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(72) Inventors:
• **YANG, Qing**
Qingdao, Shandong 266101 (CN)
• **LI, Haijun**
Qingdao, Shandong 266101 (CN)
• **KANG, Lijun**
Qingdao, Shandong 266101 (CN)

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(74) Representative: **dompatent von Kreisler Selting Werner - Partnerschaft von Patent- und Rechtsanwälten mbB**
Deichmannhaus am Dom
Bahnhofsvorplatz 1
50667 Köln (DE)

(71) Applicants:
• **Qingdao Haier Air Conditioner General Corp., Ltd.**
Qingdao, Shandong 266101 (CN)
• **Haier Smart Home Co., Ltd.**
Qingdao, Shandong 266101 (CN)

(54) **ALARMING METHOD FOR AIR CONDITIONER, AND AIR CONDITIONER**

(57) The present invention relates to the technical field of air conditioners. Provided are an alarming method for an air conditioner, and an air conditioner. An air conditioner (1) comprises an outdoor unit and a microprocessor (12). A spirit level (11) is provided at a chassis of the outdoor unit. The spirit level (11) is electrically con-

nected to the microprocessor (12). The air conditioner (1) further comprises an alarm device (13) electrically connected to the microprocessor (12). When the spirit level (11) indicates an inclination, the microprocessor (12) controls the alarm device (13) to provide alarm information.

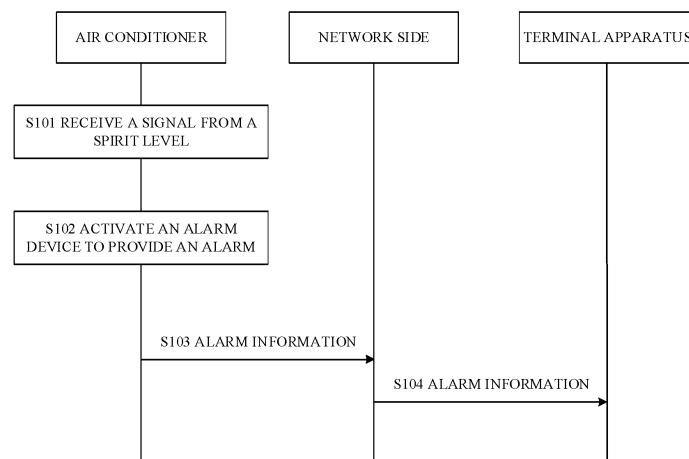


Fig. 1

Description

CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] The application is based upon and claims priority to Chinese Patent Application No. 201810095344.3, filed January 31, 2018, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] The present disclosure relates to the field of air conditioner technologies, and more particularly, to an alarm method for an air conditioner and an air conditioner.

BACKGROUND

[0003] With the development of economic level, air conditioners have entered thousands of households and become one of the necessities of life. The air conditioners play an important role in preventing heatstroke and cooling, preventing cold and keeping warm, however, the air conditioners have relatively single and relatively few additional functions.

SUMMARY

[0004] Embodiments of the present disclosure provide an alarm method for an air conditioner and an air conditioner. In order to have a basic understanding of some aspects of disclosed embodiments, a brief summary is given below. The summary is not a general comment, nor is it intended to identify key/important constituent elements or to describe the scope of protection of these embodiments, but serves as a preamble to the following detailed description.

[0005] According to a first aspect of the embodiments of the present disclosure, there is provided an alarm method for an air conditioner, the method includes: the air conditioner includes an outdoor unit and a microprocessor, wherein a chassis of the outdoor unit is provided with a spirit level electrically connected to the microprocessor; and the air conditioner further includes an alarm, wherein the microprocessor receives a signal from the spirit level and activates the alarm to provide an alarm.

[0006] Optionally, after the microprocessor receives the signal from the spirit level, the method further includes: sending warning information to a network side, so that the network side can forward the warning information to a terminal device of a user.

[0007] Optionally, the method further includes: receiving, by the microprocessor, an instruction of a user and turning off the alarm.

[0008] According to a second aspect of the embodiments of the present disclosure, there is provided an air conditioner, the air conditioner includes an outdoor unit and a microprocessor, a chassis of the outdoor unit is

provided with a spirit level, and the spirit level is electrically connected to the microprocessor; and the air conditioner further includes an alarm electrically connected to the microprocessor, wherein the microprocessor is configured to control the alarm to send out alarm information when the spirit level is out of balance.

[0009] Optionally, the alarm is installed in the outdoor unit or in an indoor unit.

[0010] Optionally, the air conditioner further includes a communication module configured to transmit information with an exterior of the communication module.

[0011] Optionally, the microprocessor is further configured to send warning information to a network side through the communication module, so that the network side can forward the warning information to a terminal device of a user.

[0012] Optionally, the microprocessor is further configured to receive an instruction of a user through the communication module and control the alarm to stop the alarm.

[0013] Some technical solutions provided by the embodiments of the present disclosure may achieve the following technical effects:

the embodiments of the present disclosure disclose an alarm method for an air conditioner and an air conditioner, the air conditioner includes the outdoor unit and the microprocessor, wherein the chassis of the outdoor unit is provided with the spirit level, and the spirit level is electrically connected to the microprocessor; the air conditioner further includes the alarm electrically connected to the microprocessor, and the microprocessor is configured to control the alarm to send out alarm information when the spirit level is out of balance, by controlling the alarm to send out alarm information when the spirit level is out of balance, the user can be effectively reminded situations such as the occurrence of an earthquake or theft of the air conditioner.

[0014] It should be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not intended to limit the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The accompanying drawings, which are incorporated in and constitute a part of this description, illustrate embodiments consistent with the present disclosure and, together with the description, serve to explain the principles of the present disclosure.

Fig. 1 is a flowchart illustrating an alarm method for an air conditioner according to an exemplary embodiment.

Fig. 2 is a flowchart illustrating an alarm method for an air conditioner according to an exemplary embodiment.

Fig. 3 is a flowchart illustrating an alarm method for an air conditioner according to an exemplary embodiment.

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Fig. 4 is a schematic structural diagram illustrating an air conditioner according to an exemplary embodiment.

[0016] Description of reference signs: 1. air conditioner; 11. spirit level; 12. microprocessor; 13. alarm.

DETAILED DESCRIPTION

[0017] The following description and accompanying drawings fully illustrate the specific implementation solutions of the present disclosure so that a person skilled in the art can practice them. The embodiments merely represent possible changes. Unless otherwise specified explicitly, the individual component and function are optional and the operation sequence may be changed. Parts and characteristics of some implementation solutions may be included in or replace parts and characteristics of other implementation solutions. The scope of the implementation solutions of the present disclosure includes the whole scope of the claims and all available equivalents of the claims. As used herein, each implementation solution may be independently or generally expressed by "present disclosure", which is merely for convenience. As a matter of fact, if more than one disclosure is disclosed, it does not mean that the scope of the application is automatically limited to any single disclosure or disclosure concept. As used herein, terms such as "first" and "second" are merely for distinguishing one entity or operation from another entity or operation and do not require or imply any actual relationship or sequence among these entities or operations. Moreover, terms such as "comprise" and "include" or any other variants indicate a non-exclusive inclusion, so that a process, method or device including a series of elements not only include these elements, but also include other elements not explicitly listed. As used herein, each embodiment is described progressively, and contents focally described in each embodiment are different from those in other embodiments. The same or similar parts among each of the embodiments may be referred to each other. Regarding a structure, a product and the like disclosed in the embodiments, since they are corresponding to parts disclosed in the embodiments, their description is relatively simple and relevant contents can be referred to the description in the method part.

[0018] The embodiments of the present disclosure provide an alarm method for an air conditioner, as shown in Fig. 1, the method includes:

the air conditioner includes an outdoor unit and a microprocessor, wherein a chassis of the outdoor unit is provided with a spirit level electrically connected to the microprocessor; and the air conditioner further includes an alarm, wherein the microprocessor receives (step S101) a signal from the spirit level, and activates (step S102) the alarm to provide an alarm.

[0019] In some optional embodiments, other control

components can also be used instead of the microprocessor for receiving the signal from the spirit level.

[0020] In some optional embodiments, after the microprocessor receives the signal from the spirit level, the method further includes: the microprocessor sends (step S103) warning information to a network side, so that the network side can forward (step S104) the warning information to a terminal device of a user.

[0021] In some optional embodiments, the sequence in which the microprocessor activates (step S102) the alarm to provide the alarm and the microprocessor sends (step S103) the warning information to the network side is not limited, and both can occur simultaneously.

[0022] In some optional embodiments, other control components can also be used instead of the microprocessor for sending the warning information.

[0023] In some optional embodiments, as shown in Fig. 2, the method further includes: the microprocessor receives (step S105) an instruction of a user, and turns off (step S106) the alarm.

[0024] In some optional embodiments, other control components can also be used instead of the microprocessor for receiving the instruction of the user and turning off the alarm.

[0025] In some optional embodiments, an alarm mode of the alarm also includes beeping, ringing, or vibrating and ringing, and the like, so as to remind indoor and nearby personnel to make timely response measures to avoid or reduce losses.

[0026] In some optional embodiments, the instruction of the user can also be sent through the terminal device to facilitate user operation.

[0027] In some optional embodiments, the terminal device includes any smart device with a screen, such as a mobile phone, a video intercom device, and a refrigerator.

[0028] In some optional embodiments, the instruction of the user can also be implemented by setting buttons with corresponding functions on a remote control, and the instruction of the user can be implemented by pressing the buttons.

[0029] In some optional embodiments, the spirit level has multiple modes to be selected, and different modes are selected according to an environment in which the spirit level is located.

[0030] In some optional embodiments, the spirit level has a sensitive mode, a general mode and an extensive state mode. When an outside of the spirit level is a closed space, the spirit level can be set to the sensitive mode; and when the outside of the spirit level is an open space, the spirit level can be set to the extensive state mode to avoid or reduce false alarms.

[0031] In some optional embodiments, as shown in Fig. 3, the microprocessor is further configured to send (step S107) the warning information to the network side through the communication module.

[0032] In some optional embodiments, other control components can also be used instead of the microproc-

essor for sending the warning information to the network side through the communication module.

[0033] In some optional embodiments, the communication module includes a wireless communication module, wherein the wireless communication module includes a wireless transceiver module with transmitting and receiving functions.

[0034] In some optional embodiments, as shown in Fig. 3, the microprocessor is further configured to receive (step S108) an instruction of a user through the communication module, and control (step S109) the alarm to stop the alarm, so as to correct the false alarms.

[0035] In some optional embodiments, the sequence in which the microprocessor activates (step S102) the alarm to provide the alarm and the microprocessor sends (step S107) the warning information to the network side through the communication module is not limited, and both can occur simultaneously.

[0036] In some optional embodiments, the instruction of the user can be implemented by setting buttons with corresponding functions on a remote control, and the instruction of the user can be implemented by pressing the buttons.

[0037] The present disclosure also provides an air conditioner. Fig. 4 is a schematic structural diagram illustrating an air conditioner according to an exemplary embodiment. As shown in Fig. 4, the air conditioner 1 includes an outdoor unit and a microprocessor 12, a chassis of the outdoor unit is provided with a spirit level 11, and the spirit level 11 is electrically connected to the microprocessor 12; and the air conditioner 1 further includes an alarm 13 electrically connected to the microprocessor 12, wherein the microprocessor 12 is configured to control the alarm 13 to send out alarm information when the spirit level 11 is out of balance.

[0038] In some alternative embodiments, the alarm 13 can be installed in the outdoor unit or in an indoor unit, and a specific installation position can be selected by an installer according to a size of an installation space and an installation condition.

[0039] In some optional embodiments, the air conditioner 1 further includes a communication module configured to transmit information with an exterior of the communication module, that is, the communication module is used for information transmission.

[0040] In some alternative embodiments, the communication module includes a wireless communication module.

[0041] In some optional embodiments, the wireless communication module includes a wireless transmitting module and a wireless receiving module.

[0042] In some optional embodiments, the wireless communication module includes a wireless transceiver module with transmitting and receiving functions.

[0043] In some optional embodiments, the microprocessor 12 is further configured to send warning information through the communication module.

[0044] In some optional embodiments, the warning in-

formation includes installation location information of the air conditioner, or installation location information of the outdoor unit including information such as an administrative area, a specific cell name and a building number.

[0045] In some optional embodiments, considering a power supply problem, the air conditioner further includes a standby power supply capable of independently supplying power to the microprocessor. For example, a battery base can be added to the indoor unit of the air conditioner, and a button cell can be added as a standby power supply to independently supply power to the microprocessor and/or the spirit level of the air conditioner. Therefore, even if the power supply trips unexpectedly, the microprocessor and/or the spirit level can still operate and send the warning information without affecting the alarm and information prompts.

[0046] It should be understood that, the present disclosure is not limited to the flowchart and structures described above and shown in the accompanying drawings, and various modifications and changes may be made without departing from the scope. The scope of the present disclosure is limited only by the appended claims.

Claims

1. An air conditioner, comprising an outdoor unit and a microprocessor, **characterized in that** a chassis of the outdoor unit is provided with a spirit level, and the spirit level is electrically connected to the microprocessor; and the air conditioner further comprising an alarm electrically connected to the microprocessor, wherein the microprocessor is configured to control the alarm to send out alarm information when the spirit level is out of balance.
2. The air conditioner according to claim 1, wherein the alarm is installed in the outdoor unit or in an indoor unit.
3. The air conditioner according to claim 1, further comprising a communication module configured to transmit information with an exterior of the communication module.
4. The air conditioner according to claim 1, wherein the microprocessor is further configured to send warning information to a network side through the communication module, so that the network side can forward the warning information to a terminal device of a user.
5. The air conditioner according to claim 1, wherein the microprocessor is further configured to receive an instruction of a user through the communication module and control the alarm to stop the alarm.
6. An alarm method for an air conditioner, wherein the air conditioner comprises an outdoor unit and a mi-

croprocessor, a spirit level is provided at a chassis of the outdoor unit, and the spirit level is electrically connected to the microprocessor, and the air conditioner further comprises an alarm, **characterized in that** the alarm method comprises:

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receiving, by the microprocessor, a signal from the spirit level and activating the alarm to provide an alarm.

7. The alarm method according to claim 6, **characterized in that** after receiving, by the microprocessor, the signal from the spirit level, further comprising: sending warning information to a network side, so that the network side can forward the warning information to a terminal device of a user. 10 15
8. The alarm method according to claim 6, **characterized in that** further comprising: receiving, by the microprocessor, an instruction of a user and turning off the alarm. 20

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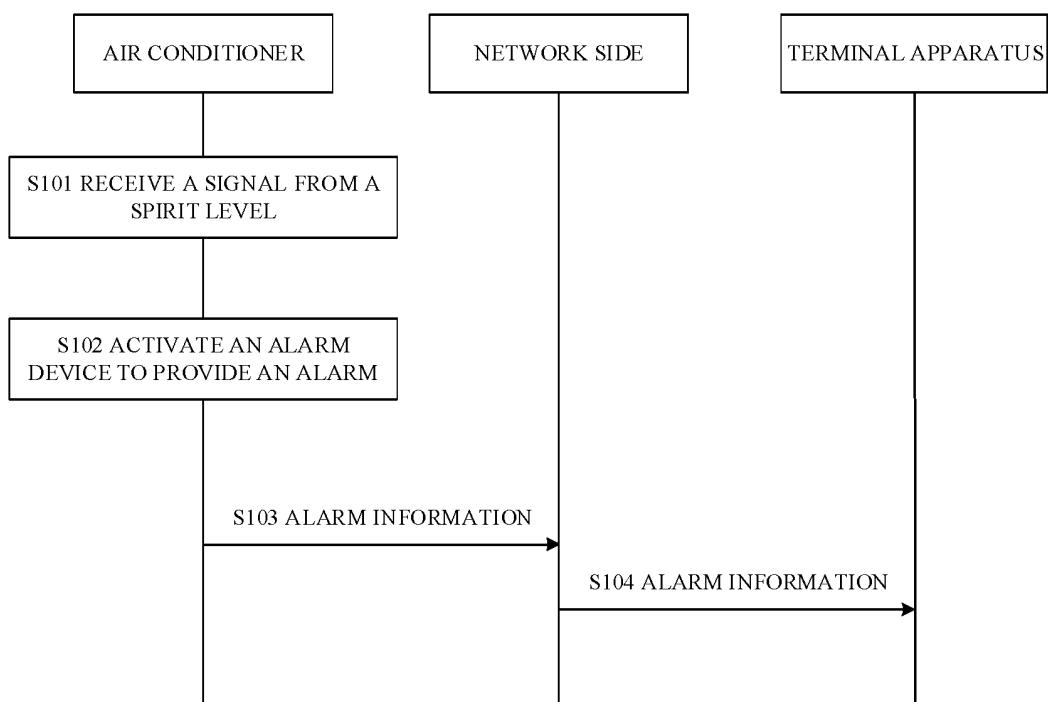


Fig. 1

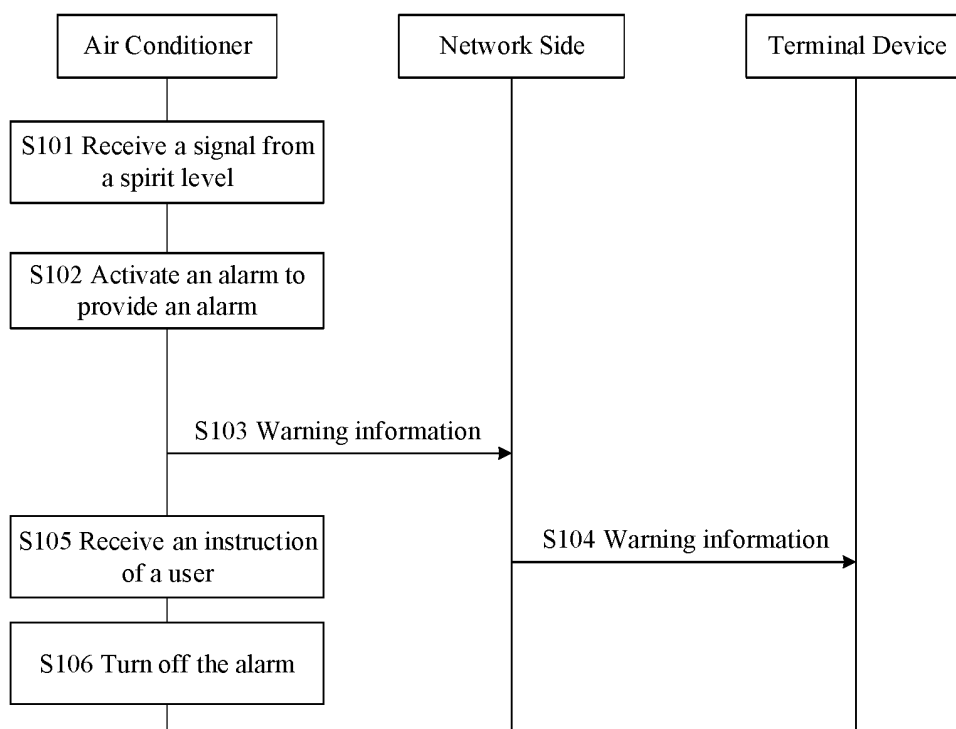


Fig. 2

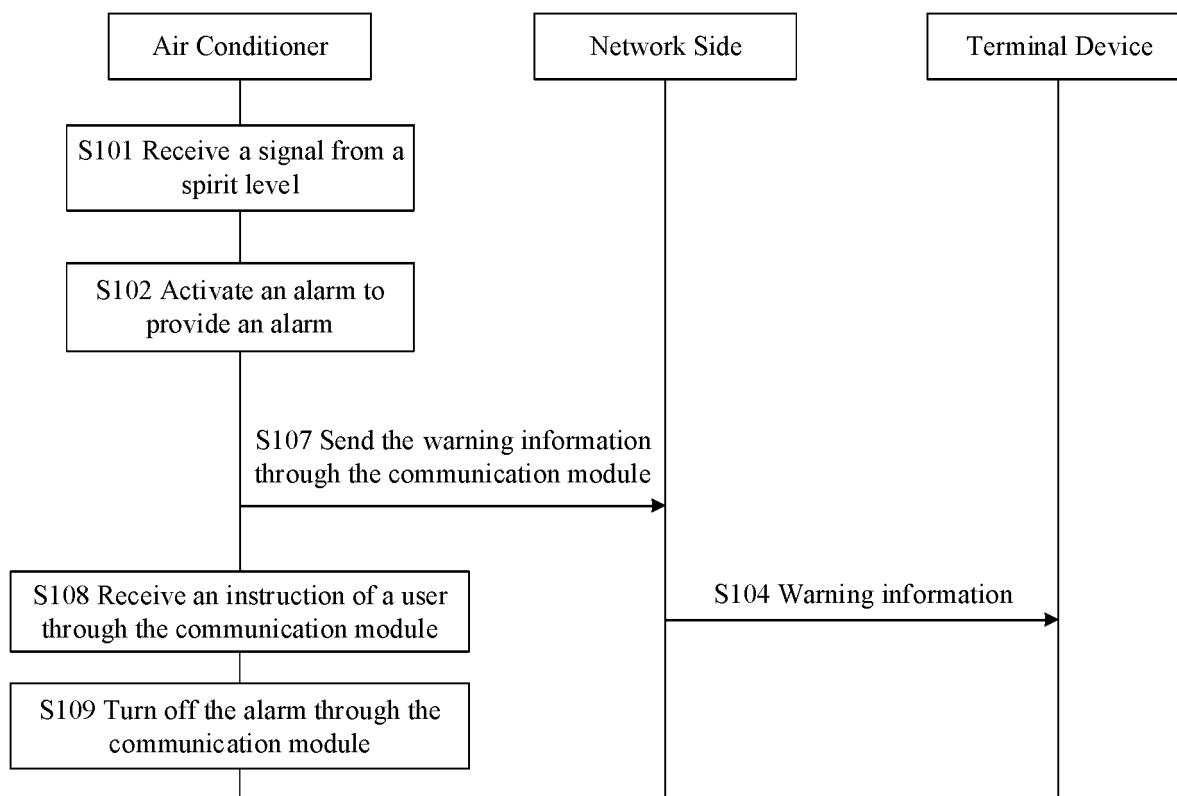


Fig. 3

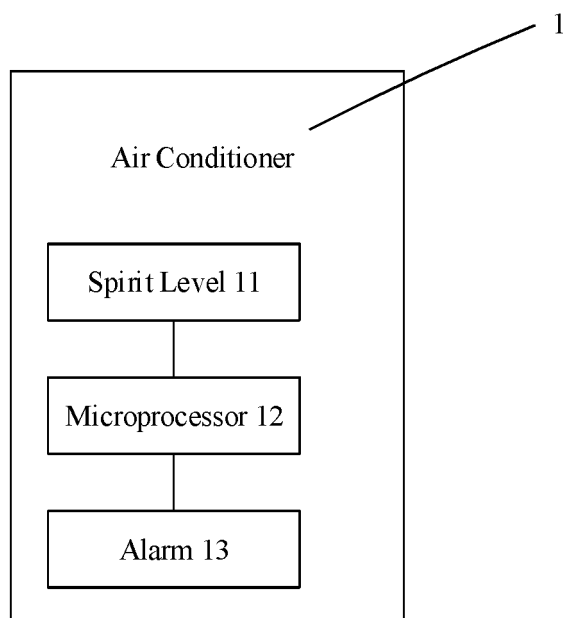


Fig. 4

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2018/114699

5	A. CLASSIFICATION OF SUBJECT MATTER		
	F24F 11/32(2018.01)i		
	According to International Patent Classification (IPC) or to both national classification and IPC		
	B. FIELDS SEARCHED		
10	Minimum documentation searched (classification system followed by classification symbols)		
	F24F11		
	Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
15	Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
	CNABS; VEN; CNTXT; CNKI; USTXT: 水平仪, 平衡仪, 报警, 警报, 检测, 处理器, 通信, 用户, level, alarm+, detect+, user		
	C. DOCUMENTS CONSIDERED TO BE RELEVANT		
20	Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
	PX	CN 108386954 A (QINGDAO HAIER AIR CONDITIONER CO., LTD.) 10 August 2018 (2018-08-10) claims 1-8	1-8
25	X	CN 204853848 U (LEI, ZHI ET AL.) 09 December 2015 (2015-12-09) description, paragraphs 0020-0028, and figures 1-3	1-8
	A	CN 204176748 U (NINGBO AUX AIR-CONDITION CO., LTD.) 25 February 2015 (2015-02-25) entire document	1-8
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40	☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.		
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	"P" document published prior to the international filing date but later than the priority date claimed		
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Patent document cited in search report			Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN	108386954	A	10 August 2018	None	
CN	204853848	U	09 December 2015	None	
CN	204176748	U	25 February 2015	None	

Form PCT/ISA/210 (patent family annex) (January 2015)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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