC function. Therefore, data writing, reading, and exchanging may be implemented between the home appliance and a mobile terminal that
20 also has the NFC function, thereby enabling one mobile terminal to directly control and manage multiple types of home appliances.

Preferably, the mobile terminal is in communication connection with a remote server, and the control method includes: determining, after acquiring the identification information of
25 the home appliance, whether an application that corresponds to the home appliance is in the mobile terminal; if a determining result is yes, starting the application; and if a determining result is no, downloading the application from the remote server according to the identification information and starting the application. Storage space of the mobile terminal is limited and is unable to store applications of multiple home appliances. Therefore, the mobile terminal identifies a home appliance, and if there is a corresponding application, starts the application; and if there is no corresponding application, downloads a corresponding application from the remote server, so as to save the storage space of the mobile terminal.

Preferably, the identification information comprises a 2-dimensional barcode, a barcode, or an NFC module, wherein the mobile terminal is provided with an apparatus for correspondingly identifying the 2-dimensional barcode, the barcode, or the NFC module. The identification information may be a 2-dimensional barcode or a barcode, which is
5 identified by a code scanner in the mobile terminal, so as to read information about a corresponding home appliance. Alternatively, the identification information may be an NFC module that is provided with information about a home appliance. The mobile terminal is connected to the home appliance by using the NFC technologies, and therefore, the mobile terminal may read the information about the home appliance in the
10 module.

Preferably, in the foregoing control method, the mobile terminal is provided with a first NFC module; and the home appliance is provided with a second NFC module that establishes an NFC wireless network with and performs data transmission with the first
15 NFC module, wherein the control instruction is sent from the first NFC module to the second NFC module.

Preferably, in the foregoing control method, the mobile terminal is in communication connection with a tag; the tag is in communication connection with a home appliance; and
20 the sending the control instruction to the home appliance includes: sending, by the mobile terminal, the control instruction to the tag, and sending, by the tag, the control instruction to the home appliance, wherein the tag establishes a communication connection to each of the mobile terminal and the home appliance by using the NFC technologies, and is configured to receive and store a control instruction sent by the mobile terminal. A user
25 sets an operating parameter or an instruction of the home appliance in the mobile terminal, and writes the same into the foregoing tag. The tag transmits the instruction to the home appliance by using the NFC technologies. The tag may operate independently from the mobile terminal, so that the tag can be used in a manner of being transferred between users, which is more convenient and secure.

Preferably, in the foregoing control method, the mobile terminal is provided with a first NFC module; the home appliance is provided with a second NFC module; and the tag is provided with a third NFC module that establishes an NFC wireless network with and performs data transmission with each of the first NFC module and the second NFC

module, wherein the first NFC module sends the control instruction to the third NFC module, and then the third NFC module sends the control instruction to the second NFC module.

- 5 According to another aspect of the present invention, a home appliance control method is provided, which is applied to a home appliance. The home appliance establishes a communication connection to a mobile terminal by using NFC technologies, and the control method includes: providing identification information of the home appliance to the mobile terminal, wherein the identification information is used to start an application in the
10 mobile terminal that corresponds to the home appliance; receiving a control instruction sent by the mobile terminal, wherein the control instruction is set in the application; and controlling, according to the control instruction, the home appliance to execute a corresponding operation. An NFC module is added to a home appliance, so that the home appliance has an NFC function. Therefore, data writing, reading, and exchanging may be
15 implemented between the home appliance and a mobile terminal that also has the NFC function, thereby enabling one mobile terminal to directly control and manage multiple types of home appliances.

- Preferably, the identification information comprises a 2-dimensional barcode, a barcode, or an NFC module, wherein the mobile terminal is provided with an apparatus for correspondingly identifying the 2-dimensional barcode, the barcode, or the NFC module. The identification information may be a 2-dimensional barcode or a barcode, which is identified by a code scanner in the mobile terminal, so as to read information about a corresponding home appliance. Alternatively, the identification information may be an
20 NFC module that is provided with information about a home appliance. The mobile terminal is connected to the home appliance by using the NFC technologies, and therefore, the mobile terminal may read the information about the home appliance in the module.
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Preferably, in the foregoing control method, the mobile terminal is provided with a first NFC module; and the home appliance is provided with a second NFC module that establishes an NFC wireless network with and performs data transmission with the first NFC module, wherein the control instruction is sent from the first NFC module to the second NFC module.

Preferably, in the foregoing method, the home appliance is in communication connection with a tag, the tag is in communication connection with the mobile terminal; and the receiving the control instruction sent by the mobile terminal includes: receiving the control
5 instruction sent by the tag, wherein the control instruction is sent by the mobile terminal to the tag; and the tag establishes a communication connection to each of the mobile terminal and the home appliance by using the NFC technologies, and is configured to receive and store a control instruction sent by the mobile terminal. A user sets an operating parameter or an instruction of the home appliance in the mobile terminal, and
10 writes the same into the foregoing tag. The tag transmits the instruction to the home appliance by using the NFC technologies. The tag may operate independently from the mobile terminal, so that the tag can be used in a manner of being transferred between users, which is more convenient and secure.

15 Preferably, in the foregoing control method, the mobile terminal is provided with a first NFC module; the home appliance is provided with a second NFC module; and the tag is provided with a third NFC module that establishes an NFC wireless network with and performs data transmission with each of the first NFC module and the second NFC module, wherein the first NFC module sends the control instruction to the third NFC
20 module, and then the third NFC module sends the control instruction to the second NFC module.

According to another aspect of the present invention, a home appliance control system is provided, including: at least one home appliance; and a mobile terminal, configured to
25 establish a communication connection to the home appliance by using NFC technologies, wherein the mobile terminal is configured to acquire identification information provided by the home appliance, start, according to the identification information, an application in the mobile terminal that corresponds to the home appliance, set, in the application, a control command used to control the home appliance, and send the control instruction to the home appliance, so as to control, according to the control instruction, the home appliance to execute a corresponding operation; and the home appliance is configured to provide the identification information of the home appliance to the mobile terminal, receive the control instruction sent by the mobile terminal, and control, according to the control instruction, the home appliance to execute the corresponding operation.

Preferably, the foregoing control system further includes: a remote server, configured to establish a communication connection to the mobile terminal, store an application of the at least one home appliance, and enable the mobile terminal to download the application.

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Preferably, the mobile terminal determines, after acquiring the identification information of the home appliance, whether an application that corresponds to the home appliance is in the mobile terminal, and if a determining result is yes, starts the application; and if a determining result is no, downloads the application from the remote server according to the identification information and starts the same. Storage space of the mobile terminal is limited and is unable to store applications of multiple home appliances. Therefore, the mobile terminal identifies a home appliance, and if there is a corresponding application, starts the application; and if there is no corresponding application, downloads a corresponding application from the remote server, so as to save the storage space of the mobile terminal.

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Preferably, the mobile terminal is provided with a first NFC module; and the home appliance is provided with a second NFC module that establishes an NFC wireless network with and performs data transmission with the first NFC module, wherein the control instruction is sent from the first NFC module to the second NFC module.

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Preferably, the foregoing control system includes a tag, configured to establish a communication connection to each of the mobile terminal and the home appliance by using the NFC technologies, and receive and store a control instruction sent by the mobile terminal. A user sets an operating parameter or an instruction of the home appliance in the mobile terminal, and writes the same into the foregoing tag. The tag transmits the instruction to the home appliance by using the NFC technologies. The tag may operate independently from the mobile terminal, so that the tag can be used in a manner of being transferred between users, which is more convenient and secure.

25

Preferably, the mobile terminal is provided with a first NFC module; the home appliance is provided with a second NFC module; and the tag is provided with a third NFC module that establishes an NFC wireless network with and performs data transmission with each of the first NFC module and the second NFC module, wherein the first NFC module sends

the control instruction to the third NFC module, and then the third NFC module sends the control instruction to the second NFC module.

- Preferably, the mobile terminal acquires running information of the home appliance, and
5 sends the same to a remote server; and the remote server provides a corresponding
solution according to the running information, and returns the same to the mobile terminal.
A user may use the mobile terminal to obtain, by using an NFC function, the running
information of the home appliance, including failure information such as a product code
and an error report, and sends the running information to the remote server by using a
10 network. A service center of the remote server obtains a corresponding solution according
to the running information, and returns the same to the mobile terminal. Certainly, the
mobile terminal may obtain routine running information of the home appliance, which is
used to record a usage habit of a user, and the like.
- 15 Preferably, the control instruction includes an operating parameter of the home appliance
and system update data of the home appliance.

- The invention has been described with regard to a method for controlling a home
appliance executed on a mobile terminal, a method for controlling a home appliance
20 executed on a home appliance and a home appliance control system. If not stated
differently, the features of one claim category may be applied in analogy to the other claim
categories. This means for example that the steps of the method executed on the mobile
terminal have corresponding steps within the method executed on the home appliance
and the home appliance control system comprises the corresponding means to execute
25 these steps.

With the present invention, problems of high costs and poor effects that exist when a user
controls a home appliance by using a mobile terminal in the prior art are resolved, so that
a user manages multiple home appliances with low costs and higher efficiency.

BRIEF DESCRIPTION OF THE DRAWINGS

Accompany drawings described herein are intended to provide further understanding of
the present invention and constitute a part of the present application; and exemplary

embodiments of the present invention and description thereof are intended to explain the present invention and do not constitute an undue limitation to the present invention, and wherein:

- 5 FIG. 1 is a flowchart of a home appliance control method according to an embodiment of the present invention;

FIG. 2 is a schematic diagram (1) of the home appliance control method according to the embodiment of the present invention;

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FIG. 3 is a schematic diagram (2) of the home appliance control method according to the embodiment of the present invention;

- 15 FIG. 4 is a preferred flowchart of the home appliance control method according to the embodiment of the present invention;

FIG. 5 is a schematic diagram (3) of the home appliance control method according to the embodiment of the present invention; and

- 20 FIG. 6 is a flowchart of a home appliance control method according to another embodiment of the present invention.

DETAILED DESCRIPTION

- 25 The present invention is described below in detail with reference to the accompany drawings and embodiments. It should be noted that, the embodiments and features of the embodiments in the present application may be combined with each other in a case of not conflicting with each other.

An embodiment of the present invention provides a home appliance control method, which is applied to a mobile terminal. The mobile terminal establishes a communication connection to a home appliance by using NFC technologies.

An NFC module is added to each of the mobile terminal and the home appliance, so that each of the mobile terminal and the home appliance has an NFC function. The mobile terminal with the NFC function moves close to an NFC antenna area of the home appliance, so that data reading, writing, or exchanging can be implemented between the mobile terminal and the home appliance. The mobile terminal may be a cell phone, a tablet computer, and the like, which is not limited herein. FIG. 1 is a flowchart of a home appliance control method according to an embodiment of the present invention. As shown in FIG. 1, the control method includes:

Step S102: Acquire identification information of the home appliance.

The identification information includes basic information of the home appliance, such as the model and the power consumption, which is not limited herein.

Step S104: Start, according to the identification information, an application in the mobile terminal that corresponds to the home appliance.

The application may be software, or may be an APP (application) applied to a cell phone. The APP may integrate applications of multiple home appliances. Meanwhile, functions of the APP include: 1) acquiring information about a home appliance; 2) setting a parameter of the home appliance; 3) writing into a tag; 4) downloading a home appliance program; 5) reading an error code; 6) connecting to a service center; 7) upgrading a home appliance system, and the like.

Step S106: Set, in the application, a control instruction used to control the home appliance.

The application is in the APP, for example, in the setting a parameter of the home appliance, a parameter is set as a control instruction used to control the home appliance.

Step S108: Send the control instruction to the home appliance, so as to control, according to the control instruction, the home appliance to execute a corresponding operation.

The control instruction is sent to the NFC module of the home appliance by using the NFC module in the mobile terminal, and after reading the control instruction, the home appliance executes the corresponding operation.

5 FIG. 2 is a schematic diagram (1) of the home appliance control method according to the embodiment of the present invention. As shown in FIG. 2, with the foregoing control method, one mobile terminal can directly control and manage multiple types of home appliances, and the home appliances do not need to be connected to a home network and do not need an additional module for supporting a network function. A home appliance of
10 any brand can be controlled and managed by the mobile terminal as long as the home appliance has an NFC function, which reduces costs, simplifies a communication mode, and improves the efficiency.

In a preferred embodiment, FIG. 3 is a schematic diagram (2) of the home appliance
15 control method according to the embodiment of the present invention, and FIG. 4 is a preferred flowchart of the home appliance control method according to the embodiment of the present invention. As shown in FIG. 3 and FIG. 4:

The mobile terminal is in communication connection with the remote server. The control
20 method includes, after step S102: acquire identification information of the home appliance, an additional step S103: determine whether an application that corresponds to the home appliance is in the mobile terminal, and if a determining result is yes, start the application; and if a determining result is no, download the application from the remote server according to the identification information and start the same.

25 The foregoing application may integrate control programs of multiple home appliances. After identifying information about a home appliance, a user opens a corresponding application. Storage space of the mobile terminal is limited and is unable to store applications of multiple home appliances. Therefore, the mobile terminal identifies a home appliance, and if there is a corresponding application, starts the application; and if there is no corresponding application, downloads a corresponding application from the remote server, so as to save the storage space of the mobile terminal.

Preferably, the identification information includes a 2-dimensional barcode, a barcode, or an NFC module, wherein the mobile terminal is provided with an apparatus for correspondingly identifying the 2-dimensional barcode, the barcode, or the NFC module.

- 5 The foregoing identification information may be a 2-dimensional barcode or a barcode, which is identified by a code scanner in the mobile terminal, so as to read information about a corresponding home appliance. Alternatively, the identification information may be an NFC module that is provided with information about a home appliance. The mobile terminal is connected to the home appliance by using the NFC technologies, and
10 therefore, the mobile terminal may read the information about the home appliance in the module.

Preferably, FIG. 3 is a schematic diagram (2) of the home appliance control method according to the embodiment of the present invention. As shown in FIG. 3, in the
15 foregoing control method, the mobile terminal is provided with a first NFC module; and the home appliance is provided with a second NFC module that establishes an NFC wireless network with and performs data transmission with the first NFC module. The control instruction is sent from the first NFC module to the second NFC module.

- 20 Preferably, FIG. 5 is a schematic diagram (3) of the home appliance control method according to the embodiment of the present invention. As shown in FIG. 5, in the foregoing control method, the mobile terminal is in communication connection with a tag; the tag is in communication connection with a home appliance; and the sending the control instruction to the home appliance includes: sending, by the mobile terminal, the
25 control instruction to the tag, and sending, by the tag, the control instruction to the home appliance, wherein the tag establishes a communication connection to each of the mobile terminal and the home appliance by using the NFC technologies, and is configured to receive and store a control instruction sent by the mobile terminal.

A user sets an operating parameter or an instruction of a home appliance in the mobile terminal, and writes the same into the foregoing tag. The tag has an NFC function. When the home appliance is required to operate, the NFC tag is enabled to move close to an NFC antenna area of the home appliance; after a wireless communication connection is established, the home appliance reads the parameter or the instruction in the NFC tag;

and the home appliance operates according to the parameter or the instruction. The user may save the set operating parameter or instruction in the NFC tag for a long time, so that the operating parameter or instruction does not need to be set again each time when the home appliance needs to be used. Therefore, the tag may operate independently from the mobile terminal, so that the tag can be used in a manner of being transferred between users, which is more convenient and secure. For example, a user not familiar with the mobile terminal (such as the elderly people) may use an NFC tag that is set by another user to control a home appliance to operate. Meanwhile, as compared with a mobile terminal, an NFC tag does not carry other information about a user, and therefore, there is no security risk when the NFC tag is transferred between different users.

Preferably, as shown in FIG. 5, in the foregoing control method, the mobile terminal is provided with a first NFC module; the home appliance is provided with a second NFC module; and the tag is provided with a third NFC module that establishes an NFC wireless network with and performs data transmission with each of the first NFC module and the second NFC module, wherein the first NFC module sends the control instruction to the third NFC module, and then the third NFC module sends the control instruction to the second NFC module.

An embodiment of the present invention further provides another home appliance control method. The control method is applied to a home appliance, and corresponds to the control method applied to a mobile terminal of the foregoing embodiment. The home appliance establishes a communication connection to a mobile terminal by using NFC technologies. An NFC module is added to each of the mobile terminal and the home appliance, so that each of the mobile terminal and the home appliance has an NFC function. The mobile terminal with the NFC function moves close to an NFC antenna area of the home appliance, so that data reading, writing, or exchanging can be implemented between the mobile terminal and the home appliance. The mobile terminal may be a cell phone, a tablet computer, and the like, which is not limited herein.

FIG. 6 is a flowchart of a home appliance control method according to another embodiment of the present invention. As shown in FIG. 6, the control method includes:

Step S202: Provide identification information of the home appliance to the mobile terminal, wherein the identification information is used to start an application in the mobile terminal that corresponds to the home appliance. The identification information includes basic information of the home appliance, such as model and power, which is not limited herein.

5

Step S204: Receive a control instruction sent by the mobile terminal, wherein the control instruction is set in the application. It should be noted that the application may be software, or may be an APP (application) applied to a cell phone. The APP may integrate applications of multiple home appliances. Meanwhile, functions of the APP include: 1) acquiring information about a home appliance; 2) setting a parameter of the home appliance; 3) writing into a tag; 4) downloading a home appliance program; 5) reading an error code; 6) connecting to a service center; 7) upgrading a home appliance system, and the like. The application is in the APP, for example, in the setting a parameter of the home appliance, a parameter is set as a control instruction used to control the home appliance.

15

Step S206: Control, according to the control instruction, the home appliance to execute a corresponding operation. The control instruction is sent to the NFC module of the home appliance by using the NFC module in the mobile terminal, and after reading the control instruction, the home appliance executes the corresponding operation.

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With the forgoing control method, a home appliance is directly controlled and managed by a mobile terminal, and the home appliance does not need to be connected to a home network and does not need an additional module for supporting a network function. A home appliance of any brand can be controlled and managed by the mobile terminal as long as the home appliance has an NFC function, which reduces costs, simplifies a communication mode, and improves the efficiency.

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Preferably, the identification information includes a 2-dimensional barcode, a barcode, or an NFC module, wherein the mobile terminal is provided with an apparatus for correspondingly identifying the 2-dimensional barcode, the barcode, or the NFC module.

The foregoing identification information may be a 2-dimensional barcode or a barcode, which is identified by a code scanner in the mobile terminal, so as to read information about a corresponding home appliance. Alternatively, the identification information may be

an NFC module that is provided with information about a home appliance. The mobile terminal is connected to the home appliance by using the NFC technologies, and therefore, the mobile terminal may read the information about the home appliance in the module.

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Preferably, as shown in FIG. 3, in the foregoing method, the mobile terminal is provided with a first NFC module; and the home appliance is provided with a second NFC module that establishes an NFC wireless network with and performs data transmission with the first NFC module, wherein the control instruction is sent from the first NFC module to the second NFC module.

10

Preferably, as shown in FIG. 5, in the foregoing method, the home appliance is in communication connection with a tag; the tag is in communication connection with a mobile terminal; and the receiving the control instruction sent by the mobile terminal includes: receiving the control instruction sent by the tag, wherein the control instruction is sent by the mobile terminal to the tag; and the tag establishes a communication connection to each of the mobile terminal and the home appliance by using the NFC technologies, and is configured to receive and store a control instruction sent by the mobile terminal.

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A user sets an operating parameter or an instruction of a home appliance in the mobile terminal, and writes the same into the foregoing tag. The tag has an NFC function. When the home appliance is required to operate, the NFC tag is enabled to move close to an NFC antenna area of the home appliance; after a wireless communication connection is established, the home appliance reads the parameter or the instruction in the NFC tag; and the home appliance operates according to the parameter or the instruction. The user may save the set operating parameter or instruction in the NFC tag for a long time, so that the operating parameter or instruction does not need to be set again each time when the home appliance needs to be used. Therefore, the tag may operate independently from the mobile terminal, so that the tag can be used in a manner of being transferred between users, which is more convenient and secure. For example, a user not familiar with the mobile terminal (such as the elderly people) may use an NFC tag that is set by another user to control a home appliance to operate. Meanwhile, as compared with a mobile

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terminal, an NFC tag does not carry other information about a user, and therefore, there is no security risk when the NFC tag is transferred between different users.

Preferably, as shown in FIG. 5, in the foregoing method, the mobile terminal is provided
5 with a first NFC module; the home appliance is provided with a second NFC module; and
the tag is provided with a third NFC module that establishes an NFC wireless network with
and performs data transmission with each of the first NFC module and the second NFC
module, wherein the first NFC module sends the control instruction to the third NFC
10 module, and then the third NFC module sends the control instruction to the second NFC
module.

An embodiment of the present invention further provides a home appliance control
system, which corresponds to the control method of the foregoing embodiment, as shown
in FIG. 3: the system includes at least one home appliance, and a mobile terminal,
15 configured to establish a communication connection to the home appliance by using NFC
technologies.

An NFC module is added to each of the mobile terminal and the home appliance, so that
each of the mobile terminal and the home appliance has an NFC function. The mobile
20 terminal with the NFC function moves close to an NFC antenna area of the home
appliance, so that data reading, writing, or exchanging can be implemented between the
mobile terminal and the home appliance. The mobile terminal may be a cell phone, a
tablet computer, and the like, which is not limited herein.

25 The mobile terminal is configured to acquire identification information provided by the
home appliance, start, according to the identification information, an application in the
mobile terminal that corresponds to the home appliance, set, in the application, a control
command used to control the home appliance, and send the control instruction to the
home appliance, so as to control, according to the control instruction, the home appliance
to execute a corresponding operation.

The home appliance is configured to provide the identification information of the home
appliance to the mobile terminal, receive the control instruction sent by the mobile

terminal, and control, according to the control instruction, the home appliance to execute a corresponding operation.

Preferably, the foregoing control system further includes: a remote server, configured to
5 establish a communication connection to the mobile terminal, store an application of the at least one home appliance, and enable the mobile terminal to download the application.

The application in the system may integrate control programs of multiple home appliances. After identifying information about a home appliance, a user opens a
10 corresponding application. Storage space of the mobile terminal is limited and is unable to store applications of multiple home appliances. Therefore, the mobile terminal identifies a home appliance, and if there is a corresponding application, starts the application; and if there is no corresponding application, downloads a corresponding application from the remote server, so as to save the storage space of the mobile terminal.

15 Preferably, the mobile terminal is provided with a first NFC module; and the home appliance is provided with a second NFC module that establishes an NFC wireless network with and performs data transmission with the first NFC module, wherein the control instruction is sent from the first NFC module to the second NFC module.

20 Preferably, as shown in FIG. 5, the foregoing control system includes a tag, configured to establish a communication connection to each of the mobile terminal and the home appliance by using the NFC technologies, and receive and store a control instruction sent by the mobile terminal.

25 A user sets an operating parameter or an instruction of a home appliance in the mobile terminal, and writes the same into the foregoing tag. The tag has an NFC function. When the home appliance is required to operate, the NFC tag is enabled to move close to an NFC antenna area of the home appliance; after a wireless communication connection is established, the home appliance reads the parameter or the instruction in the NFC tag; and the home appliance operates according to the parameter or the instruction. The user may save the set operating parameter or instruction in the NFC tag for a long time, so that the operating parameter or instruction does not need to be set again each time when the home appliance needs to be used. Therefore, the tag may operate independently from the

mobile terminal, so that the tag can be used in a manner of being transferred between users, which is more convenient and secure. For example, a user not familiar with the mobile terminal (such as the elderly people) may use an NFC tag that is set by another user to control a home appliance to operate. Meanwhile, as compared with a mobile
5 terminal, an NFC tag does not carry other information about a user, and therefore, there is no security risk when the NFC tag is transferred between different users.

Preferably, as shown in FIG. 5, the mobile terminal is provided with a first NFC module; the home appliance is provided with a second NFC module; and the tag is provided with a
10 third NFC module that establishes an NFC wireless network with and performs data transmission with each of the first NFC module and the second NFC module, wherein the first NFC module sends the control instruction to the third NFC module, and then the third NFC module sends the control instruction to the second NFC module.

15 Preferably, the mobile terminal acquires running information of the home appliance, and sends the same to a remote server; and the remote server provides a corresponding solution according to the running information, and returns the same to the mobile terminal.

A user may use the mobile terminal to obtain, by using an NFC function, the running
20 information of the home appliance, including failure information such as a product code and an error report, and sends the running information to the remote server by using a network. A service center of the remote server obtains a corresponding solution according to the running information, and returns same to the mobile terminal. Certainly, the mobile terminal may obtain routine running information of the home appliance, which is used to
25 record a usage habit of a user, and the like.

Preferably, the control instruction includes an operating parameter of the home appliance and system update data of the home appliance.

With the present invention, problems of high costs and poor effects that exist when a user controls a home appliance by using a mobile terminal in the prior art are resolved, so that a user manages multiple home appliances with low costs, enhanced system function, and higher efficiency.

Various specific embodiments described in the foregoing and shown in accompanying drawings are only used for illustrating the present invention, and are not regarded as limiting the present invention. Within the scope of the invention as defined in the claims, any types of modifications may be made to the described embodiments.

CLAIMS

What is claimed is:

1. A method for controlling a home appliance using a mobile terminal, which
5 establishes a communication connection to the home appliance by using near field communication (NFC) technologies, wherein the method comprises:
acquiring identification information of the home appliance;
starting, according to the identification information, an application in the mobile
terminal that corresponds to the home appliance;
10 setting, in the application, a control instruction used to control the home appliance;
and
sending the control instruction to the home appliance, so as to control, according to
the control instruction, the home appliance to execute a corresponding operation.
- 15 2. The method according to claim 1, characterized in that, the mobile terminal is in
communication connection with a remote server, and the control method comprises:
determining, after acquiring the identification information of the home appliance,
whether an application that corresponds to the home appliance is in the mobile
terminal;
20 if a determining result is yes, starting the application; and
if a determining result is no, downloading the application from the remote server
according to the identification information and starting the application.
3. The method according to claim 1 or 2, characterized in that,
25 the identification information comprises a 2-dimensional barcode, a barcode, or an
NFC module, wherein the mobile terminal is provided with an apparatus for
correspondingly identifying the 2-dimensional barcode, the barcode, or the NFC
module.
4. The method according to one of the preceding claims, characterized in that,
the mobile terminal is provided with a first NFC module; and

the home appliance is provided with a second NFC module that establishes an NFC wireless network with and performs data transmission with the first NFC module, wherein

the control instruction is sent from the first NFC module to the second NFC module.

5

5. The method according to one of the preceding claims, characterized in that, the mobile terminal is in communication connection with a tag; the tag is in communication connection with the home appliance; and the sending the control instruction to the home appliance comprises:

10

sending, by the mobile terminal, the control instruction to the tag, and sending, by the tag, the control instruction to the home appliance, wherein the tag establishes a communication connection to each of the mobile terminal and the home appliance by using the NFC technologies, and is configured to receive and store a control instruction sent by the mobile terminal.

15

6. The method according to claim 5, characterized in that, the mobile terminal is provided with a first NFC module; the home appliance is provided with a second NFC module; and the tag is provided with a third NFC module that establishes an NFC wireless network with and performs data transmission with each of the first NFC module and the second NFC module, wherein the first NFC module sends the control instruction to the third NFC module, and then the third NFC module sends the control instruction to the second NFC module.

20

- 25 7. A method for controlling a home appliance, wherein the home appliance establishes a communication connection to a mobile terminal by using NFC technologies, wherein the method is executed by the home appliance and comprises: providing identification information of the home appliance to the mobile terminal, wherein the identification information is used to start an application in the mobile terminal that corresponds to the home appliance; receiving a control instruction sent by the mobile terminal, wherein the control instruction is set in the application; and controlling, according to the control instruction, the home appliance to execute a corresponding operation.

8. The method according to claim 7, characterized in that, the home appliance is in communication connection with a tag; the tag is in communication connection with the mobile terminal; and the receiving the control instruction sent by the mobile terminal comprises:
- 5 receiving the control instruction sent by the tag, wherein the control instruction is sent by the mobile terminal to the tag; and
- the tag establishes a communication connection to each of the mobile terminal and the home appliance by using the NFC technologies, and is configured to receive and
- 10 store a control instruction sent by the mobile terminal.
9. A home appliance control system, comprising:
- at least one home appliance; and
- a mobile terminal, configured to establish a communication connection to the home
- 15 appliance by using NFC technologies,
- characterized in that,
- the mobile terminal is configured to acquire identification information provided by the home appliance, start, according to the identification information, an application in the mobile terminal that corresponds to the home appliance, set, in the application, a
- 20 control command used to control the home appliance, and send the control instruction to the home appliance, so as to control, according to the control instruction, the home appliance to execute a corresponding operation; and
- the home appliance is configured to provide the identification information of the home appliance to the mobile terminal, receive the control instruction sent by the
- 25 mobile terminal, and control, according to the control instruction, the home appliance to execute the corresponding operation.
10. The control system according to claim 9, characterized by comprising:
- a remote server, configured to establish a communication connection to the mobile terminal, store an application of the at least one home appliance, and enable the mobile terminal to download the application.

11. The control system according to claim 9 or 10, characterized in that,
the mobile terminal is configured to determine, after acquiring the identification
information of the home appliance, whether an application that corresponds to the
home appliance is in the mobile terminal, and
5 if a determining result is yes, start the application; and
if a determining result is no, download the application from the remote server
according to the identification information and start the same.
12. The control system according to one of the claims 9 to 11, characterized by
10 comprising:
a tag, configured to establish a communication connection to each of the mobile
terminal and the home appliance by using the NFC technologies, and receive and
store a control instruction sent by the mobile terminal.
13. The control system according to claim 12, characterized in that,
15 the mobile terminal is provided with a first NFC module;
the home appliance is provided with a second NFC module; and
the tag is provided with a third NFC module that establishes an NFC wireless
network with and performs data transmission with each of the first NFC module and
20 the second NFC module, wherein the first NFC module sends the control instruction
to the third NFC module, and then the third NFC module sends the control
instruction to the second NFC module.
14. The control system according to one of the claims 9 to 13, characterized in that,
25 the mobile terminal is configured to acquire running information of the home
appliance, and send the same to a remote server; and
the remote server is configured to provide a corresponding solution according to the
running information, and returns the same to the mobile terminal.
15. The control system according to one of the claims 9 to 14, characterized in that,
the control instruction comprises an operating parameter of the home appliance and
system update data of the home appliance.

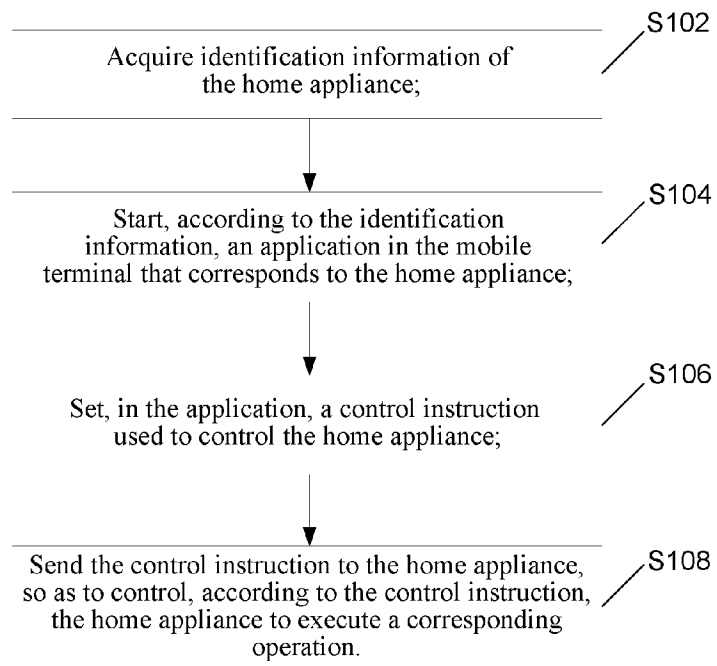
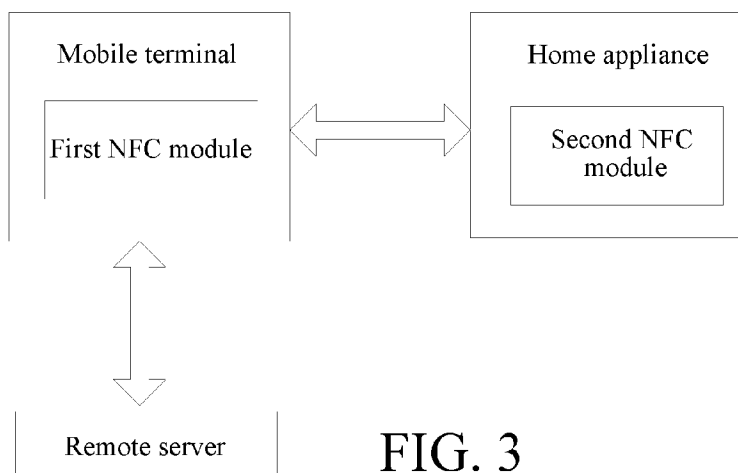
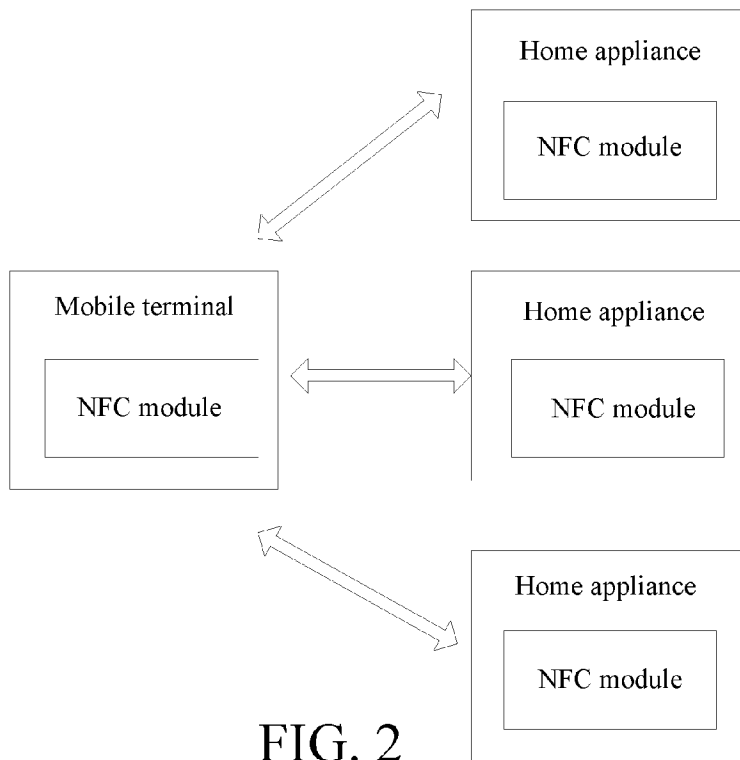


FIG. 1

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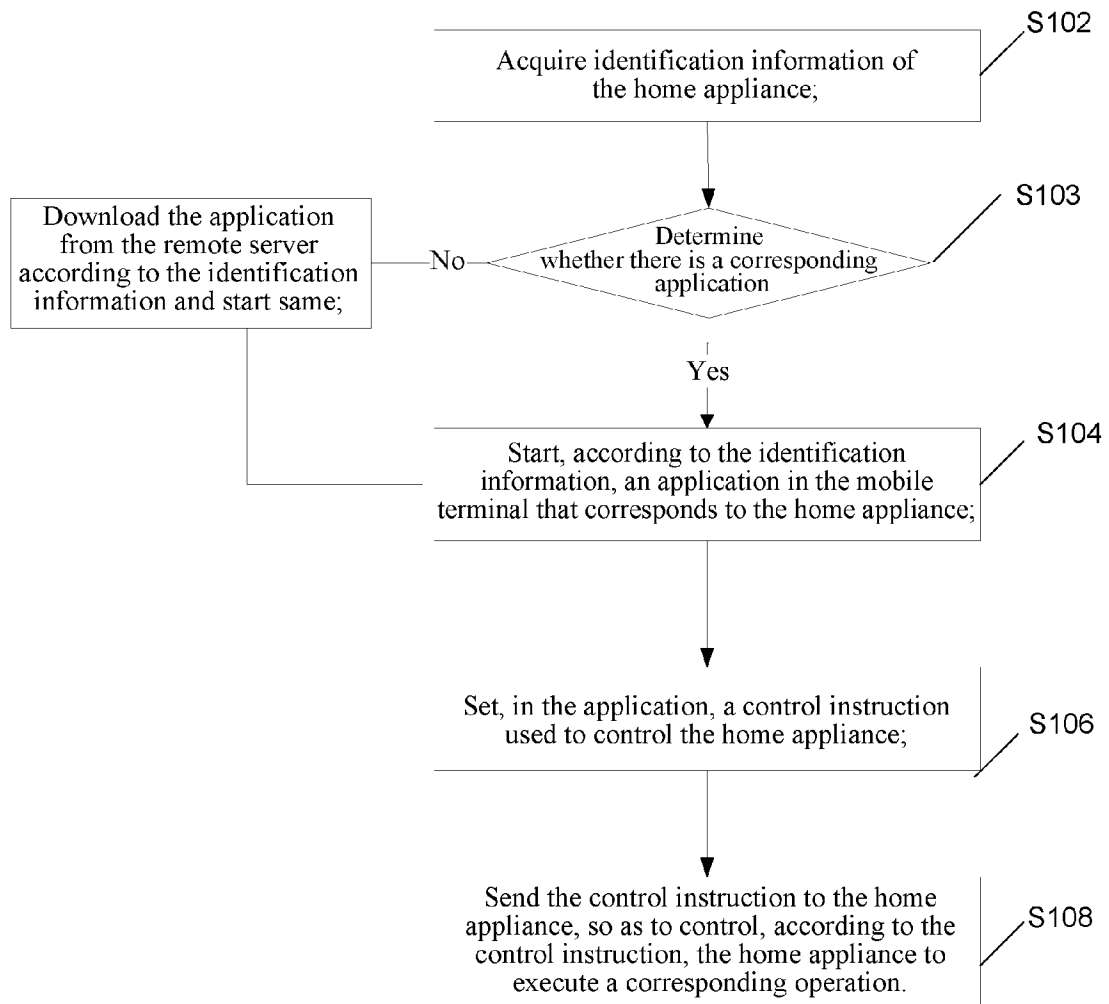


FIG. 4

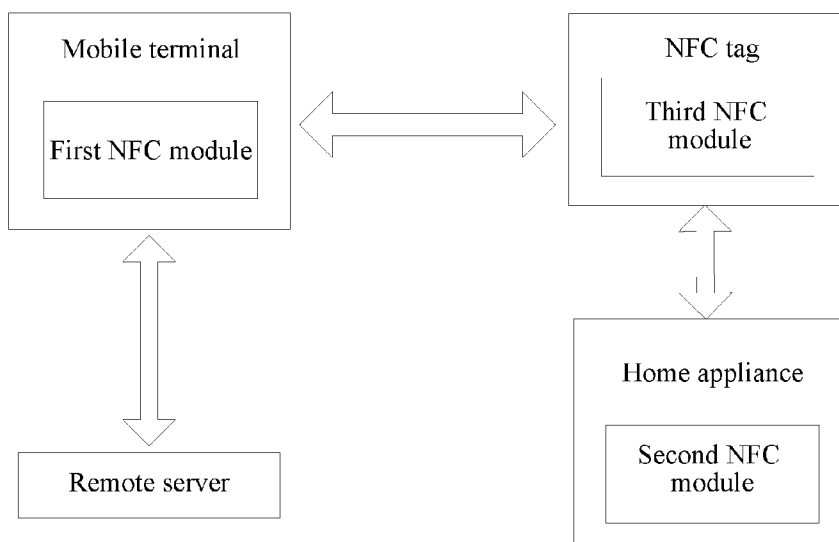


FIG. 5

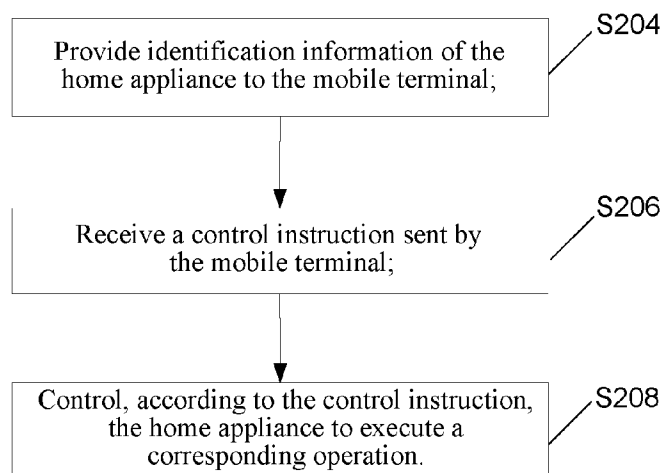


FIG. 6

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/062630

A. CLASSIFICATION OF SUBJECT MATTER INV. H04W4/00 H04B5/00 H04L12/28 H04W8/24 ADD.		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) H04W H04B H04L G08C		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) EPO-Internal, WPI Data		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 8 498 572 B1 (SCHOOLEY STEPHEN [US] ET AL) 30 July 2013 (2013-07-30) column 1, line 16 - column 4, line 22 -----	1-15
X	DE 10 2013 219053 A1 (BSH BOSCH UND SIEMENS HAUSGERÄTE GMBH [DE]) 26 March 2015 (2015-03-26) the whole document -----	1-15
☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 10 August 2016	Date of mailing of the international search report 19/08/2016	
Name and mailing address of the ISA/ European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Authorized officer Yanai, Yoav	

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/EP2016/062630

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