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(54) **CONTROL METHOD AND APPARATUS FOR AIR-CONDITIONING DEVICE, AND DEVICE, MEDIUM AND PROGRAM PRODUCT**

(57) Provided are a method and apparatus for controlling an air-conditioning device, a device, a medium, and a program product. The method includes: (S410) activating a linkage mode of the air-conditioning device; (S420) in the linkage mode, determining, in response to a control instruction for a first adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device and in response to controlling the first adjustment dimension, a target value of the first adjustment dimension

device and in response to controlling the first adjustment dimension, a target value of the first adjustment dimension, and (S430) controlling a second adjustment dimension based on the target value of the first adjustment dimension and an adjustment coefficient for an adjustment from the first adjustment dimension to the second adjustment dimension.

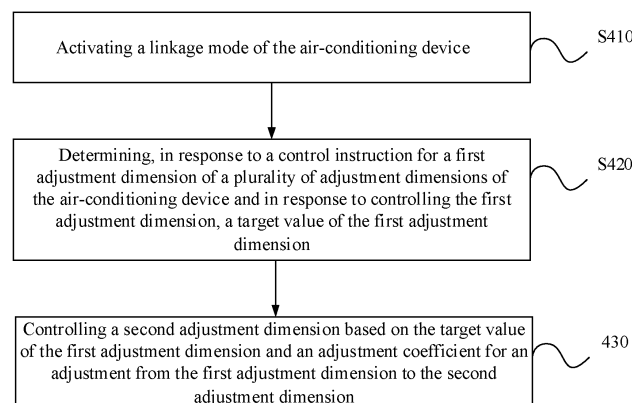


FIG. 4

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Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to Chinese patent application No. 202210658348.4, titled "METHOD AND APPARATUS FOR CONTROLLING AIR-CONDITIONING DEVICE, DEVICE, MEDIUM, AND PROGRAM PRODUCT", and filed on June 10, 2022, the entire contents of which are incorporated herein by reference.

FIELD

[0002] The present disclosure relates to the field of air-conditioning technologies, and in particular, to a method and apparatus for controlling an air-conditioning device, a device, a medium, and a program product.

BACKGROUND

[0003] Currently, users can adjust a temperature, a fan speed, humidity, purification, fresh air, and other dimensions of an air-conditioning device, in such a manner that the air-conditioning device can provide the users with a comfortable environment. However, currently, a plurality of adjustment dimensions such as the temperature, the fan speed, the humidity, the purification, and the fresh air for the air-conditioning device can only be controlled separately, which results in a low control efficiency and unsatisfactory user experience.

SUMMARY

[0004] The present disclosure aims to solve at least one of the technical problems in related art to some extent.

[0005] To this end, a first objective of the present disclosure is to provide a method for controlling an air-conditioning device. With the method, subsequent to activation of a linkage mode, an enabled adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device other than a first adjustment dimension is controlled in response to a control instruction for the first adjustment dimension of the plurality of adjustment dimensions and in response to controlling the first adjustment dimension, which can improve a control efficiency and user experience. In addition, the air-conditioning device can control the enabled adjustment dimension based on an adjustment coefficient, which is a more reasonable and effective control method, further improving the user experience.

[0006] A second objective of the present disclosure is to provide an apparatus for controlling an air-conditioning device.

[0007] A third objective of the present disclosure is to provide an electronic device.

[0008] A fourth objective of the present disclosure is to

provide a computer-readable storage medium.

[0009] A fifth objective of the present disclosure is to provide a computer program product.

[0010] To achieve the above objectives, embodiments in a first aspect of the present disclosure provide a method for controlling an air-conditioning device. The method comprises: activating a linkage mode of the air-conditioning device; and in the linkage mode, determining, in response to a control instruction for a first adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device and in response to controlling the first adjustment dimension, a target value of the first adjustment dimension, and controlling a second adjustment dimension based on the target value of the first adjustment dimension and an adjustment coefficient for an adjustment from the first adjustment dimension to the second adjustment dimension. The second adjustment dimension is an enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension.

[0011] According to an embodiment of the present disclosure, the controlling the second adjustment dimension based on the target value of the first adjustment dimension and the adjustment coefficient for the adjustment from the first adjustment dimension to the second adjustment dimension comprises: determining a first to-be-adjusted amount of the second adjustment dimension based on the target value of the first adjustment dimension; determining a second to-be-adjusted amount of the second adjustment dimension based on the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient; and adjusting the second adjustment dimension based on the second to-be-adjusted amount of the second adjustment dimension.

[0012] According to an embodiment of the present disclosure, the determining, in response to controlling the first adjustment dimension, the target value of the first adjustment dimension comprises: determining, in response to enabling the first adjustment dimension, a currently enabled value of the first adjustment dimension as the target value of the first adjustment dimension; or determining, in response to adjusting the first adjustment dimension, an adjusted value of the first adjustment dimension as the target value of the first adjustment dimension.

[0013] According to an embodiment of the present disclosure, the determining the first to-be-adjusted amount of the second adjustment dimension based on the target value of the first adjustment dimension comprises: determining a first mapping relationship between the target value of the first adjustment dimension and an adjusted value corresponding to the second adjustment dimension; determining the adjusted value corresponding to the second adjustment dimension based on the target value of the first adjustment dimension and the first mapping relationship; and determining the first to-be-adjusted amount of the second adjustment dimension based on a current value of the second adjustment

dimension and the adjusted value corresponding to the second adjustment dimension.

[0014] According to an embodiment of the present disclosure, the determining, in response to controlling the first adjustment dimension, the target value of the first adjustment dimension comprises: determining, in response to adjusting the first adjustment dimension, an adjustment amount of the first adjustment dimension as the target value of the first adjustment dimension.

[0015] According to an embodiment of the present disclosure, the determining the first to-be-adjusted amount of the second adjustment dimension based on the target value of the first adjustment dimension comprises: determining a second mapping relationship between the adjustment amount of the first adjustment dimension and the first to-be-adjusted amount of the second adjustment dimension; and determining the first to-be-adjusted amount of the second adjustment dimension based on the adjustment amount of the first adjustment dimension and the second mapping relationship.

[0016] According to an embodiment of the present disclosure, the determining the second to-be-adjusted amount of the second adjustment dimension based on the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient comprises: determining the second to-be-adjusted amount of the second adjustment dimension as zero when the adjustment coefficient is zero; and calculating, when the adjustment coefficient is greater than zero, a product of the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient as the second to-be-adjusted amount of the second adjustment dimension.

[0017] According to an embodiment of the present disclosure, the activating the linkage mode of the air-conditioning device comprises: activating the linkage mode of the air-conditioning device in response to a power on instruction or a linkage instruction.

[0018] According to an embodiment of the present disclosure, the method further comprises: enabling at least one of the plurality of adjustment dimensions in response to the power on instruction or the linkage instruction.

[0019] According to an embodiment of the present disclosure, the at least one of the plurality of adjustment dimensions is any one of: an adjustment dimension that needs to be enabled by a system by default; an adjustment dimension historically enabled in the linkage mode; and an adjustment dimension that needs to be enabled based on a current environment.

[0020] According to an embodiment of the present disclosure, when the air-conditioning device switches from a normal mode to the linkage mode in response to the linkage instruction, the at least one of the plurality of adjustment dimensions is any one of: an adjustment dimension that needs to be enabled by a system by default; an adjustment dimension historically enabled in the linkage mode; an adjustment dimension enabled

in the normal mode; and an adjustment dimension that needs to be enabled based on a current environment. The normal mode is a mode in which the plurality of adjustment dimensions are independently controlled.

[0021] According to an embodiment of the present disclosure, the activating the linkage mode of the air-conditioning device comprises: activating the linkage mode of the air-conditioning device in response to a selection instruction and a linkage instruction for at least one of the plurality of adjustment dimensions.

[0022] According to an embodiment of the present disclosure, the method further comprises: enabling the at least one of the plurality of adjustment dimensions in response to the selection instruction and the linkage instruction for the at least one of the plurality of adjustment dimensions.

[0023] To achieve the above objectives, embodiments in a second aspect of the present disclosure provide an apparatus for controlling an air-conditioning device. The apparatus comprises: an activation module configured to activate a linkage mode of the air-conditioning device; and a control module configured to determine, in the linkage mode and in response to a control instruction for a first adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device and in response to controlling the first adjustment dimension, a target value of the first adjustment dimension, and control a second adjustment dimension based on the target value of the first adjustment dimension and an adjustment coefficient for an adjustment from the first adjustment dimension to the second adjustment dimension. The second adjustment dimension is an enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension.

[0024] To achieve the above objectives, embodiments in a third aspect of the present disclosure provide an electronic device. The electronic device comprises a processor and a memory configured to store a computer program. The processor is configured to invoke and execute the computer program stored in the memory to perform the above method for controlling the air-conditioning device.

[0025] To achieve the above objectives, embodiments in a fourth aspect of the present disclosure provide a computer-readable storage medium having a computer program stored thereon. The computer program causes a computer to perform the above method for controlling the air-conditioning device.

[0026] To achieve the above objectives, embodiments in a fifth aspect of the present disclosure provide a computer program product comprising a computer program or computer instructions. The computer program or the computer instructions, when executed by a processor, implement the above method for controlling the air-conditioning device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027]

FIG. 1 is a schematic diagram of an application scenario according to an embodiment of the present disclosure.

FIG. 2 is a schematic diagram of another application scenario according to an embodiment of the present disclosure.

FIG. 3 is a schematic diagram of yet another application scenario according to an embodiment of the present disclosure.

FIG. 4 is a flowchart of a method for controlling an air-conditioning device according to an embodiment of the present disclosure.

FIG. 5 is a schematic diagram of an interface according to an embodiment of the present disclosure.

FIG. 6 is a schematic diagram of another interface according to an embodiment of the present disclosure.

FIG. 7 is a schematic diagram of yet another interface according to an embodiment of the present disclosure.

FIG. 8 is a schematic diagram of still yet another interface according to an embodiment of the present disclosure.

FIG. 9 is a schematic diagram of an interface according to an embodiment of the present disclosure.

FIG. 10 is a schematic diagram of another interface according to an embodiment of the present disclosure.

FIG. 11 is a schematic diagram of yet another interface according to an embodiment of the present disclosure.

FIG. 12 is a schematic diagram showing adjustment coefficients between a plurality of adjustment dimensions according to an embodiment of the present disclosure.

FIG. 13 is a flowchart of another method for controlling an air-conditioning device according to an embodiment of the present disclosure.

FIG. 14 is a flowchart of yet another method for controlling an air-conditioning device according to an embodiment of the present disclosure.

FIG. 15 is a flowchart of still yet another method for controlling an air-conditioning device according to an embodiment of the present disclosure.

FIG. 16 is a flowchart of still yet another method for controlling an air-conditioning device according to an embodiment of the present disclosure.

FIG. 17 is a schematic diagram of an apparatus 1700 for controlling an air-conditioning device according to an embodiment of the present disclosure.

FIG. 18 is a schematic block diagram of an electronic device 1800 according to an embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0028] Technical solutions according to embodiments of the present disclosure will be described clearly and completely below in combination with accompanying drawings of the embodiments of the present disclosure. Obviously, the embodiments described below are only a part of the embodiments of the present disclosure, rather than all embodiments of the present disclosure. On a basis of the embodiments of the present disclosure, all other embodiments obtained by those skilled in the art without creative labor shall fall within the protection scope of the present disclosure.

[0029] It should be noted that terms such as "first" and "second" in the specification and claims of the present disclosure and in the accompanying drawings are intended to distinguish similar objects and do not necessarily describe a specific order or sequence. It should be understood that the numerals as used can be interchanged where appropriate, in such a manner that the embodiments of the present disclosure described herein can be implemented in an order other than those illustrated or described herein. In addition, terms "including" and "having" and any variations thereof are intended to cover non-exclusive inclusions. For example, a process, method, system, product, or server that includes a series of steps or units is not necessarily limited to those clearly listed steps or units, but may also include other steps or units that are not clearly listed or are inherent to the process, method, product, or device.

[0030] As mentioned above, currently, a plurality of adjustment dimensions for an air-conditioning device can only be controlled separately, which results in a low control efficiency and unsatisfactory user experience.

[0031] To solve the above technical problems, a linkage control scheme is provided according to embodiments of the present disclosure. In an exemplary embodiment of the present disclosure, subsequent to activation of a linkage mode, an enabled adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device other than a first adjustment dimension is controlled in response to a control instruction for the first adjustment dimension of the plurality of adjustment dimensions and in response to controlling the first adjustment dimension.

[0032] Exemplarily, the technical solutions of the present disclosure can be, but are not limited to, applied in the following scenarios.

[0033] FIG. 1 is a schematic diagram of an application scenario according to an embodiment of the present disclosure. As illustrated in FIG. 1, the application scenario may include an air-conditioning device 110 and a remote controller 120. A user can operate the remote controller 120 to remotely control the air-conditioning device 110.

[0034] In another exemplary embodiment of the present disclosure, the remote controller 120 may be an

infrared remote controller including an infrared emitting unit. The air-conditioning device 110 may include an infrared receiving unit. The infrared remote controller is configured to emit infrared signals to the air-conditioning device 110 through the infrared emitting unit. The air-conditioning device 110 is configured to receive the infrared signals through the infrared receiving unit. Therefore, remote control of the air-conditioning device 110 is realized.

[0035] FIG. 2 is a schematic diagram of another application scenario according to an embodiment of the present disclosure. As illustrated in FIG. 2, the application scenario may include an air-conditioning device 210 and a terminal device 220. The terminal device 220 may be installed with an application (APP) for controlling the air-conditioning device 210. The user can operate the APP to remotely control the air-conditioning device 210.

[0036] In another exemplary embodiment of the present disclosure, the terminal device may be, but is not limited to, a mobile phone, a computer, etc.

[0037] It should be understood that the air-conditioning device in FIG. 1 and FIG. 2 may be either a wall-mounted air-conditioning device or a cabinet air-conditioning device.

[0038] FIG. 3 is a schematic diagram of yet another application scenario according to an embodiment of the present disclosure. As illustrated in FIG. 3, the application scenario may include an air-conditioning device having a touch panel. The user can control the air-conditioning device through operations on the touch panel.

[0039] It should be understood that the present disclosure is also applicable in voice control scenarios, gesture control scenarios, or the like for the air-conditioning device.

[0040] The technical solutions of the present disclosure will be described in detail below.

[0041] FIG. 4 is a flowchart of a method for controlling an air-conditioning device according to an embodiment of the present disclosure. The method can be performed by an air-conditioning device, which may be a cabinet air-conditioning device, a wall-mounted air-conditioning device, or the like. As illustrated in FIG. 4, the method can include the following operations.

[0042] At S410, a linkage mode of the air-conditioning device is activated.

[0043] At S420, in response to a control instruction for a first adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device and in response to controlling the first adjustment dimension, a target value of the first adjustment dimension is determined.

[0044] At S430, a second adjustment dimension is controlled based on the target value of the first adjustment dimension and an adjustment coefficient for an adjustment from the first adjustment dimension to the second adjustment dimension.

[0045] It should be understood that the operations at S420 and S430 are performed in the linkage mode.

[0046] It should be understood that the linkage mode refers to a mode in which, when obtaining the control instruction for the first adjustment dimension of the plurality of adjustment dimensions, the air-conditioning device controls an enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension in response to controlling the first adjustment dimension. The first adjustment dimension may be any one of the plurality of adjustment dimensions.

The second adjustment dimension mentioned above may be an enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension. For example, the second adjustment dimension may be any enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension, or an enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension and having a lower priority than the first adjustment dimension.

[0047] In another exemplary embodiment of the present disclosure, the control instruction may be an enable instruction, a disable instruction, or an adjustment instruction.

[0048] In another exemplary embodiment of the present disclosure, the adjustment instruction is used to adjust a magnitude of an adjustment dimension corresponding to the adjustment instruction. For example, the adjustment instruction is used to adjust a magnitude of temperature, fan speed, humidity, fresh air, purification, etc.

[0049] In another exemplary embodiment of the present disclosure, the air-conditioning device is configured to control, in the linkage mode in response to an enable instruction for the first adjustment dimension and in response to controlling the first adjustment dimension, the second adjustment dimension to vary, when the priority of the second adjustment dimension is lower than that of the first adjustment dimension.

[0050] For example, assuming that the plurality of adjustment dimensions are five adjustment dimensions of temperature, fan speed, humidity, purification, and fresh air, all of which have been enabled, and the temperature adjustment dimension is the first adjustment dimension having higher priority than the other adjustment dimensions, the air-conditioning device can adjust the other four adjustment dimensions of fan speed, humidity, purification, and fresh air in a linkage manner when the user adjusts the temperature adjustment dimension.

[0051] In another exemplary embodiment of the present disclosure, the air-conditioning device is configured to control, in the linkage mode in response to an adjustment instruction for the first adjustment dimension, the second adjustment dimension to vary in a linkage manner.

[0052] For example, assuming that the plurality of adjustment dimensions are five adjustment dimensions of temperature, fan speed, humidity, purification, and fresh air, all of which have been enabled, the air-conditioning

device can adjust a magnitude of the other four adjustment dimensions of fan speed, humidity, purification, and fresh air in a linkage manner when the user adjusts the temperature adjustment dimension.

[0053] The linkage mode can be explained by the following example. For example, when the user adjusts the temperature adjustment dimension, the enabled fan speed adjustment dimension can also be automatically adjusted. For example, when the user enables the fan speed adjustment dimension, the enabled humidity adjustment dimension can also be automatically adjusted. For example, when the user disables the humidity adjustment dimension, the enabled adjustment dimension can remain unadjusted.

[0054] In another exemplary embodiment of the present disclosure, the linkage mode is designed for the plurality of adjustment dimensions which may be default to a system. All of the plurality of adjustment dimensions may have a linkage relationship, or some of the plurality of adjustment dimensions may have a linkage relationship while others do not have the linkage relationship.

[0055] In another exemplary embodiment of the present disclosure, the plurality of adjustment dimensions may include, but are not limited to, temperature, fan speed, humidity, purification, fresh air, and other adjustment dimensions. The fan speed adjustment dimension may include a wind-free situation. The humidity adjustment dimension may include a humidification situation and a dehumidification situation.

[0056] In another exemplary embodiment of the present disclosure, activating the linkage mode of the air-conditioning device includes but is not limited to the following situations.

[0057] Situation 1: the air-conditioning device obtains a power on instruction and activates the linkage mode of the air-conditioning device in response to the power on instruction. For example, when the user turns on the air-conditioning device, the air-conditioning device automatically enters the linkage mode.

[0058] In another exemplary embodiment of the present disclosure, the power on instruction may be generated based on an operation on a power on button on the remote controller or a touch panel from the user or an operation on a power on icon on the APP from the user, or the power on instruction may be a voice instruction, a gesture or posture instruction, etc.

[0059] Situation 2: the air-conditioning device obtains a linkage instruction and activates the linkage mode of the air-conditioning device in response to the linkage instruction. For example, when the user turns on the air-conditioning device, the user can click on a linkage icon or a linkage button to enable the air-conditioning device to automatically enter the linkage mode.

[0060] In another exemplary embodiment of the present disclosure, the linkage instruction may be generated based on an operation on a linkage button on the remote controller or the touch panel from the user or an operation on a linkage icon on the APP from the user, or the linkage

instruction may be a voice instruction, a gesture or posture instruction, etc.

[0061] Situation 3: the air-conditioning device obtains a selection instruction and a linkage instruction for at least one adjustment dimension, and activates the linkage mode of the air-conditioning device in response to the selection instruction and the linkage instruction. For example, when the user turns on the air-conditioning device, five adjustment dimensions of temperature, fan speed, humidity, purification, and fresh air may be selected by the user. Then, the user clicks on the linkage icon or button to enable the air-conditioning device to enter the linkage mode.

[0062] In another exemplary embodiment of the present disclosure, in situation 3, assuming that the user selects a plurality of adjustment dimensions, the air-conditioning device can determine whether a maximum time interval between selection instructions for the plurality of adjustment dimensions is less than a predetermined duration. When the maximum time interval is less than the predetermined duration, the linkage mode of the air-conditioning device is activated in response to the selection instruction and the linkage instruction.

[0063] In another exemplary embodiment of the present disclosure, the predetermined duration may be 5 seconds, 10 seconds, etc., which is not limited in the present disclosure.

[0064] It should be understood that setting the predetermined duration can reduce misjudgments of the air-conditioning device. For example, assuming that no predetermined duration is set, the user selects the fresh air adjustment dimension at a time point t ; half an hour later, the user selects three adjustment dimensions of temperature, humidity, and fan speed; then, the user may click on or touch the linkage button or icon. In fact, the user expects to link the three adjustment dimensions of temperature, humidity, and fan speed. However, if the predetermined duration is not set, the air-conditioning device may link the four adjustment dimensions of fresh air, temperature, humidity, and fan speed.

[0065] An exemplary explanation of the maximum time interval between the selection instructions is made below. Hypothetically, the user selects three adjustment dimensions of temperature, humidity, and fan speed, and selection time points corresponding to the three adjustment dimensions are t , $t+1s$, and $t+2s$. For the three adjustment dimensions, the maximum time interval between the selection instructions is $t+2-t=2s$.

[0066] It should be understood that there are two scenarios in each of situation 2 and situation 3. One scenario is that the air-conditioning device defaults to a normal mode when turned on. In this case, when the air-conditioning device obtains the linkage instruction, or obtains the selection instruction and the linkage instruction for the at least one adjustment dimension, the air-conditioning device can switch from the normal mode to the linkage mode. Another scenario is that the air-conditioning device enters no mode when turned on. Such a mode may

be referred to as an idle mode. Alternatively, such a state may be referred to as an idle state. When the air-conditioning device obtains the linkage instruction, or obtains the selection instruction and the linkage instruction for the at least one adjustment dimension, the air-conditioning device can enter the linkage mode.

[0067] It should be understood that the normal mode may also be referred to as a non-linkage mode, which refers to a mode in which the plurality of adjustment dimensions are independently controlled. That is, when the user controls any one of the plurality of adjustment dimensions, the other adjustment dimensions are free from being controlled in a linkage manner.

[0068] It should be understood that the linkage instruction is used to activate the linkage mode of the air-conditioning device.

[0069] After entering the linkage mode, the air-conditioning device enables at least one adjustment dimension. The at least one adjustment dimension being enabled is described below for each of the above three situations of activating the linkage mode.

[0070] In another exemplary embodiment of the present disclosure, in situation 1 mentioned above or situation 2 mentioned above, when the air-conditioning device directly enters the linkage mode after being turned on, the at least one adjustment dimension enabled by the air-conditioning device may be any of, but is not limited to, an adjustment dimension that needs to be enabled by a system by default, an adjustment dimension historically enabled in the linkage mode, and an adjustment dimension that needs to be enabled based on a current environment.

[0071] For example, five adjustment dimensions of temperature, humidity, fan speed, purification, and fresh air are enabled by the system by default. Based on this, when obtaining the power on instruction or the linkage instruction, the air-conditioning device can automatically enable the five adjustment dimensions.

[0072] For example, two adjustment dimensions of temperature and fan speed are enabled by the system by default. Based on this, when obtaining the power on instruction or the linkage instruction, the air-conditioning device can automatically enable the two adjustment dimensions.

[0073] For example, hypothetically, the last adjustment dimensions enabled by the user in the linkage mode are three adjustment dimensions of temperature, humidity, and fan speed. Based on this, when obtaining the power on instruction or the linkage instruction, the air-conditioning device can automatically enable the three adjustment dimensions.

[0074] For example, the air-conditioning device can collect current environmental data such as temperature, humidity, pollution index, etc. Further, the air-conditioning device can determine, based on the current environmental data, the adjustment dimension that needs to be enabled. Based on this, when obtaining the power on instruction or the linkage instruction, the air-conditioning

device can automatically enable the adjustment dimension that needs to be enabled.

[0075] In another exemplary embodiment of the present disclosure, in a case where the air-conditioning device has not been used yet, the air-conditioning device can enable, when obtaining the power on instruction or the linkage instruction, the adjustment dimension that needs to be enabled by the system by default, or the adjustment dimension that needs to be enabled based on the current environment. In a case where the air-conditioning device has been used, the air-conditioning device can enable, when obtaining the power on instruction or the linkage instruction, the adjustment dimension that needs to be enabled by the system by default, or the adjustment dimension historically enabled in the linkage mode, or the adjustment dimension that needs to be enabled based on the current environment.

[0076] In another exemplary embodiment of the present disclosure, in situation 2 mentioned above, when the air-conditioning device switches from the normal mode to the linkage mode, the at least one adjustment dimension enabled by the air-conditioning device may be any of, but is not limited to, an adjustment dimension that needs to be enabled by a system by default, an adjustment dimension historically enabled in the linkage mode, an adjustment dimension enabled in the normal mode, and an adjustment dimension that needs to be enabled based on a current environment.

[0077] For example, hypothetically, the air-conditioning device enters the normal mode when turned on. It is assumed that in the normal mode, the user enables two adjustment dimensions including the temperature adjustment dimension and the fan speed adjustment dimension. In this case, when obtaining the linkage instruction, the air-conditioning device can automatically enable the two adjustment dimensions including the temperature adjustment dimension and the fan speed adjustment dimension.

[0078] In another exemplary embodiment of the present disclosure, in situation 3 mentioned above, the air-conditioning device can enable at least one adjustment dimension selected by the user.

[0079] For example, the user can select at least one adjustment dimension through a remote controller, an APP, or a touch panel. For example, two adjustment dimensions including the temperature adjustment dimension and the fan speed adjustment dimension are selected. Then, the user can click on or touch the linkage button or icon to enable the two adjustment dimensions.

[0080] In another exemplary embodiment of the present disclosure, the air-conditioning device can push first prompt information to prompt the user that the air-conditioning device has entered the linkage mode.

[0081] It should be understood that the first prompt information mentioned above is used to prompt the user that the air-conditioning device has entered the linkage mode.

[0082] In another exemplary embodiment of the pre-

sent disclosure, the first prompt information is any one of, but not limited to, an indicator light corresponding to the linkage mode being turned on, the indicator light corresponding to the linkage mode staying on for a first predetermined duration, the indicator light corresponding to the linkage mode displaying a first predetermined color, the indicator light corresponding to the linkage mode displaying the first predetermined color and staying on for the first predetermined duration, the indicator light corresponding to the linkage mode flashing based on a first predetermined mode, and voice information.

[0083] In another exemplary embodiment of the present disclosure, the indicator light corresponding to the linkage mode may be disposed in a touch panel of a cabinet air-conditioning device or a display panel of a wall-mounted air-conditioning device.

[0084] In another exemplary embodiment of the present disclosure, one or more indicator lights may be provided corresponding to the linkage mode.

[0085] In another exemplary embodiment of the present disclosure, the first predetermined duration may be 10 minutes, 30 minutes, etc.

[0086] In another exemplary embodiment of the present disclosure, the first predetermined color may be blue, green, red, etc.

[0087] In another exemplary embodiment of the present disclosure, flashing based on the first predetermined mode may be flashing every N seconds, where N is a positive integer, or a time interval between two adjacent flashes may alternate between 1 second and 2 seconds.

[0088] For example, as illustrated in FIG. 5, icons corresponding to the linkage mode are displayed in an interface. The icons indicate that the indicator light corresponding to the linkage mode is activated, which represents that the linkage mode has been activated. In other embodiments of the present disclosure, only one of the two icons exists. As illustrated in FIG. 6, no icon corresponding to the linkage mode is displayed in the interface, which represents that the linkage mode has been deactivated.

[0089] For example, when the indicator light corresponding to the linkage mode stays on for 10 minutes, the linkage mode may be indicated to have been activated. When the indicator light corresponding to the linkage mode is turned off, the linkage mode may be indicated to have been deactivated.

[0090] For example, when the indicator light corresponding to the linkage mode displays the green color, the linkage mode is indicated to have been activated. When the indicator light corresponding to the linkage mode is turned off or displays the red color, the linkage mode is indicated to have been deactivated.

[0091] For example, when the indicator light corresponding to the linkage mode displays the green color for 10 minutes, the linkage mode is indicated to have been activated. When the indicator light corresponding to the linkage mode is turned off or displays the red color, the linkage mode is indicated to have been deactivated.

[0092] For example, when the indicator light corresponding to the linkage mode flashes every 2 seconds, the linkage mode is indicated to have been activated. When the indicator light corresponding to the linkage mode is turned off or displays the red color, the linkage mode is indicated to have been deactivated.

[0093] For example, the air-conditioning device may also adopt voice broadcasting to announce to the user that "the linkage mode is activated", which indicates that the linkage mode has been activated.

[0094] To facilitate the user in distinguishing enabled adjustment dimensions from disabled adjustment dimensions, in the embodiments of the present disclosure, the air-conditioning device can push third prompt information or fourth prompt information for each of the plurality of adjustment dimensions. The third prompt information is used to prompt the user that the corresponding adjustment dimension is enabled, while the fourth prompt information is used to prompt the user that the corresponding adjustment dimension is disabled.

[0095] In another exemplary embodiment of the present disclosure, third prompt information corresponding to any adjustment dimension of the plurality of adjustment dimensions may be any one of, but not limited to, an indicator light corresponding to the adjustment dimension displaying a third predetermined color, the indicator light corresponding to the adjustment dimension displaying the third predetermined color and staying on for a third predetermined duration, and the indicator light corresponding to the adjustment dimension flashing based on a third predetermined mode.

[0096] In another exemplary embodiment of the present disclosure, the indicator light corresponding to the adjustment dimension may be disposed in a touch panel of a cabinet air-conditioning device or a display panel of a wall-mounted air-conditioning device.

[0097] In another exemplary embodiment of the present disclosure, one or more indicator lights may be provided corresponding to the plurality of adjustment dimensions.

[0098] In another exemplary embodiment of the present disclosure, the third predetermined duration may be 1 second, 2 seconds, etc.

[0099] In another exemplary embodiment of the present disclosure, the third predetermined color may be white, blue, green, red, etc.

[0100] In another exemplary embodiment of the present disclosure, flashing based on the third predetermined mode may be flashing every P seconds, where P is a positive integer, or a time interval between two adjacent flashes may alternate between 2 seconds and 1 second.

[0101] In another exemplary embodiment of the present disclosure, fourth prompt information corresponding to any adjustment dimension of the plurality of adjustment dimensions may be any one of, but not limited to, an indicator light corresponding to the adjustment dimension being turned off, and the indicator light correspond-

ing to the adjustment dimension displaying a fourth predetermined color.

[0102] In another exemplary embodiment of the present disclosure, the fourth predetermined color may be red, purple, etc.

[0103] For example, as illustrated in FIG. 5, a striated box indicates that the indicator light displays a white color, representing that the corresponding adjustment dimension is enabled, and a blank box indicates that the indicator light is turned off, representing that the corresponding adjustment dimension is disabled. Therefore, a result illustrated in FIG. 5 reveals that the temperature adjustment dimension and the fan speed adjustment dimension are enabled currently, while the humidity adjustment dimension, the purification adjustment dimension, and the fresh air adjustment dimension are disabled currently.

[0104] In another exemplary embodiment of the present disclosure, to facilitate the user in obtaining a progress of each of the plurality of adjustment dimensions, when any adjustment dimension of the plurality of adjustment dimensions is enabled, the air-conditioning device can also display a current progress of the adjustment dimension.

[0105] For example, as illustrated in FIG. 7, a striated box indicates that the indicator light displays a white color, representing that the corresponding adjustment dimension is enabled. In addition, a length of the striated box represents a current progress of the corresponding adjustment dimension.

[0106] It should be understood that in FIG. 7, a same indicator light is used to simultaneously indicate an enabled/disabled state and a current progress of one adjustment dimension. In fact, different indicator lights may also be used to indicate the enabled/disabled state and the current progress of one adjustment dimension.

[0107] For example, as illustrated in FIG. 8, a striated box indicates that the indicator light displays a white color, representing that the corresponding adjustment dimension is enabled, while a height of a shadow part indicates the current progress of the adjustment dimension.

[0108] It should be understood that the indicator lights represented by the striated boxes in FIG. 8 indicate the enabled/disabled states of the corresponding adjustment dimensions, while the indicator lights represented by the shadow parts indicate the current progresses of the corresponding adjustment dimensions. In fact, the indicator lights represented by the shadow parts may also be used to indicate the enabled/disabled states of the corresponding dimension adjustments, while the indicator lights represented by the striated boxes may indicate the current progresses of the corresponding dimension adjustments. Alternatively, both the indicator lights represented by the striated boxes and the indicator lights represented by the shadow parts can simultaneously indicate the enabled/disabled states and the current progresses of the corresponding dimension adjustments.

[0109] It should be understood that in the embodiments of the present disclosure, for the linkage mode, the first adjustment dimension mentioned above may be referred to as a main adjustment dimension, and the second adjustment dimension may be referred to as an auxiliary adjustment dimension.

[0110] For example, if the user controls the temperature adjustment dimension through a remote controller, an app, or a touch panel, the temperature adjustment dimension may be referred to as the main adjustment dimension. Based on control of the temperature adjustment dimension, the enabled fan speed adjustment dimension, the enabled humidity adjustment dimension, the enabled fresh air adjustment dimension, and the enabled purification adjustment dimension controlled in a linkage manner by the air-conditioning device may all be referred to as the second adjustment dimension.

[0111] To enable the user to intuitively feel the adjustment dimension controlled by himself or herself, in the embodiments of the present disclosure, the air-conditioning device can push second prompt information for the first adjustment dimension to prompt the user that the first adjustment dimension is the main adjustment dimension.

[0112] In another exemplary embodiment of the present disclosure, the second prompt information may be any one of, but not limited to, an indicator light corresponding to the first adjustment dimension displaying a second predetermined color, the indicator light corresponding to the first adjustment dimension displaying the second predetermined color and being turned on for a second predetermined duration, and the indicator light corresponding to the first adjustment dimension flashing based on a second predetermined mode.

[0113] In another exemplary embodiment of the present disclosure, the indicator light corresponding to the first adjustment dimension may be disposed in a touch panel of a cabinet air-conditioning device or a display panel of a wall-mounted air-conditioning device.

[0114] In another exemplary embodiment of the present disclosure, one or more indicator lights may be provided corresponding to the first adjustment dimension.

[0115] In another exemplary embodiment of the present disclosure, the second predetermined duration may be 3 seconds, 5 seconds, etc.

[0116] In another exemplary embodiment of the present disclosure, the second predetermined color may be blue, green, red, etc.

[0117] In another exemplary embodiment of the present disclosure, flashing based on the second predetermined mode may be flashing every M seconds, where M is a positive integer, or a time interval between two adjacent flashes may alternate between 1 second and 3 seconds.

[0118] For example, as illustrated in FIG. 9, hypothetically, the temperature adjustment dimension is the main adjustment dimension. When the user is currently controlling the temperature adjustment dimension, an indi-

cator light corresponding to the temperature adjustment dimension displays the blue color and lasts for 1 second. A box filled with black dots in FIG. 9 indicates that the indicator light displays the blue color.

[0119] In another exemplary embodiment of the present disclosure, the air-conditioning device can further display a control progress of the first adjustment dimension in response to the control instruction.

[0120] For example, as illustrated in FIG. 10, hypothetically, the temperature adjustment dimension is the main adjustment dimension. When the user is currently controlling the temperature adjustment dimension, an indicator light corresponding to the temperature adjustment dimension displays a blue color and lasts for 1 second. In FIG. 10, a box filled with black dots is used to indicate that the indicator light displays the blue color, and a variation in a length of the box filled with black dots represents a control progress of the temperature adjustment dimension.

[0121] For example, as illustrated in FIG. 11, hypothetically, the temperature adjustment dimension is the main adjustment dimension. When the user is currently controlling the temperature adjustment dimension, an indicator light corresponding to the temperature adjustment dimension displays a blue color and lasts for 1 second. In FIG. 11, a box filled with black dots is used to indicate that the indicator light displays the blue color, and a variation in a height of a shadow part represents a control progress of the temperature adjustment dimension.

[0122] It should be understood that in FIG. 11, the box filled with black dots is used to represent the temperature adjustment dimension as the main adjustment dimension, and the shadow part is used to represent the control progress of the temperature adjustment dimension. In fact, the shadow part may also be used to represent the temperature adjustment dimension as the main adjustment dimension, and a variation in a length of the striated box may be used to represent the control progress of the temperature adjustment dimension. Alternatively, both the box filled with black dots and the shadow part may simultaneously indicate the temperature adjustment dimension as the main adjustment dimension and the control progress of the temperature adjustment dimension.

[0123] It should be understood that a target value of the first adjustment dimension is used to determine a first to-be-adjusted amount of the second adjustment dimension.

[0124] It should be understood that considering different priorities of the plurality of adjustment dimensions, a priority of the first adjustment dimension can determine an adjustment coefficient for an adjustment from the first adjustment dimension to the second adjustment dimension. The adjustment coefficient for the adjustment from the first adjustment dimension to the second adjustment dimension increases as the priority of the first adjustment dimension becomes higher. Conversely, the adjustment coefficient for the adjustment from the first adjustment

dimension to the second adjustment dimension decreases as the priority of the first adjustment dimension becomes lower.

[0125] For example, hypothetically, the priority of the temperature adjustment dimension is higher than that of the fan speed adjustment dimension and the humidity adjustment dimension, and the priorities of the humidity adjustment dimension and the fan speed adjustment dimension are the same. Based on this, as illustrated in FIG. 12, an adjustment coefficient for an adjustment from the temperature adjustment dimension to the humidity adjustment dimension may be 1, an adjustment coefficient for an adjustment from the humidity adjustment dimension to the temperature adjustment dimension may be 0.5, an adjustment coefficient for an adjustment from the temperature adjustment dimension to the fan speed adjustment dimension may be 1, an adjustment coefficient for an adjustment from the fan speed adjustment dimension to the temperature adjustment dimension may be 0.5, an adjustment coefficient for an adjustment from the humidity adjustment dimension to the fan speed adjustment dimension may be 0.5, and an adjustment coefficient for an adjustment from the fan speed adjustment dimension to the humidity adjustment dimension may also be 0.5.

[0126] In another exemplary embodiment of the present disclosure, priorities of the plurality of adjustment dimensions may be factory-set for the air-conditioning device, or set by the user through a remote controller, an APP, or a touch panel. The present disclosure is not limited in this regard.

[0127] It should be understood that the above adjustment coefficient and the above first to-be-adjusted amount are used to determine a second to-be-adjusted amount of the second adjustment dimension, in such a manner that the air-conditioning device can control the second adjustment dimension based on the second to-be-adjusted amount.

[0128] In the embodiments of the present disclosure, the air-conditioning device can activate the linkage mode of the air-conditioning device. In the linkage mode, the air-conditioning device controls, in response to the control instruction for the first adjustment dimension of the plurality of adjustment dimensions of the air-conditioning device and in response to controlling the first adjustment dimension, the enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension. In this way, the user no longer needs to control other adjustment dimensions separately. The linkage control method can improve a control efficiency and user experience. In addition, the air-conditioning device can control the second adjustment dimension based on the adjustment coefficient, which is a more reasonable and effective control method, further improving the user experience.

[0129] Also, the air-conditioning device can further push the first prompt information to prompt the user that the air-conditioning device has entered the linkage mode,

which can also improve the user experience. The air-conditioning device can further push the third prompt information or the fourth prompt information for each of the plurality of adjustment dimensions, to facilitate the user in distinguishing the enabled adjustment dimensions from the disabled adjustment dimensions, thereby improving the user experience. The air-conditioning device can further display the current progress of each of the plurality of adjustment dimensions, which can also improve the user experience. The air-conditioning device can further push the second prompt information for the main adjustment dimension, to inform the user of the main adjustment dimension, further improving the user experience.

[0130] A further detailed explanation of the method for controlling the air-conditioning device is described in detail below.

[0131] As illustrated in FIG. 13, the operation at S430 can include the following operations.

[0132] At S1310, a first to-be-adjusted amount of the second adjustment dimension is determined based on the target value of the first adjustment dimension.

[0133] At S1320, a second to-be-adjusted amount of the second adjustment dimension is determined based on the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient.

[0134] At S1330, the second adjustment dimension is adjusted based on the second to-be-adjusted amount of the second adjustment dimension.

[0135] In one possible implementation, when the first adjustment dimension is enabled, i.e., the above control instruction is an enable instruction, the target value of the first adjustment dimension may be a current enabled value of the first adjustment dimension. For example, when the temperature adjustment dimension is enabled and a current temperature value is 25 degrees, the target value in this case is 25 degrees. In a case of adjusting the first adjustment dimension, the target value of the first adjustment dimension may be an adjusted value of the first adjustment dimension. For example, when the user adjusts the temperature from 25 degrees to 22 degrees, the target value in this case is 22 degrees. Based on this, as illustrated in FIG. 14, the operation at S1310 can include the following operations.

[0136] At S1410, a first mapping relationship between target values of the first adjustment dimension and adjusted values corresponding to the second adjustment dimension is determined.

[0137] At S1420, an adjusted value corresponding to the second adjustment dimension is determined based on the target value of the first adjustment dimension and the first mapping relationship.

[0138] At S1430, the first to-be-adjusted amount of the second adjustment dimension is determined based on a current value of the second adjustment dimension and the adjusted value corresponding to the second adjustment dimension.

[0139] For example, hypothetically, the first adjustment

dimension is the temperature adjustment dimension, the second adjustment dimension is the fan speed adjustment dimension, the adjusted temperature is 25 degrees, and the fan speed corresponding to 25 degrees should be level 1. If a current fan speed of the air-conditioning device is level 3, the air-conditioning device can decrease the fan speed by two levels. Here, the decreased two levels is the first to-be-adjusted amount of the fan speed.

[0140] In another possible implementation, in response to adjusting the first adjustment dimension, i.e., in response to the above control instruction being the adjustment instruction, the target value of the first adjustment dimension may be an adjustment amount of the first adjustment dimension. For example, hypothetically, the first adjustment dimension is the temperature adjustment dimension, and the second adjustment dimension is the fan speed adjustment dimension. When the user adjusts the temperature from 25 degrees to 22 degrees, the air-conditioning device determines that the adjustment amount of the temperature adjustment dimension is -3 degrees, where -3 degrees is the target value of the temperature adjustment dimension. Based on this, as illustrated in FIG. 15, the operation at S1310 can include the following operations.

[0141] At S1510, a second mapping relationship between adjustment amounts of the first adjustment dimension and first to-be-adjusted amounts of the second adjustment dimension is determined.

[0142] At S1520, the first to-be-adjusted amount of the second adjustment dimension is determined based on the adjustment amount of the first adjustment dimension and the second mapping relationship.

[0143] For example, hypothetically, the first adjustment dimension is the temperature adjustment dimension, and the second adjustment dimension is the fan speed adjustment dimension. When the user adjusts the temperature from 25 degrees to 22 degrees, the air-conditioning device determines that the adjustment amount of the temperature adjustment dimension is -3 degrees. If the adjustment amount of the fan speed adjustment dimension corresponding to -3 degrees is increasing the fan speed by one level, the increased one level of the fan speed is the first to-be-adjusted amount corresponding to the fan speed adjustment dimension.

[0144] It should be understood that for different adjustment dimensions, adjustment granularities are different. For example, the temperature can be adjusted by one degree Celsius at each time, and the adjustment granularity may even be 0.5 degrees Celsius. However, each of the fan speed, the humidity, the fresh air, and the purification can be adjusted by one level at each time. Therefore, the mapping relationship between the adjustment amounts of the first adjustment dimension and the first to-be-adjusted amounts of the second adjustment dimension may be a correspondence between temperature adjustment amount ranges and level adjustment amounts. For example, when the adjustment amount

of the temperature adjustment dimension is below -10 degrees Celsius, the adjustment amount of the fan speed adjustment dimension is an increase by three levels. When the adjustment amount of the temperature adjustment dimension ranges from -10 degrees Celsius to -5 degrees Celsius, the adjustment amount of the fan speed adjustment dimension is an increase by two levels. When the adjustment amount of the temperature adjustment dimension ranges from -5 degrees Celsius to -1 degree Celsius, the adjustment amount of the fan speed adjustment dimension is an increase by one level. When the adjustment amount of the temperature adjustment dimension ranges from 1 degree Celsius to 5 degrees Celsius, the adjustment amount of the fan speed adjustment dimension is a decrease by one level. When the adjustment amount of the temperature adjustment dimension ranges from 5 degrees Celsius to 10 degrees Celsius, the adjustment amount of the fan speed adjustment dimension is a decrease by two levels. When the adjustment amount of the temperature adjustment dimension is above 10 degrees Celsius, the adjustment amount of the fan speed adjustment dimension is a decrease by three levels. Alternatively, the mapping relationship between the adjustment amounts of the first adjustment dimension and the first to-be-adjusted amounts of the second adjustment dimension may be a mapping relationship between level adjustment amounts. For example, when the fan speed is increased by one level, the humidity is also increased by one level in a linkage manner; and when the fan speed is increased by two levels, the humidity is also increased by two levels in a linkage manner.

[0145] It should be understood that if the first adjustment dimension is the fan speed adjustment dimension, the humidity adjustment dimension, the purification adjustment dimension, or the fresh air adjustment dimension, and the second adjustment dimension is the temperature adjustment dimension, since temperatures are of continuous values, the temperature adjustment amount range is determined based on the correspondence between the adjustment amounts of the first adjustment dimension and temperature adjustment amount ranges of the second adjustment dimension when the air-conditioning device determines the adjustment amount of the first adjustment dimension. In this case, the air-conditioning device can select a temperature adjustment amount in the temperature adjustment amount range based on predetermined rules, e.g., a maximum value, a minimum value, or an intermediate value in the temperature adjustment amount range. The present disclosure is not limited to any of these examples.

[0146] In another exemplary embodiment of the present disclosure, in the above two possible implementations, when the air-conditioning device obtains the first to-be-adjusted amount and the adjustment coefficient, the air-conditioning device can determine that the second to-be-adjusted amount of the second adjustment dimension is zero when the adjustment coefficient is zero. When the

adjustment coefficient is greater than zero, a product of the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient is calculated as the second to-be-adjusted amount of the second adjustment dimension.

[0147] It should be understood that assuming that a linkage relationship exists between the plurality of adjustment modes mentioned above, the adjustment coefficient for the adjustment from any one of the plurality of adjustment modes to any other adjustment mode of the plurality of adjustment modes is greater than zero. If the plurality of adjustment modes mentioned above include adjustment modes having a linkage relationship and having no linkage relationship, the adjustment coefficient between two adjustment modes having the linkage relationship is greater than zero, and the adjustment coefficient between two adjustment modes having no linkage relationship is equal to zero.

[0148] For example, assuming that a linkage relationship exists between the temperature adjustment dimension and the fan speed adjustment dimension, the adjustment coefficient for the adjustment from the temperature adjustment dimension to the fan speed adjustment dimension is 1, the user adjusts the temperature from 25 degrees to 23 degrees, a fan speed value corresponding to 23 degrees is level 1, and a current fan speed level is level 2, the first to-be-adjusted amount of the fan speed adjustment dimension can be determined as a decrease by one level. Further, the air-conditioning device can calculate the product of the first to-be-adjusted amount and the adjustment coefficient for the adjustment from the temperature adjustment dimension to the fan speed adjustment dimension as the second to-be-adjusted amount, which is a decrease by one level. Assuming that no linkage relationship exists between the fan speed adjustment dimension and the purification adjustment dimension, the adjustment coefficient for the adjustment from the fan speed adjustment dimension to the purification adjustment dimension is 0. Based on this, when the user adjusts the fan speed, the purification adjustment dimension can remain unchanged.

[0149] Considering that the second to-be-adjusted amount may exceed a maximum adjustable amount of the second adjustment dimension, the air-conditioning device can adjust the second adjustment dimension in, but not limited to, the following ways.

[0150] In another exemplary embodiment of the present disclosure, when the second to-be-adjusted amount of the second adjustment dimension is less than or equal to the maximum adjustable amount of the second adjustment dimension, the air-conditioning device can adjust the second adjustment dimension by the second to-be-adjusted amount. When the second to-be-adjusted amount of the second adjustment dimension is greater than the maximum adjustable amount of the second adjustment dimension, the second adjustment dimension can be adjusted to the maximum adjustable amount. Alternatively, when the determined second to-be-ad-

justed amount of the second adjustment dimension is greater than the maximum adjustable amount of the second adjustment dimension, the second adjustment dimension is adjusted to the maximum adjustable amount of the second adjustment dimension, and the adjustment continues to iterate from a minimum value of the second adjustment dimension, until an adjustment amount of the second adjustment dimension reaches the second to-be-adjusted amount determined based on the mapping relationship.

[0151] Limitations are imposed on maximum and minimum values for each adjustment dimension. For example, hypothetically, a maximum value of the fan speed is level 5 and the current fan speed is at level 3. If the fan speed needs to be increased by three levels based on the above mapping relationship, it is obvious that such an increase has already exceeded the maximum value of the fan speed due to the limitation. In this case, the fan speed can be increased to level 5. Alternatively, the fan speed is adjusted in a cyclic process. After the fan speed reaches level 5, the fan speed continues to return to level 1.

[0152] In the embodiments of the present disclosure, the first to-be-adjusted amount of the second adjustment dimension is obtained by the air-conditioning device based on different target values of the first adjustment dimension. Further, when the adjustment coefficient for the adjustment from the first adjustment dimension to the second adjustment dimension is zero, the second to-be-adjusted amount of the second adjustment dimension is zero. When the adjustment coefficient for the adjustment from the first adjustment dimension to the second adjustment dimension is greater than zero, the product of the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient is calculated as the second to-be-adjusted amount of the second adjustment dimension. Based on this, the second adjustment dimension can be adjusted based on the second to-be-adjusted amount. The method of controlling the second adjustment dimension based on the adjustment coefficient is more reasonable and effective, which can further improve the user experience.

[0153] FIG. 16 is a flowchart of still yet another method for controlling an air-conditioning device according to an embodiment of the present disclosure. As illustrated in FIG. 16, based on FIG. 4, the method can further include the following operations subsequent to the operation at 5430.

[0154] At S440, a mode switching instruction is obtained.

[0155] At S450, a switch from the linkage mode to the normal mode is performed in response to the mode switching instruction.

[0156] In another exemplary embodiment of the present disclosure, the mode switching instruction may be generated based on a deactivation operation on the linkage mode, or the mode switching instruction may be generated based on an activation instruction for the

normal mode, or the mode switching instruction may be generated based on a click or touch operation on a mode switching identifier or button. The mode switching identifier or button may be disposed at a remote controller, an APP or a touch panel.

[0157] It should be understood that when the air-conditioning device switches to the normal mode, the user can only control each of the plurality of adjustment dimensions separately. For example, when the user adjusts the temperature adjustment dimension, the fan speed adjustment dimension, the fresh air adjustment dimension, and the purification adjustment dimension are free from being controlled in a linkage manner.

[0158] In another exemplary embodiment of the present disclosure, when the air-conditioning device switches to the normal mode, the air-conditioning device can switch to the linkage mode again. After entering the linkage mode, the air-conditioning device can control the plurality of adjustment dimensions based on the method provided in the present disclosure.

[0159] In the embodiments of the present disclosure, the air-conditioning device can flexibly switch between the linkage mode and the normal mode, thereby improving the user experience.

[0160] The following examples can be used to exemplarily illustrate the method provided in the present disclosure.

[0161] Example 1: when the user turns on the air-conditioning device, the air-conditioning device automatically activates the linkage mode and enables the temperature adjustment dimension and the fan speed adjustment dimension by default. The air-conditioning device can prompt the user that the temperature adjustment dimension and the fan speed adjustment dimension are enabled and that the humidity adjustment dimension, the purification adjustment dimension, and the fresh air adjustment dimension are disabled. The air-conditioning device can also display current progresses of the temperature adjustment dimension and the fan speed adjustment dimension. When the user adjusts the temperature adjustment dimension, the air-conditioning device can adjust the fan speed adjustment dimension based on a variation in the temperature adjustment dimension and the adjustment coefficient for the adjustment from the temperature adjustment dimension to the fan speed adjustment dimension and can display progress changes of the temperature adjustment dimension and the fan speed adjustment dimension. The air-conditioning device can also prompt that the temperature adjustment dimension is the main adjustment dimension. Further, when the user enables the humidity adjustment dimension, if the temperature adjustment dimension has a higher priority than the humidity adjustment dimension and the humidity adjustment dimension has a higher priority than the fan speed adjustment dimension, the air-conditioning device can adjust the fan speed adjustment dimension based on the adjustment coefficient for the adjustment from the humidity adjustment dimension to the fan speed adjust-

ment dimension, and also display the progress change of the fan speed adjustment dimension.

[0162] Example 2: when the user turns on the air-conditioning device, the air-conditioning device automatically activates the linkage mode and determines that the linkage mode was last used for the temperature adjustment dimension, the fan speed adjustment dimension, the humidity adjustment dimension, and the fresh air adjustment dimension. The air-conditioning device can prompt the user that the four adjustment dimensions are enabled and the purification adjustment dimension is disabled, and can also display current progresses of the four adjustment dimensions. When the user adjusts the temperature adjustment dimension, the air-conditioning device can adjust the fan speed adjustment dimension based on a variation in the temperature adjustment dimension and the adjustment coefficient for the adjustment from the temperature adjustment dimension to the fan speed adjustment dimension. The air-conditioning device can adjust two adjustment dimensions including the humidity adjustment dimension and the fresh air adjustment dimension in a similar way and display progress changes of the four adjustment dimensions. The air-conditioning device can also prompt that the temperature adjustment dimension is the main adjustment dimension. Further, when the user enables the purification adjustment dimension, if the purification adjustment dimension has a lower priority than all other adjustment dimensions, the air-conditioning device controls all other adjustment dimensions to remain unchanged.

[0163] Example 3: when the user turns on the air-conditioning device, the air-conditioning device activates the normal mode. If the user enables the temperature adjustment dimension, the fresh air adjustment dimension, and the fan speed adjustment dimension in the normal mode, and then activates the linkage mode, the air-conditioning device determines the temperature adjustment dimension, the fresh air adjustment dimension, and the fan speed adjustment dimension enabled in the normal mode as enabled adjustment modes. The air-conditioning device can prompt the user that the three adjustment dimensions are enabled and that the purification adjustment dimension and the humidity adjustment dimension are disabled and can also display current progresses of the three adjustment dimensions. When the user adjusts the temperature adjustment dimension, the air-conditioning device can adjust the fan speed adjustment dimension based on a variation in the temperature adjustment dimension and the adjustment coefficient for the adjustment from the temperature adjustment dimension to the fan speed adjustment dimension. The fresh air adjustment dimension may be adjusted in a similar way. In addition, the air-conditioning device can display progress changes of the temperature adjustment dimension, the fan speed adjustment dimension, and the fresh air adjustment dimension, and also prompt that the temperature adjustment dimension is the main adjustment dimension. Further, when the user en-

ables the purification adjustment dimension, if the purification adjustment dimension has a lower priority than all other adjustment dimensions, the air-conditioning device controls all other adjustment dimensions to remain unchanged.

[0164] Example 4: the user turns on the air-conditioning device. In this case, five adjustment dimensions including the temperature adjustment dimension, the fan speed adjustment dimension, the humidity adjustment dimension, the purification adjustment dimension, and the fresh air adjustment dimension are selected by the user. Then, the user clicks on a linkage icon or a linkage button to enable the air-conditioning device to enter the linkage mode. The air-conditioning device can prompt the user that the five adjustment dimensions are enabled and can also display current progresses of the five adjustment dimensions. When the user adjusts the temperature adjustment dimension, the air-conditioning device can adjust the other four adjustment dimensions based on a variation in the temperature adjustment dimension and the adjustment coefficient for the adjustment from the temperature adjustment dimension to each of the other four adjustment dimensions and can display progress changes of the five adjustment dimensions. The air-conditioning device can also prompt that the temperature adjustment dimension is the main adjustment dimension.

[0165] FIG. 17 is a schematic diagram of an apparatus 1700 for controlling an air-conditioning device according to an embodiment of the present disclosure. The apparatus 1700 for controlling the air-conditioning device can include an activation module 1710 and a control module 1720. The activation module 1710 is configured to activate the linkage mode of the air-conditioning device. The control module 1720 is configured to determine, in the linkage mode and in response to a control instruction for a first adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device and in response to controlling the first adjustment dimension, a target value of the first adjustment dimension, and control a second adjustment dimension based on the target value of the first adjustment dimension and an adjustment coefficient for an adjustment from the first adjustment dimension to the second adjustment dimension. The second adjustment dimension is an enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension.

[0166] In another exemplary embodiment of the present disclosure, the control module 1720 is configured to: determine a first to-be-adjusted amount of the second adjustment dimension based on the target value of the first adjustment dimension; determine a second to-be-adjusted amount of the second adjustment dimension based on the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient; and adjust the second adjustment dimension based on the second to-be-adjusted amount of the second adjustment dimension.

[0167] In another exemplary embodiment of the present disclosure, the control module 1720 is configured to: determine, in response to enabling the first adjustment dimension, a currently enabled value of the first adjustment dimension as the target value of the first adjustment dimension; or determine, in response to adjusting the first adjustment dimension, an adjusted value of the first adjustment dimension as the target value of the first adjustment dimension.

[0168] In another exemplary embodiment of the present disclosure, the control module 1720 is configured to: determine a first mapping relationship between target values of the first adjustment dimension and adjusted values corresponding to the second adjustment dimension; determine an adjusted value corresponding to the second adjustment dimension based on the target value of the first adjustment dimension and the first mapping relationship; and determine the first to-be-adjusted amount of the second adjustment dimension based on a current value of the second adjustment dimension and the adjusted value corresponding to the second adjustment dimension.

[0169] In another exemplary embodiment of the present disclosure, the control module 1720 is configured to determine, in response to adjusting the first adjustment dimension, an adjustment amount of the first adjustment dimension as the target value of the first adjustment dimension.

[0170] In another exemplary embodiment of the present disclosure, the control module 1720 is configured to: determine a second mapping relationship between adjustment amounts of the first adjustment dimension and first to-be-adjusted amounts of the second adjustment dimension; and determine the first to-be-adjusted amount of the second adjustment dimension based on the adjustment amount of the first adjustment dimension and the second mapping relationship.

[0171] In another exemplary embodiment of the present disclosure, the control module 1720 is configured to: determine the second to-be-adjusted amount of the second adjustment dimension as zero when the adjustment coefficient is zero; and calculate, when the adjustment coefficient is greater than zero, a product of the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient as the second to-be-adjusted amount of the second adjustment dimension.

[0172] In another exemplary embodiment of the present disclosure, the activation module 1710 is configured to activate the linkage mode of the air-conditioning device in response to a power on instruction or a linkage instruction.

[0173] In another exemplary embodiment of the present disclosure, the activation module 1710 is further configured to enable at least one adjustment dimension of the plurality of adjustment dimensions in response to the power on instruction or the linkage instruction.

[0174] In another exemplary embodiment of the present disclosure, the at least one adjustment dimension

may be any one of: an adjustment dimension that needs to be enabled by a system by default; an adjustment dimension historically enabled in the linkage mode; and an adjustment dimension that needs to be enabled based on a current environment.

[0175] In another exemplary embodiment of the present disclosure, when the air-conditioning device switches from a normal mode to the linkage mode in response to the linkage instruction, the at least one of the plurality of adjustment dimensions is any one of: an adjustment dimension that needs to be enabled by a system by default; an adjustment dimension historically enabled in the linkage mode; an adjustment dimension enabled in the normal mode; and an adjustment dimension that needs to be enabled based on a current environment. The normal mode is a mode in which the plurality of adjustment dimensions are independently controlled.

[0176] In another exemplary embodiment of the present disclosure, the activation module 1710 is configured to activate the linkage mode of the air-conditioning device in response to a selection instruction and a linkage instruction for at least one adjustment dimension of the plurality of adjustment dimensions.

[0177] In another exemplary embodiment of the present disclosure, the activation module 1710 is further configured to enable the at least one-dimensional adjustment dimension in response to the selection instruction and the linkage instructions for the at least one adjustment dimension.

[0178] It should be understood that the apparatus embodiments can correspond to the method embodiments, and similar descriptions can refer to the method embodiments, which will be omitted here to avoid repetition. In an exemplary embodiment of the present disclosure, the apparatus 1700 illustrated in FIG. 17 can perform the above method embodiments. In addition, the above and other operations and/or functions of each module in the apparatus 1700 are configured to implement corresponding processes in the above method embodiments, which will be omitted here for simplicity.

[0179] The apparatus 1700 according to the embodiments of the present disclosure is described above from the perspective of functional modules in conjunction with the accompanying drawings. It should be understood that the functional modules can be implemented through hardware, software instructions, or a combination of hardware and software modules. In an exemplary embodiment of the present disclosure, the operations of the method embodiments disclosed in the present disclosure can be completed through hardware integrated logic circuits and/or software instructions in a processor. The operations of the method embodiments disclosed in the present disclosure can be directly embodied as being executed by a hardware decoding processor, or by a combination of hardware and software modules in a decoding processor. In another exemplary embodiment of the present disclosure, software modules can be located in known storage media in the art, such as a

random-access memory, a flash memory, a read-only memory, a programmable read-only memory, an electrically erasable programmable memory, a register, etc. The storage medium is located in the memory. The processor reads information in the memory and implements the operations in the above method embodiments in combination with its hardware.

[0180] FIG. 18 is a schematic block diagram of an electronic device 1800 according to an embodiment of the present disclosure.

[0181] As illustrated in FIG. 18, the electronic device 1800 can include a memory 1810 and a processor 1820. The memory 1810 is configured to store a computer program and transmit program codes to the processor 1820. That is, the processor 1820 can be configured to invoke and execute the computer program stored in the memory 1810 to implement the method according to the embodiments of the present disclosure.

[0182] For example, the processor 1820 can be configured to perform the above method embodiments based on instructions in the computer program.

[0183] In some embodiments of the present disclosure, the processor 1820 can include, but is not limited to a general-purpose processor, a digital signal processor (DSP), an application specific integrated circuit (ASIC), a field programmable gate array (FPGA) or other programmable logic devices, discrete gate or transistor logic devices, discrete hardware components, etc.

[0184] In some embodiments of the present disclosure, the memory 1810 includes, but is not limited to, a volatile memory and/or a non-volatile memory. The non-volatile memory may be a read-only memory (ROM), a programmable ROM (PROM), an erasable PROM (EPROM), an electrically EPROM (EEPROM), or a flash memory. The volatile memory may be a random-access memory (RAM), which is used as an external cache. By way of example but not limitation, many forms of RAM are available, such as a static RAM (SRAM), a dynamic RAM (DRAM), a synchronous DRAM (SDRAM), a double data rate SDRAM (DDR SDRAM), an enhanced SDRAM (ESDRAM), a synchronous link DRAM (SLDRAM), and a direct rambus RAM (DR RAM).

[0185] In some embodiments of the present disclosure, the computer program may be divided into one or more modules, which are stored in the memory 1810 and executed by the processor 1820 to implement the method provided in the present disclosure. The one or more modules may be a series of computer program instruction segments capable of performing specific functions, which are used to describe an execution process of the computer program in the electronic device.

[0186] As illustrated in FIG. 18, the electronic device can further include a transceiver 1830 connected to the processor 1820 or the memory 1810.

[0187] The processor 1820 can be configured to control the transceiver 1830 to communicate with other devices. In an exemplary embodiment of the present disclosure. The transceiver 1830 can be configured to

transmit information or data to other devices, or receive information or data transmitted by other devices. The transceiver 1830 can include a transmitter and a receiver. The transceiver 1830 can further include one or more antennas.

[0188] It should be understood that various components in the electronic device are connected through a bus system. In addition to a data bus, the bus system can further include a power bus, a control bus, and a status signal bus.

[0189] The present disclosure further provides a computer storage medium on which a computer program is stored. The computer program, when executed by a computer, causes the computer to perform the method according to the method embodiments described above. In other words, the embodiments of the present disclosure further provide a computer program product including instructions. The instructions, when executed by a computer, cause the computer to perform the method according to the above method embodiments.

[0190] When implemented by software, implementation can be made in the form of a computer program product completely or in part. The computer program product includes one or more computer instructions. The computer program instructions, when loaded and executed on a computer, produce all or a part of the processes or functions described in the embodiments of the present disclosure. The computer may be a general purpose computer, an application specific computer, a computer network, or any other programmable device. The computer instructions may be stored in a computer-readable storage medium or transmitted from one computer-readable storage medium to another computer-readable storage medium. For example, the computer instructions may be transmitted from one website, computer, server, or data center to another website, computer, server, or data center via a wired manner (such as coaxial cable, optical fiber, Digital Subscriber Line (DSL)) or a wireless manner (such as infrared, wireless, microwave, etc.). The computer-readable storage medium may be any usable medium that can be accessed by a computer or a data storage device such as a server or a data center integrated with one or more usable medium. The usable medium may be a magnetic medium (for example, a floppy disk, a hard disk, a magnetic tape), an optical medium (for example, a Digital Video Disc (DVD)), or a semiconductor medium (for example, a Solid State Disk (SSD)), etc.

[0191] It can be appreciated by those skilled in the art that the modules and the steps of the algorithm of examples described in combination with the embodiments disclosed herein may be implemented in electronic hardware or a combination of computer software and electronic hardware, depending on specific applications and design constraint conditions of technical solutions. For each specific application, professionals and technicians can use different methods to implement the described functions, but such implementation should not be con-

sidered as going beyond the scope of the present disclosure.

[0192] In several embodiments provided by the present disclosure, it is to be understood that, the systems, apparatuses and methods disclosed can be implemented in other ways. For example, the apparatus embodiments described above are merely exemplary. For example, the modules are merely divided based on logic functions. In practical implementation, the modules can be divided in other manners. For example, multiple modules or components can be combined or integrated into another system, or some features can be omitted or not executed. In addition, mutual coupling or direct coupling or communication connection described or discussed can be implemented as indirect coupling or communication connection via some interfaces, apparatuses or modules, and may be electrical, mechanical or in other forms.

[0193] The modules illustrated as separate components may be or not be separated physically, and components shown as modules may be or not be physical modules, i.e., may be located at one position, or distributed onto multiple network units. It is possible to select some or all of the modules according to actual needs, for achieving the objective of embodiments of the present disclosure. For example, respective functional modules in respective embodiments of the present disclosure can be integrated into one processing module, or can be present as separate physical entities. It is also possible to integrate two or more modules into one module.

[0194] The above description merely illustrates specific implementations of the present disclosure, and the scope of the present disclosure is not limited thereto. Any change or replacement within the technical scope disclosed by the present disclosure that can be easily conceived by those skilled in the art should fall in the protection scope of the present disclosure. The protection scope of the present disclosure should be defined by the claims.

Claims

1. A method for controlling an air-conditioning device, comprising:

activating a linkage mode of the air-conditioning device; and
in the linkage mode, determining, in response to a control instruction for a first adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device and in response to controlling the first adjustment dimension, a target value of the first adjustment dimension, and controlling a second adjustment dimension based on the target value of the first adjustment dimension and an adjustment coefficient for an adjustment from the first adjustment dimension

to the second adjustment dimension, wherein the second adjustment dimension is an enabled adjustment dimension of the plurality of adjustment dimensions other than the first adjustment dimension.

2. The method according to claim 1, wherein the controlling the second adjustment dimension based on the target value of the first adjustment dimension and the adjustment coefficient for the adjustment from the first adjustment dimension to the second adjustment dimension comprises:

determining a first to-be-adjusted amount of the second adjustment dimension based on the target value of the first adjustment dimension; determining a second to-be-adjusted amount of the second adjustment dimension based on the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient; and
adjusting the second adjustment dimension based on the second to-be-adjusted amount of the second adjustment dimension.

3. The method according to claim 2, wherein the determining, in response to controlling the first adjustment dimension, the target value of the first adjustment dimension comprises:

determining, in response to enabling the first adjustment dimension, a currently enabled value of the first adjustment dimension as the target value of the first adjustment dimension; or determining, in response to adjusting the first adjustment dimension, an adjusted value of the first adjustment dimension as the target value of the first adjustment dimension.

4. The method according to claim 3, wherein the determining the first to-be-adjusted amount of the second adjustment dimension based on the target value of the first adjustment dimension comprises:

determining a first mapping relationship between the target value of the first adjustment dimension and an adjusted value corresponding to the second adjustment dimension; determining the adjusted value corresponding to the second adjustment dimension based on the target value of the first adjustment dimension and the first mapping relationship; and determining the first to-be-adjusted amount of the second adjustment dimension based on a current value of the second adjustment dimension and the adjusted value corresponding to the second adjustment dimension.

5. The method according to claim 2, wherein the determining, in response to controlling the first adjustment dimension, the target value of the first adjustment dimension comprises:
determining, in response to adjusting the first adjustment dimension, an adjustment amount of the first adjustment dimension as the target value of the first adjustment dimension. 5
6. The method according to claim 5, wherein the determining the first to-be-adjusted amount of the second adjustment dimension based on the target value of the first adjustment dimension comprises: 10
determining a second mapping relationship between the adjustment amount of the first adjustment dimension and the first to-be-adjusted amount of the second adjustment dimension; and 15
determining the first to-be-adjusted amount of the second adjustment dimension based on the adjustment amount of the first adjustment dimension and the second mapping relationship. 20
7. The method according to any one of claims 2 to 6, wherein the determining the second to-be-adjusted amount of the second adjustment dimension based on the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient comprises: 25
determining the second to-be-adjusted amount of the second adjustment dimension as zero when the adjustment coefficient is zero; and
calculating, when the adjustment coefficient is greater than zero, a product of the first to-be-adjusted amount of the second adjustment dimension and the adjustment coefficient as the second to-be-adjusted amount of the second adjustment dimension. 30
8. The method according to any one of claims 1 to 6, wherein the activating the linkage mode of the air-conditioning device comprises: 35
activating the linkage mode of the air-conditioning device in response to a power on instruction or a linkage instruction. 40
9. The method according to claim 8, further comprising: 45
enabling at least one of the plurality of adjustment dimensions in response to the power on instruction or the linkage instruction. 50
10. The method according to claim 9, wherein the at least one of the plurality of adjustment dimensions is any one of: 55
an adjustment dimension that needs to be enabled by a system by default;
an adjustment dimension historically enabled in the linkage mode; and
an adjustment dimension that needs to be enabled based on a current environment.
11. The method according to claim 9, wherein when the air-conditioning device switches from a normal mode to the linkage mode in response to the linkage instruction, the at least one of the plurality of adjustment dimensions is any one of:
an adjustment dimension that needs to be enabled by a system by default;
an adjustment dimension historically enabled in the linkage mode;
an adjustment dimension enabled in the normal mode; and
an adjustment dimension that needs to be enabled based on a current environment, wherein the normal mode is a mode in which the plurality of adjustment dimensions are independently controlled.
12. The method according to any one of claims 1 to 6, wherein the activating the linkage mode of the air-conditioning device comprises:
activating the linkage mode of the air-conditioning device in response to a selection instruction and a linkage instruction for at least one of the plurality of adjustment dimensions.
13. The method according to claim 12, further comprising:
enabling the at least one of the plurality of adjustment dimensions in response to the selection instruction and the linkage instruction for the at least one of the plurality of adjustment dimensions.
14. An apparatus for controlling an air-conditioning device, comprising:
an activation module configured to activate a linkage mode of the air-conditioning device; and
a control module configured to determine, in the linkage mode and in response to a control instruction for a first adjustment dimension of a plurality of adjustment dimensions of the air-conditioning device and in response to controlling the first adjustment dimension, a target value of the first adjustment dimension, and control a second adjustment dimension based on the target value of the first adjustment dimension and an adjustment coefficient for an adjustment from the first adjustment dimension to the second adjustment dimension, wherein the second adjustment dimension is an enabled adjustment dimension of the plurality of

adjustment dimensions other than the first adjustment dimension.

15. An air-conditioning device, comprising:

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a processor; and

a memory configured to store a computer program, wherein the processor is configured to invoke and execute the computer program stored in the memory to perform a method according to any one of claims 1 to 13.

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16. A computer-readable storage medium having a computer program stored thereon, wherein the computer program causes a computer to perform a method according to any one of claims 1 to 13.

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17. A computer program product, comprising a computer program or a computer instruction, wherein the computer program or the computer instruction, when executed by a processor, implement a method according to any one of claims 1 to 13.

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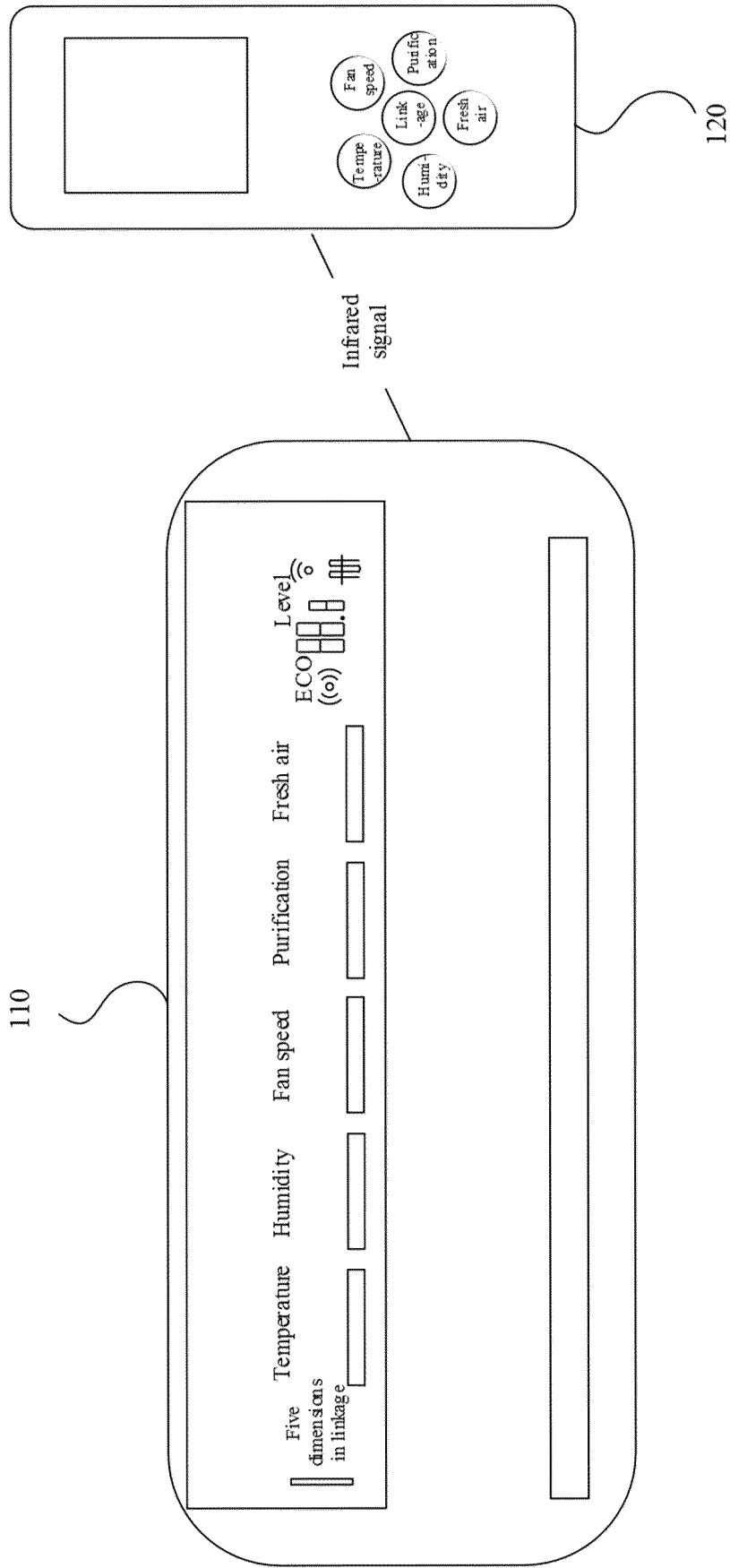


FIG. 1

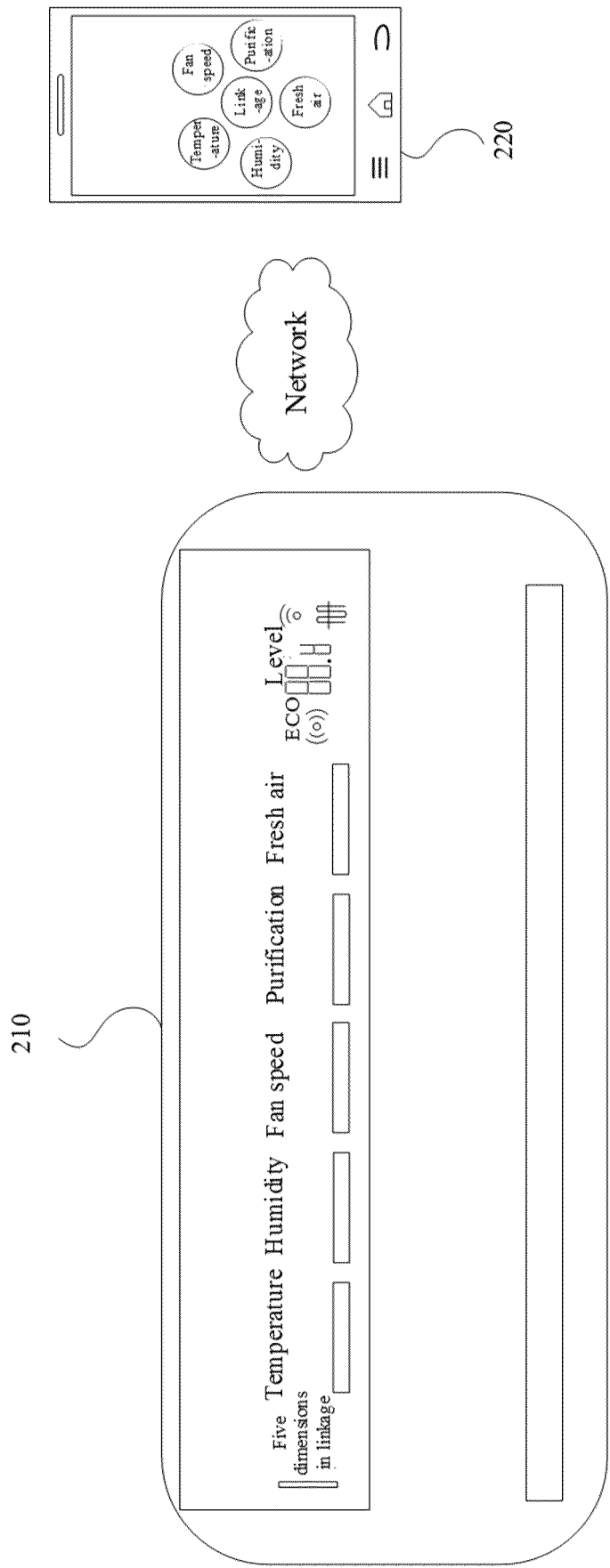


FIG. 2

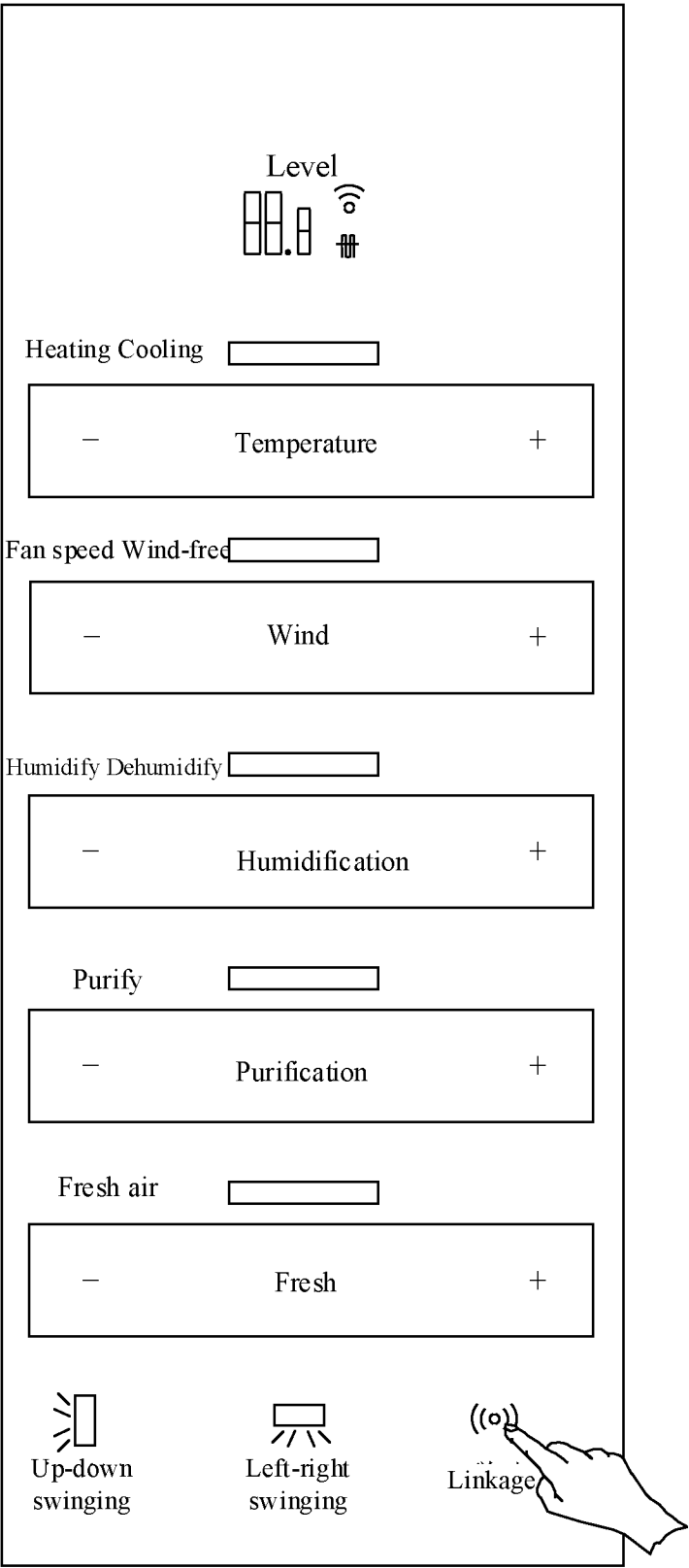


FIG. 3

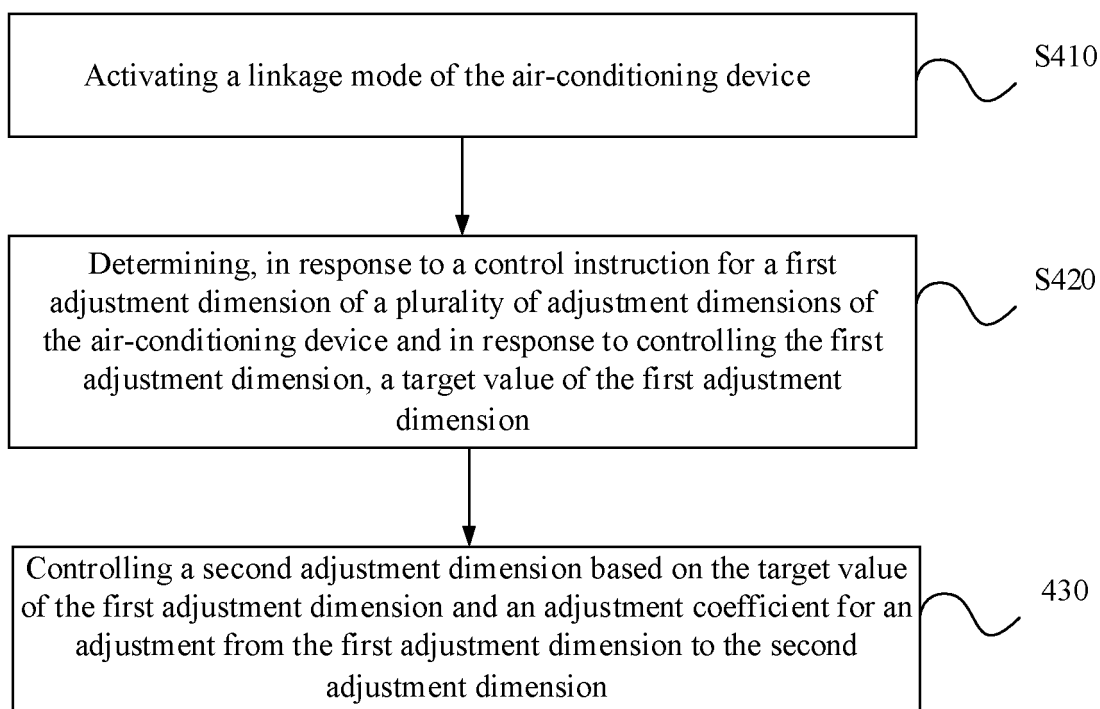


FIG. 4

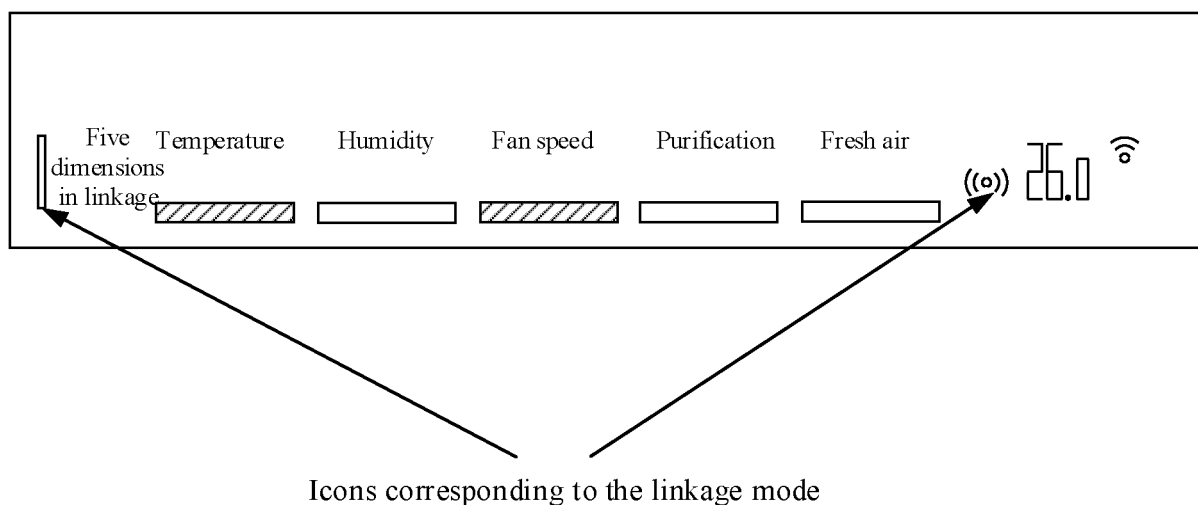


FIG. 5

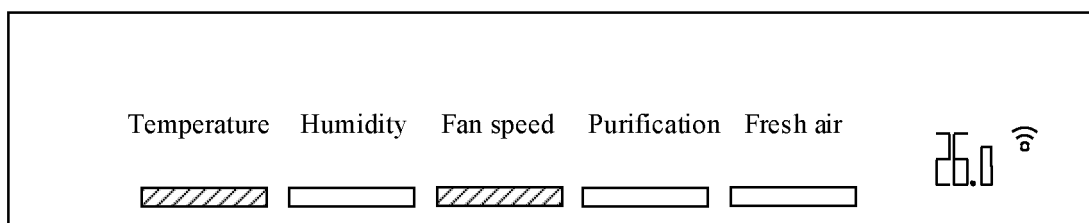


FIG. 6

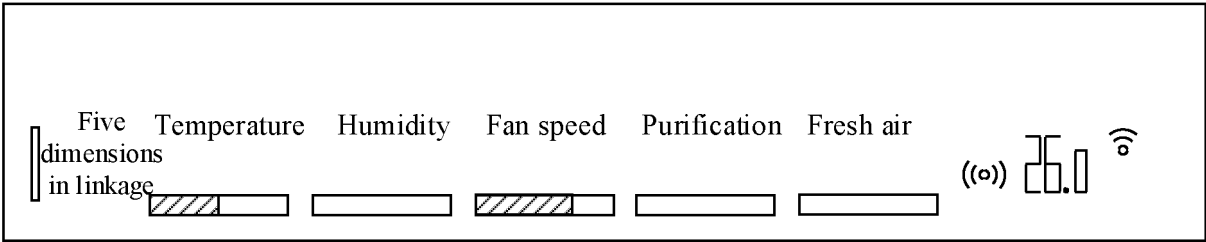


FIG. 7

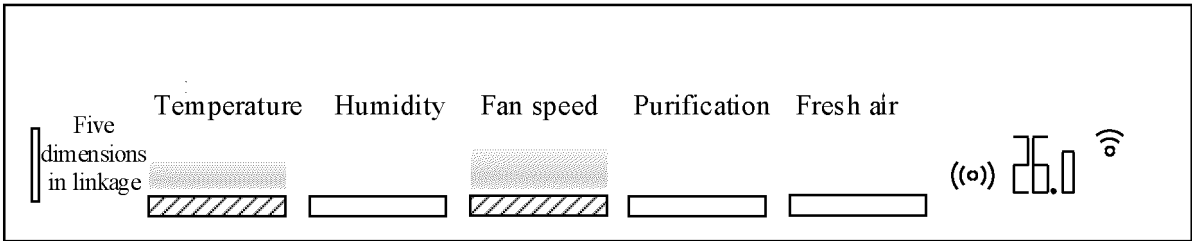


FIG. 8

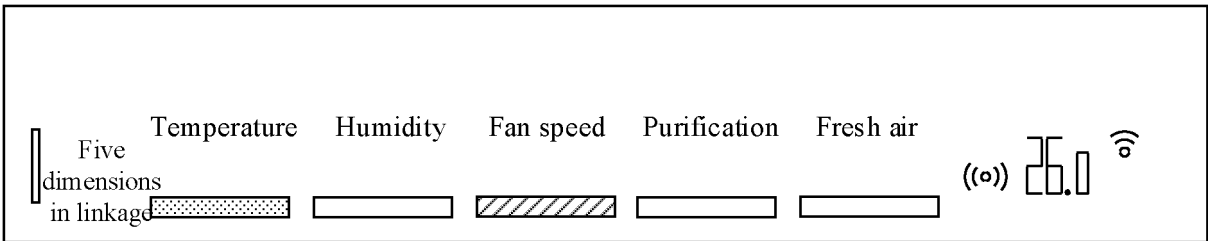


FIG. 9

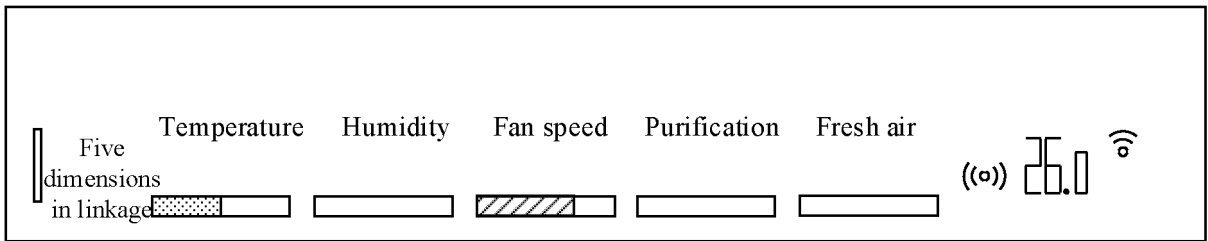


FIG. 10

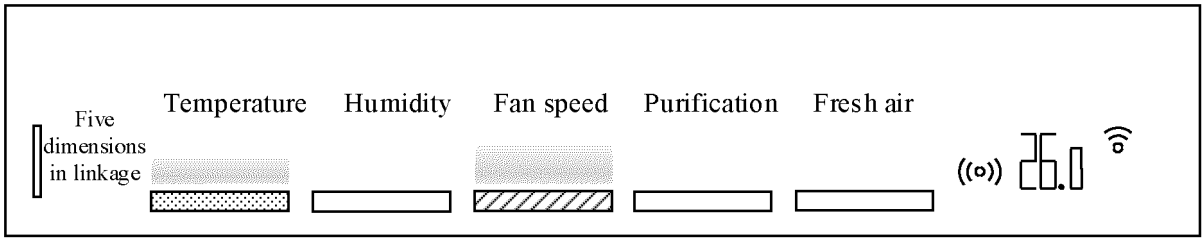


FIG. 11

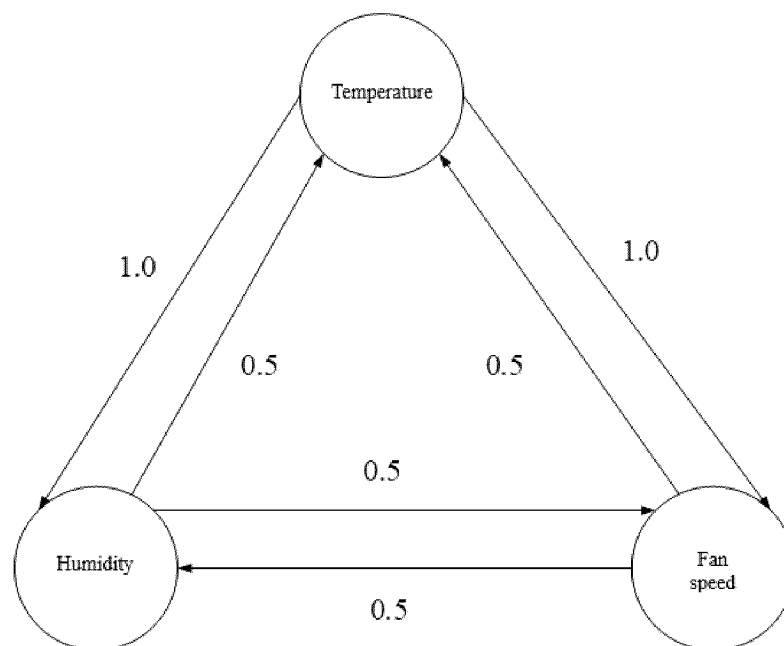


FIG. 12

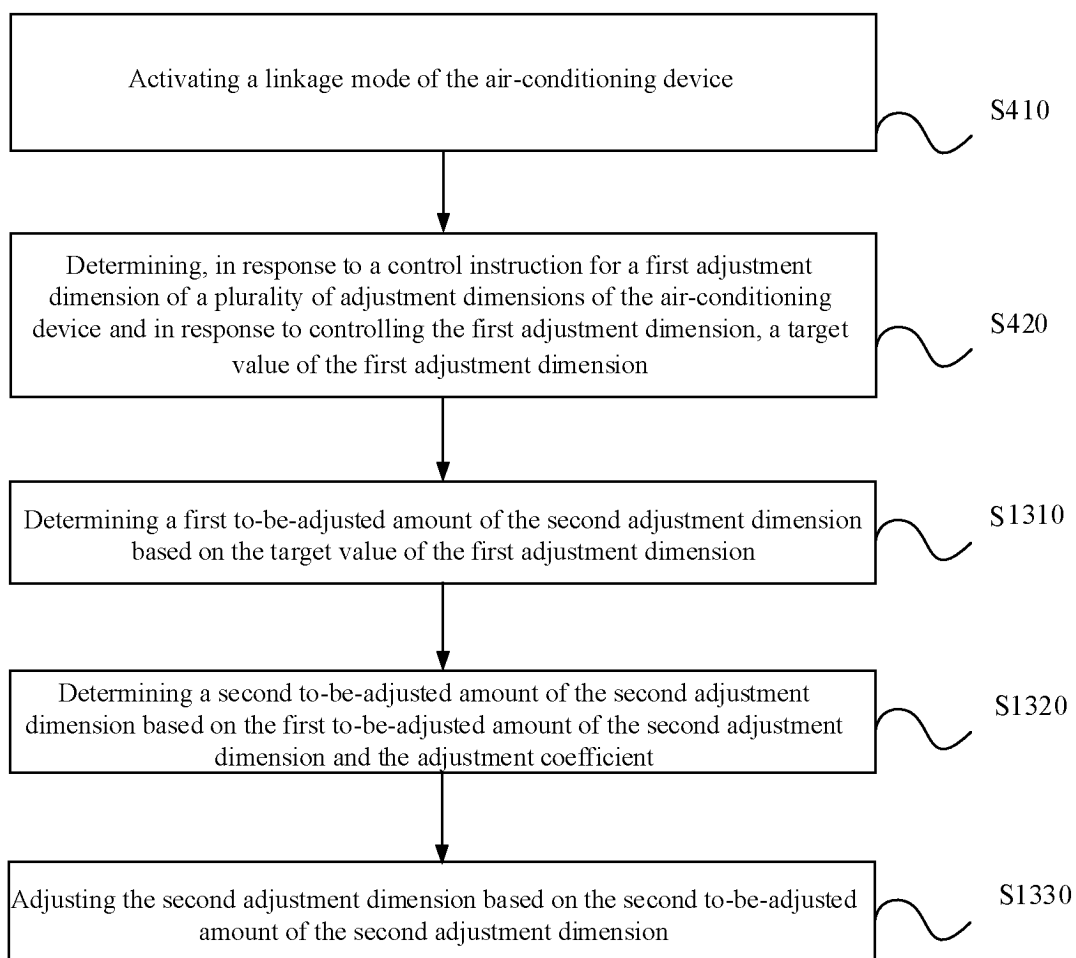


FIG. 13

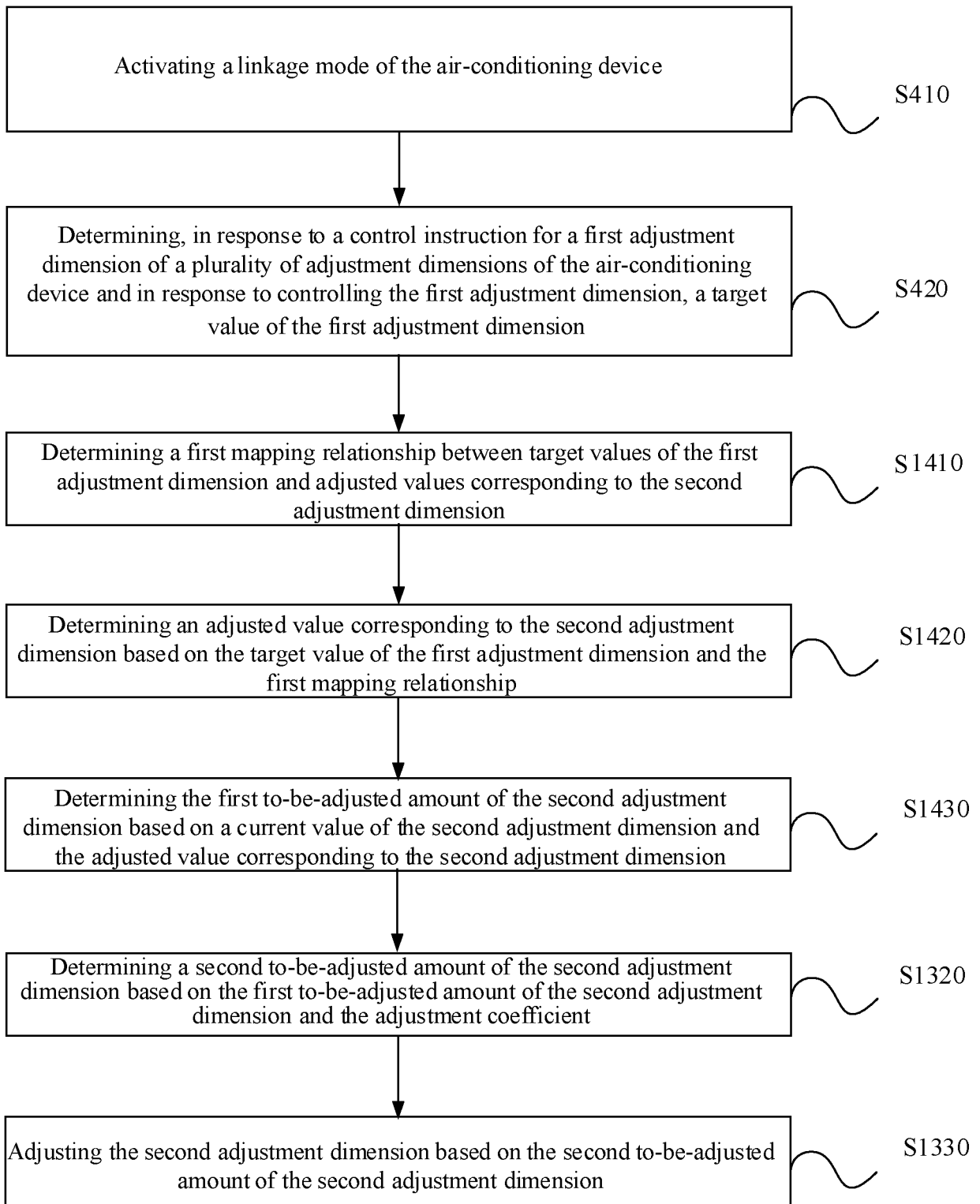


FIG. 14

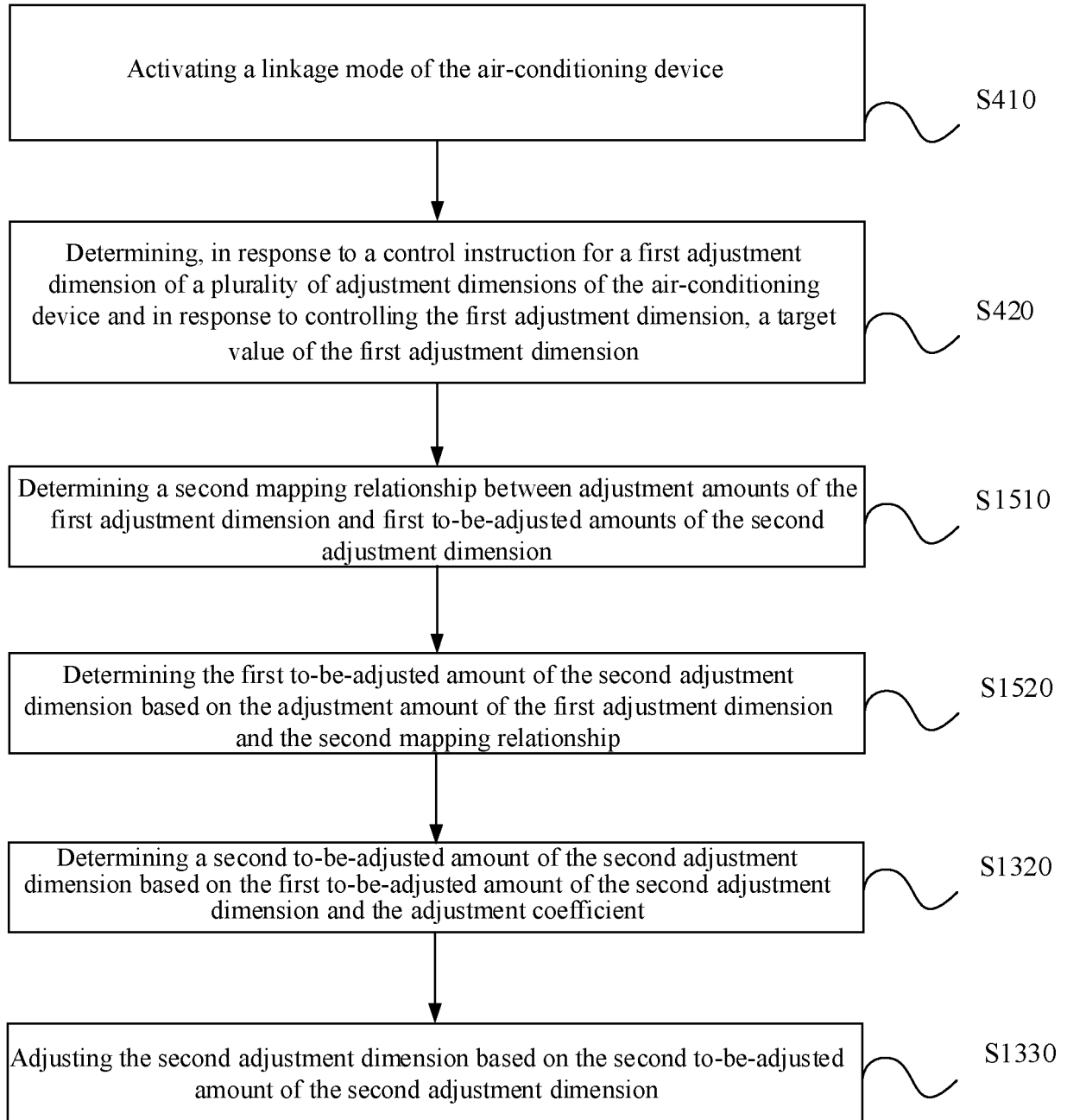


FIG. 15

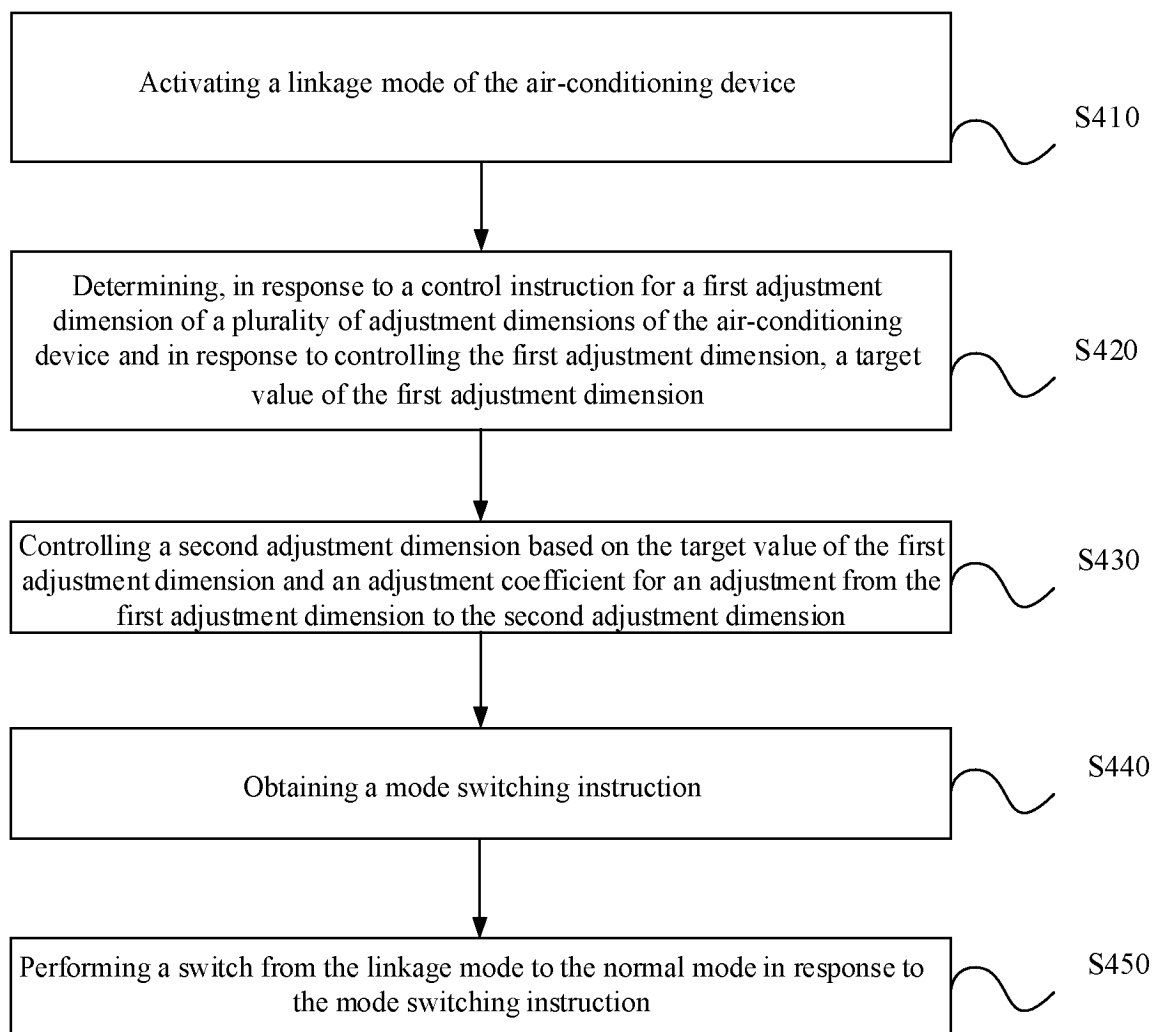


FIG. 16

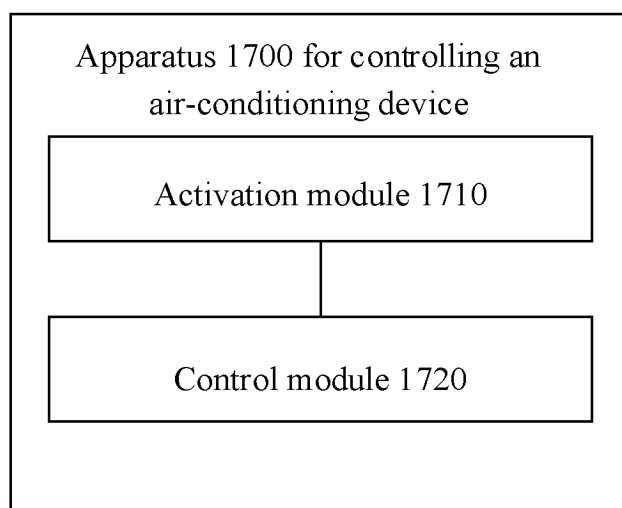


FIG. 17

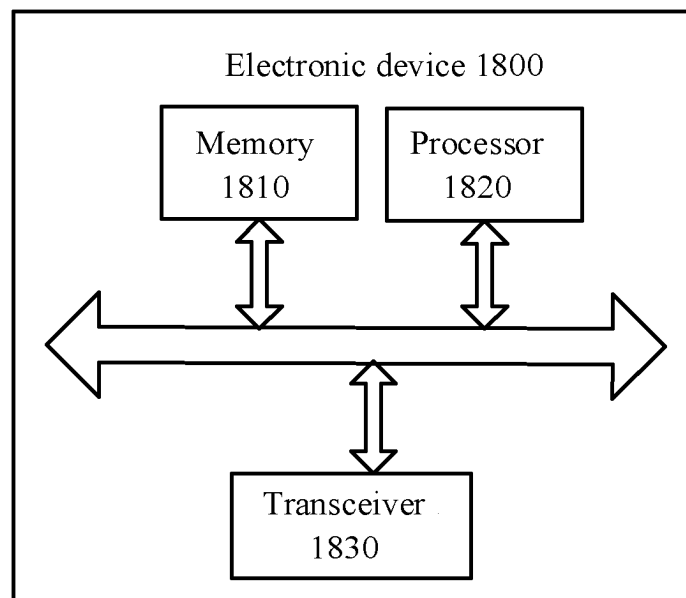


FIG. 18

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2022/127082

A. CLASSIFICATION OF SUBJECT MATTER

F24F11/64(2018.01)i;F24F120/10(2018.01)i

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)

F24F

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)

CNTXT, ENTXTC, VEN, CNKI: 参数, 控制, 联动, 联合, 温度, parameter?, link+, temperature, control, adjust+, monitor+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	CN 109595756 A (GUANGDONG MIDEA AIR CONDITIONING EQUIPMENT CO., LTD.) 09 April 2019 (2019-04-09) description, paragraphs [0041]-[0089], and figures 1-4	1-17
A	CN 111397131 A (GUANGDONG MIDEA AIR CONDITIONING EQUIPMENT CO., LTD. et al.) 10 July 2020 (2020-07-10) entire document	1-17
A	CN 113124551 A (QINGDAO HAIER AIR CONDITIONER GENERAL CO., LTD. et al.) 16 July 2021 (2021-07-16) entire document	1-17
A	JP 2009145033 A (SHIJIN KOGYO SAKUSHINKAI) 02 July 2009 (2009-07-02) entire document	1-17
A	JP 2021148410 A (FUJITSU GENERAL LTD.) 27 September 2021 (2021-09-27) entire document	1-17

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

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“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

27 February 2023

Date of mailing of the international search report

28 February 2023

Name and mailing address of the ISA/CN

**China National Intellectual Property Administration (ISA/
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Beijing 100088**

Facsimile No. (86-10)62019451

Authorized officer

Telephone No.

Form PCT/ISA/210 (second sheet) (July 2022)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2022/127082

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CN	111397131	A	10 July 2020	None			
CN	113124551	A	16 July 2021	None			
JP	2009145033	A	02 July 2009	JP	4864019	B2	25 January 2012
				TW	200925525	A	16 June 2009
				TWI	401399	B	11 July 2013
JP	2021148410	A	27 September 2021	None			

Form PCT/ISA/210 (patent family annex) (July 2022)

REFERENCES CITED IN THE DESCRIPTION

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