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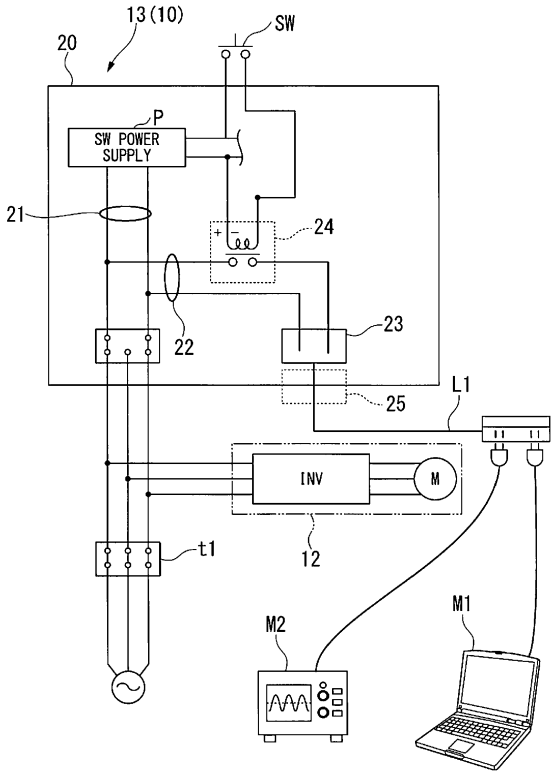
(54) OUTDOOR UNIT AND AIR CONDITIONER

(57) An outdoor unit (10) includes an outdoor device disposed outdoor among devices constituting a refrigeration cycle; a control device (13) which has a control board (20) having a main power supply line (21) of single-phase alternating current and having at least a volatile memory, and is configured to control an operation of the outdoor device; and a casing configured to accommodate the outdoor device and the control device (13). The control board (20) includes a power supply connector (23) branched and connected to the main power supply line (21) via an auxiliary power supply line (22), and a relay (24) provided in the auxiliary power supply line (22) and capable of electrically connecting and disconnecting between the main power supply line (21) and the power supply connector (23).

FIG. 2



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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to an outdoor unit and an air conditioner.

Description of Related Art

[0002] In an air conditioner provided with an indoor unit and an outdoor unit, a power supply may be required near the outdoor unit when operations such as installation and maintenance are performed. In such cases, power would generally be supplied from a distance, using a cord reel or the like. However, since there is a need to carry the cord reel, this increases the burden on the operator.

[0003] Patent Document 1 discloses a technique of providing a power receptacle for an outdoor unit in an air conditioner provided with an indoor unit and an outdoor unit. In the outdoor unit of Patent Document 1, a vacuum pump for performing removal of impurities such as air contained in the refrigerant by a vacuum drawing method is connected to the power receptacle. In Patent Document 1, a supply destination of the power supply is switched from a control device on the outdoor side to the power receptacle by a switching operation of the indoor unit.

[Patent Documents]

[0004] [Patent Document 1] Japanese Unexamined Patent Application, First Publication No. 2000-146270

[0005] In the air conditioner disclosed in Patent Document 1, the power is not supplied to the control device on the outdoor side when the vacuum pump is operated. For this reason, in a case in which error information or the like is stored in a volatile memory of the control device, when the power supply is not supplied to the control device, there is a problem that stored information such as error information disappears.

[0006] Further, for example, in the outdoor unit disclosed in Patent Document 1, when a device such as a vacuum pump is connected to the outdoor unit while maintaining the power supply to the control device, a surge due to arc discharge or the like occurs, and there is a possibility of an occurrence of a problem that the volatile memory is reset by the surge.

[0007] Furthermore, in Patent Document 1, a power receptacle is provided inside the outdoor unit. However, there is a case in which it is difficult to secure a space in which the power receptacle is installed in the outdoor unit.

[0008] The present invention provides an outdoor unit and an air conditioner capable of stably supplying power by connecting an external device without stopping the power supply to the control device.

SUMMARY OF THE INVENTION

[0009] According to a first aspect of the present invention, an outdoor unit includes: an outdoor device disposed outdoor among devices constituting a refrigeration cycle; a control device which has a control board having a main power supply line of single-phase alternating current and is configured to control an operation of the outdoor device; and a casing configured to accommodate the outdoor device and the control device. The control board includes a power supply connector branched and connected to the main power supply line via an auxiliary power supply line, and a relay provided in the auxiliary power supply line and capable of electrically connecting and disconnecting the main power supply line and the power supply connector.

[0010] According to the first aspect of the present invention, the relay capable of performing the electrical connection and disconnection between the main power supply line and the power supply connector is included. With this relay, when connecting the external devices to the power supply connector, the power supply connector and the main power supply line can be electrically disconnected without stopping the power supply to other devices such as memory on the control board. Therefore, there is no need to stop the power supply to other devices on the control board such as a volatile memory. Therefore, it is possible to limit occurrences of defects such as disappearance of stored information such as error information stored in the volatile memory.

[0011] Furthermore, since the power supply connector and the main power supply line are electrically disconnected, it is possible to limit occurrences of failure in which a surge or the like occurs and the volatile memory is reset when connecting the external devices to the power supply connector.

[0012] Also, in the first aspect, since the power supply connector is provided on the control board, power can be supplied from the power supply connector of the control board to the external devices, even when there is no space for providing the power receptacle or the like in the casing.

[0013] Therefore, it is possible to stably supply the power by connecting the external devices without stopping the power supply to the control device.

[0014] According to a second aspect of the present invention, the power supply connector according to the first aspect may be formed to be able to insert and remove an external connector provided at an end portion of a power supply line outside the casing.

[0015] With such a configuration, it is possible to easily connect the external connector to the power supply connector and to limit erroneous connection of the external power supply line.

[0016] According to a third aspect of the present invention, the power supply connector according to the second aspect may have the same color display as that of the external connector.

[0017] With this configuration, an operator who sees the color display of the external connector can easily find the position of the power supply connector at which the external connector can be inserted and removed.

[0018] According to a fourth aspect of the present invention, the outdoor unit according to any one of the first to third aspects may further include a manipulation switch disposed around the power supply connector and capable of turning on and off a contact of the relay.

[0019] With this configuration, when the external connector is connected to the power supply connector, the manipulation switch disposed around the power supply connector may be operated. Therefore, as compared with a case in which the manipulation switch is disposed at a place separated from the power supply connector, it is possible to easily turn on and off the contact of the relay, and it is possible to limit an operator from forgetting the operation of the manipulation switch.

[0020] According to a fifth aspect of the present invention, the outdoor unit according to the fourth aspect may further include a cover mechanism which is set to an non-openable restricted state in which it is not be able to open due to covering the power supply connector when the manipulation switch is turned off in cooperation with the operation of the manipulation switch, and is set to an release state in which it can come into contact with the power supply connector when the manipulation switch is turned on.

[0021] With this configuration, when the contact of the relay is turned on, it is possible to prevent erroneously connecting of the external connector to the power supply connector.

[0022] According to a sixth aspect of the present invention, the casing according to any one of the first to fifth aspects may include an openable and closable side wall panel. Further, the control board may be disposed to face the side wall panel when the side wall panel is at a closed position. The power supply connector may be disposed on a surface of the control board facing the side wall panel.

[0023] With such a configuration, by merely detaching the side wall panel, it is possible to access the power supply connector of the control board. Therefore, it is possible to start the power supply from the outdoor unit to the external devices in a short time.

[0024] According to a seventh aspect of the present invention, an air conditioner includes the outdoor unit according to any one of the first to sixth aspects.

[0025] By configuring in this way, it is possible to easily perform operations such as maintenance of the outdoor unit. Therefore, the merchantability can be improved.

[0026] According to the outdoor unit, it is possible to stably supply the power by connecting an external device without stopping the power supply to the control device.

BRIEF DESCRIPTION OF THE DRAWINGS

[0027]

FIG. 1 is a configuration diagram showing a schematic configuration of an air conditioner in a first embodiment of the present invention.

FIG. 2 is a circuit diagram showing a schematic configuration of an outdoor unit in the first embodiment of the present invention.

FIG. 3 is an enlarged view of the periphery of a power supply connector in a second embodiment of the present invention.

FIG. 4 is a schematic configuration diagram of a control board in which a power supply connector is in a non-energized state in a third embodiment of the present invention.

FIG. 5 is a schematic configuration diagram of the control board in which the power supply connector is in an energized state in the third embodiment.

DETAILED DESCRIPTION OF THE INVENTION

[0028] Next, an outdoor unit and an air conditioner in an embodiment of the present invention will be described with reference to the drawings.

(First embodiment)

[0029] FIG. 1 is a configuration diagram showing a schematic configuration of an air conditioner according to a first embodiment of the present invention. As shown in FIG. 1, the air conditioner 100 is provided with an outdoor unit 10 and an indoor unit (not shown). The air conditioner 100 of the first embodiment is a so-called air conditioner for buildings. The air conditioner 100 is capable of performing a cooling operation and a heating operation by causing a refrigerant to circulate between the outdoor unit 10 and an indoor unit (not shown).

[0030] The outdoor unit 10 is installed outdoors (in other words, outdoor) such as a roof of a building and is connected to an indoor unit (not shown) via a refrigerant piping or the like. The outdoor unit 10 includes a casing 11, an outdoor device 12, and a control device 13.

[0031] The casing 11 accommodates the outdoor device 12 and the control device 13. The casing 11 provided as an exemplary example in this embodiment is formed in a box shape having a rectangular parallelepiped outer shape. The casing 11 is provided with a heat interchange chamber 14 at the top and provided with a machine chamber 15 at the bottom. The heat interchange chamber 14 accommodates the outdoor device 12 therein, and the machine chamber 15 accommodates the control device 13 therein.

[0032] The heat interchange chamber 14 is provided with a side wall opening 17 in the side wall 16. The heat interchange chamber 14 is provided with a plurality of fan openings 18a for a fan F in a ceiling portion 18. In the heat interchange chamber 14, outside air can flow between the side wall opening 17 and the fan opening 18a.

[0033] The machine chamber 15 has a plurality of side

wall panels 19. The side wall panels 19 are each formed in a rectangular plate shape, and are attachable to and detachable from a frame (not shown) of the machine chamber 15 using fasteners such as screws.

[0034] FIG. 2 is a circuit diagram showing a schematic configuration of the outdoor unit in the first embodiment of the present invention.

[0035] As shown in FIGS. 1 and 2, the outdoor device 12 is a unit disposed outdoors, among the units constituting the refrigeration cycle of the air conditioner 100. A heat interchanger (not shown), a compressor (not shown), a fan F, and the like are adopted as the outdoor device 12. The outdoor devices 12 are accommodated in the heat interchange chamber 14. The heat interchanger (not shown) functions as a condenser at the time of the cooling operation, and functions as an evaporator at the time of the heating operation.

[0036] A compressor (not shown) is driven by a motor M. The rotational speed of the motor M for driving the compressor is controlled by an inverter INV. Three-phase alternating current (for example, alternating current 200 V) is supplied to the inverter INV. This three-phase alternating current is supplied to the outdoor unit 10 as a power source from the outside. Further, the three-phase alternating current supplied to the outdoor unit 10 may be supplied from the indoor unit.

[0037] The control device 13 mainly controls the operation of the outdoor device 12. The control device 13 includes a control board 20 on which a switching (SW) power supply P, a processing device (not shown) such as a central processing unit (CPU), a volatile memory, a nonvolatile memory and the like are mounted.

[0038] The control board 20 is a so-called rigid board, and further has a main power supply line 21 of a single-phase alternating current, an auxiliary power supply line 22, a power supply connector 23, and a relay 24. The main power supply line 21 extracts single-phase alternating current from the three-phase alternating current supplied to the outdoor unit 10. The main power supply line 21 supplies the single-phase alternating current (for example, alternating current 200 V) to a primary side terminal of a switching power supply P such as an AC/DC converter provided inside the control board 20. The direct current power supply (for example, DC 5 V) converted by the switching power supply P is supplied as a power supply for the processing device and various memories mounted on the aforementioned control board 20.

[0039] When a defect occurs in the operation or the like of the outdoor device 12, the control device 13 accumulates error information on the occurred defect in a volatile memory on the control board 20. The information accumulated in the volatile memory can be loaded into a personal computer (PC) via a communication interface (not shown) mounted in the control device 13. For example, a module for wireless communication such as a wireless local area network (LAN) is mounted in the control device 13 so that error information accumulated in the volatile memory of the control device 13 may be extracted via the wireless communication.

[0040] The auxiliary power supply line 22 branches off from the main power supply line 21 and supplies three-phase alternating current to the power supply connector 23. The auxiliary power supply line 22 can be formed as a printed wiring on a board made of, for example, an insulator.

[0041] The power supply connector 23 is a connector that can supply power to external devices M1 and M2 such as a personal computer (PC) and an oscilloscope carried in to perform an operation such as maintenance. The power supply connector 23 is branched and connected to the main power supply line 21 via the auxiliary power supply line 22. The power supply connector 23 in this embodiment is a dedicated connector different from a household receptacle. The power supply connector 23 provided as an exemplary example in this embodiment can further be connected to an external connector 25 provided at an end portion of an electric wire (power supply line) L1 of a power tap or a power cord. This embodiment shows a case in which the power supply connector 23 is a so-called female connector, and the external connector is a male connector. However, the power supply connector 23 may be a male connector and the external connector may be a female connector.

[0042] The control board 20 is disposed to face one predetermined side wall panel 19A of the plurality of side wall panels 19 in a state in which the machine chamber 15 is closed by the plurality of side wall panels 19. The power supply connector 23 is disposed on a mounting surface of the control board 20 facing the predetermined side wall panel 19A. That is, by detaching the predetermined side wall panel 19A, it is possible to easily access to the power supply connector 23 on the control board 20 from the opening of the machine chamber 15 formed by detaching the side wall panel 19A. Further, the side wall panel 19A may be swingably supported by the frame via a hinge.

[0043] Here, the aforementioned power supply connector 23 and the external connector 25 are each provided with the same color display (for example, red). In other words, the operator can find the power supply connector 23 connectable with the external connector 25 by looking at the color display of the external connector 25 and searching for the same color indication on the control board 20.

[0044] The external connector 25 can be inserted to and removed from the power supply connector 23 in this embodiment along the mounting surface of the control board 20. Therefore, a direction in which the electric wire L1 is pulled can be set to be different from a direction in which the external connector 25 is inserted and removed. Therefore, even if the electric wire L1 provided with the external connector 25 is pulled, the external connector 25 can be made difficult to be removed from the power supply connector 23.

[0045] The relay 24 is provided in the auxiliary power supply line 22. More specifically, the relay 24 is provided

in the middle of the auxiliary power supply line 22. The relay 24 enables electrical connection and disconnection between the main power supply line 21 and the power supply connector 23. The relay 24 in this embodiment is a so-called mechanical relay, and it is possible to switch the contacts to an on-state and an off-state, using the DC output on the secondary side of the above-described switching power supply. The relay 24 of this embodiment is connected to the manipulation switch SW.

[0046] The manipulation switch SW is able to select a first position at which a voltage is applied to a coil (not shown) of the relay 24 and a second position at which no voltage is applied to the coil through the operation of an operator, and is also able to hold the selected state. Although the mechanical relay is used as the relay 24 of the above-described embodiment, a non-contact relay using a semiconductor or the like may be used. In addition, as an example of the contact of the relay 24, a case of contact 'a' in which the contact is closed by the voltage application has been described. However, the contact of the relay 24 is not limited to the contact 'a'.

[0047] By switching the above-mentioned manipulation switch SW from the first position (application) to the second position (non-application), the contact of the relay 24 can be brought into an open state from a closed state. Therefore, the power supply connector 23 can be brought into a non-energized state. On the other hand, by operating the manipulation switch from the second position to the first position, it is possible to bring the contact of the relay 24 from the open state to the closed state. Therefore, the power supply connector 23 can be brought into an energized state. In addition, in FIG. 2, reference symbol "t1" is a terminal block.

[0048] According to the aforementioned first embodiment, the relay 24 capable of performing the electrical connection and disconnection between the main power supply line 21 and the power supply connector 23 is included. With this relay 24, when connecting the external devices M1 and M2 to the power supply connector 23, the power supply connector 23 and the main power supply line 21 can be electrically disconnected, without stopping the power supply to other devices such as memory on the control board 20. Therefore, there is no need to stop the power supply to other devices on the control board 20 such as a volatile memory. Therefore, it is possible to limit occurrences of defect such as disappearance of stored information such as error information stored in the volatile memory.

[0049] Furthermore, since the power supply connector 23 and the main power supply line 21 are electrically disconnected, when connecting the external devices M1 and M2 to the power supply connector 23, it is possible to limit occurrences of failure in which a surge or the like occurs and the volatile memory is reset.

[0050] Further, in the first embodiment, the external connector 25 can be inserted into and removed from the power supply connector 23. In addition, the power supply connector 23 has a shape different from that of a household receptacle. Therefore, it is possible to easily connect the external connector to the power supply connector, and to limit erroneous connection of the external power supply line.

[0051] Furthermore, in the first embodiment, the power supply connector 23 has the same color display as the external connector 25. Therefore, an operator who sees the color display of the external connector 25 can easily find the position of the power supply connector 23 at which the external connector 25 can be inserted and removed.

[0052] Further, in the first embodiment, the contact of the relay 24 can be opened and closed by the manipulation switch. Therefore, it is possible to easily perform turning-on and turning-off of the contact of the relay 24.

[0053] Furthermore, in the first embodiment, the control board 20 is disposed to face the predetermined side wall panel 19 when the predetermined side wall panel 19 is at the closed position. The power supply connector 23 is disposed on the mounting surface of the control board 20 facing the predetermined side wall panel 19. Therefore, by merely detaching the predetermined side wall panel 19, it is possible to access the power supply connector 23 of the control board 20. Therefore, it is possible to start the power supply from the outdoor unit 10 to the external devices M1 and M2 in a short time.

[0054] In addition, in the first embodiment, by providing the outdoor unit, it is possible to easily perform operations such as maintenance of the outdoor unit 10. Therefore, the merchantability of the air conditioner 100 can be improved.

(Second embodiment)

[0055] Next, a second embodiment of the present invention will be described on the basis of the drawings. The outdoor unit of the second embodiment is different from the outdoor unit of the first embodiment only in the arrangement of manipulation switches. Therefore, the same parts as those of the above-described first embodiment are denoted by the same reference numerals, and redundant explanation will be omitted.

[0056] FIG. 3 is an enlarged view of the periphery of the power supply connector in the second embodiment of the present invention.

[0057] As shown in FIG. 3, like the control board 20 of the first embodiment described above, the outdoor unit 210 of the second embodiment is provided with a control board 220, on which a switching power supply P, a processing device (not shown) such as a CPU, a volatile memory, a nonvolatile memory and the like are mounted, in the machine chamber 15 of the casing 11.

[0058] The control board 220 further includes a main power supply line 21 (not shown in FIG. 3), an auxiliary power supply line 22, a power supply connector 23, a relay 24, and a manipulation switch SW2. Like the control board 20 of the first embodiment, the control board 220 is disposed to face the side wall panel 19A in the closed

state. The power supply connector 23 is disposed on the mounting surface of the control board 220 facing the predetermined side wall panel 19A.

[0059] Like the manipulation switch SW of the first embodiment, the manipulation switch SW2 is able to select a first position at which a voltage is applied to a coil (not shown) of the relay 24 and a second position at which no voltage is applied to the coil, by the operation of the operator, and is able to hold the selected state. The manipulation switch SW2 is disposed around the power supply connector 23. More specifically, the manipulation switch SW2 is disposed on the mounting surface of the control board 220 near the power supply connector 23. Although the case in which the manipulation switch SW2 is a slide switch is an exemplary example, the manipulation switch SW2 is not limited to the slide switch.

[0060] By operating the above-described manipulation switch SW2 from the first position (application: ON) to the second position (non-application: OFF), the contact of the relay 24 can be brought into the opened state (ON) from the closed state (OFF). On the other hand, by operating the manipulation switch SW2 from the second position to the first position, it is possible to bring the contact of the relay 24 from the open state (ON) into the closed state (OFF).

[0061] Therefore, according to the above-described second embodiment, when the external connector 25 is connected to the power supply connector 23, the manipulation switch SW2 disposed around the power supply connector 23 may be operated. Therefore, it is possible to easily turn on and off the contact of the relay 24, as compared with the case in which the manipulation switch is disposed at a place separated from the power supply connector 23. Furthermore, since the manipulation switch SW2 is disposed around the relay 24, it is possible to limit an operator from forgetting the operation of the manipulation switch SW2.

(Third embodiment)

[0062] Next, a third embodiment of the present invention will be described on the basis of the drawings. An outdoor unit of the third embodiment differs from the outdoor unit of the above-described first embodiment only in the configuration in the vicinity of the power supply connector. Therefore, the same parts as those of the above-described first embodiment are denoted by the same reference numerals, and redundant explanation will be omitted.

[0063] FIG. 4 is a schematic configuration diagram of a control board in a non-energized state of a power supply connector according to a third embodiment of the present invention. FIG. 5 is a schematic configuration diagram of the control board in the energized state of the power supply connector according to the third embodiment.

[0064] As shown in FIGS. 4 and 5, like the control board 20 of the first embodiment, a control board 320 of an outdoor unit 310 according to the third embodiment is provided with a control board 320 in the machine chamber 15 of the casing 11. A switching power supply P, a processing device (not shown) such as a CPU, a volatile memory, a nonvolatile memory and the like are mounted on the control board 320.

[0065] The control board 320 further includes a main power supply line 21, an auxiliary power supply line 22, a power supply connector 23, a relay 24, and a manipulation switch SW. Like the control board 20 of the first embodiment, the control board 320 is disposed to face the side wall panel 19A of the closed state. The power supply connector 23 is disposed on the mounting surface of the control board 320 facing the predetermined side wall panel 19A.

[0066] The control board 320 further includes a cover mechanism 30. The cover mechanism 30 interlocks with the operation of the manipulation switch SW. The cover mechanism 30 is in a restricted state in which an access to the power supply connector 23 is restricted when the manipulation switch SW is turned off. More specifically, the cover mechanism 30 covers the power supply connector 23 to make it in a non-openable state, when the manipulation switch SW is turned off. On the other hand, the cover mechanism 30 is in a state in which it can access the power supply connector 23, when the manipulation switch SW is turned on. That is, the cover mechanism 30 is in an openable state.

[0067] The cover mechanism 30 provided as an exemplary example in the third embodiment includes a lock portion 31, a support portion 32, and a cover portion 33. The lock portion 31 and the support portion 32 are disposed to face each other with the power supply connector 23 sandwiched therebetween.

[0068] The cover portion 33 is swingably supported at the upper end portion of the support portion 32 via a hinge. The cover portion 33 can be swung from a closed position (see FIG. 5) for restricting access to the power supply connector 23 to an open position (see FIG. 4) accessible to the power supply connector 23. The cover portion 33 is formed in a flat plate shape and is disposed to extend between the upper end portion of the support portion 32 and the upper end portion of the lock portion 31 when it is at the closed position. The cover portion 33 is urged toward the closed position using a coil spring (not shown) or the like. In the third embodiment, a case in which the cover portion 33 swings in a direction approaching the power supply connector 23 from the closed position to reach the open position is shown as an example.

[0069] The lock portion 31 locks the cover portion 33 not to be displaced from the closed position when the manipulation switch SW is turned on. The lock portion 31 in this embodiment locks and unlocks the swinging of the cover portion 33 on the basis of a signal indicating the state of the manipulation switch SW. The lock portion 31 is not limited to a configuration in which the swinging of the cover portion 33 is locked and unlocked on the basis of the signal indicating the state of the manipulation

switch SW. The swinging may be unlocked when the power supply connector 23 is energized. For example, in a case in which the line voltage of the two auxiliary power supply lines 22 between the relay 24 and the power supply connector 23 is detected and the line voltage is equal to or less than a preset threshold value, the swinging of the cover portion 33 may be unlocked.

[0070] Therefore, according to the third embodiment, when the contact of the relay 24 is turned on, since the cover portion 33 is locked at the closed position, it is possible to prevent erroneously connecting the external connector 25 to the power supply connector 23 in a state in which the power supply connector 23 is energized due to forgetting to turn off the contact of the relay 24 by the manipulation switch SW.

[0071] The present invention is not limited to the configurations of the above-described embodiments, and the design change can be made without departing from the gist thereof.

[0072] For example, in each of the above-described embodiments, the case in which the relay 24 is provided in one of the two wirings of the auxiliary power supply line 22 and only one wiring is connected and disconnected has been described. However, the relay 24 may be provided in each of the two wirings of the auxiliary power supply line 22, and the two wirings of the auxiliary power supply line 22 may be simultaneously connected and disconnected by the relay 24.

[0073] Further, in each of the above-described embodiments, a case in which a single-phase alternating current is extracted from three-phase alternating current and the power is supplied to the control boards 20, 220 and 320 or the power supply connector 23 has been described. However, anther supply method in which the single-phase alternating current supplied to the control boards 20, 220 and 320 by the main power supply line 21, and the single-phase alternating current supplied to the power supply connector 23 by the auxiliary power supply line 22 are converted, for example, from three-phase alternating current using a Scott transformer may be adopted.

[0074] Furthermore, in the third embodiment, although the case in which the manipulation switch SW is disposed at a position separated from the power supply connector 23 has been shown, the manipulation switch SW2 of the second embodiment may be used in combination with the third embodiment. In the case of such a configuration, the manipulation switch SW2 of the second embodiment may be formed integrally with the lock portion 31 and the support portion 32 of the cover mechanism 30 of the third embodiment.

[0075] According to the aforementioned outdoor unit, it is possible to stably supply power by connecting an external device, without stopping the power supply to the control device.

[0076] While preferred embodiments of the invention have been described and shown above, it should be understood that these are exemplary examples of the invention and are not to be considered as limiting. Additions, omissions, substitutions, and other modifications can be made without departing from the spirit or scope of the present invention. Accordingly, the invention is not to be considered as being limited by the foregoing description, and is only limited by the scope of the appended claims.

EXPLANATION OF REFERENCES

[0077]

10 Outdoor unit
11 Casing
12 Outdoor device
13 Control device
14 Heat interchange chamber
15 Machine chamber
16 Side wall
17 Side wall opening
18 Ceiling portion
19 Side wall panel
20, 220, 320 Control board
21 Main power supply line
22 Auxiliary power supply line
23 Power supply connector
24 Relay
25 External connector
30 Cover mechanism
31 Lock portion
32 Support portion
33 Cover portion
100 Air conditioner
F Fan
SW, SW2 Manipulation switch
M1, M2 External device

Claims

1. An outdoor unit (10) comprising:

an outdoor device (12) disposed outdoor among devices constituting a refrigeration cycle;
a control device (13) which has a control board (20) having a main power supply line (21) of single-phase alternating current and having at least a volatile memory, and is configured to control an operation of the outdoor device (12); and
a casing (11) configured to accommodate the outdoor device (12) and the control device (13),
wherein the control board (20) includes:

a power supply connector (23) branched and connected to the main power supply line (21) via an auxiliary power supply line (22), and
a relay (24) provided in the auxiliary power supply line (22) and capable of electrically

connecting and disconnecting between the main power supply line (21) and the power supply connector (23).

2. The outdoor unit (10) according to claim 1, wherein the power supply connector (23) is formed to be capable of inserting and removing an external connector (25) provided at an end portion of a power supply line outside the casing (11).

3. The outdoor unit (10) according to claim 2, wherein the power supply connector (23) is displayed in the same color as that of the external connector (25).

4. The outdoor unit (10) according to any one of claims 1 to 3, further comprising:
a manipulation switch (SW, SW2) disposed around the power supply connector (23) and capable of turning on and off a contact of the relay (24).

5. The outdoor unit (10) according to claim 4, further comprising:
a cover mechanism (30) which covers the power supply connector (23) to set a non-openable restricted state when the manipulation switch (SW, SW2) is turned off in cooperation with the operation of the manipulation switch (SW, SW2), and is configured to set a release state capable of coming into contact with the power supply connector (23), when the manipulation switch (SW, SW2) is turned on.

6. The outdoor unit (10) according to any one of claims 1 to 5, wherein the casing (11) includes an openable and closable side wall panel (19),

the control board (20) is disposed to face the side wall panel (19) when the side wall panel (19) is at a closed position, and
the power supply connector (23) is disposed on a surface of the control board (20) facing the side wall panel (19).

7. An air conditioner (100) equipped with the outdoor unit (10) according to any one of claims 1 to 6.

FIG. 1

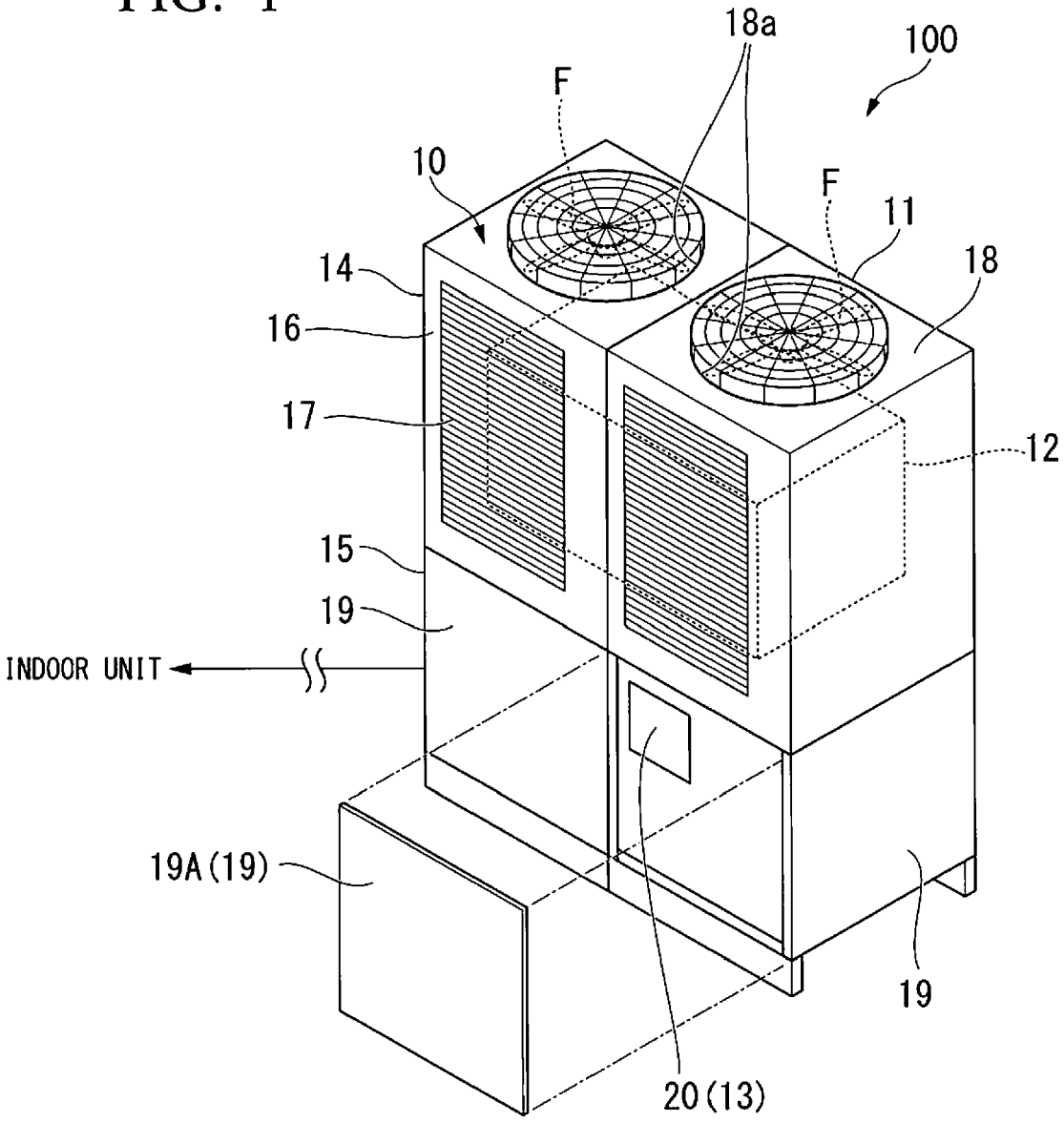


FIG. 2

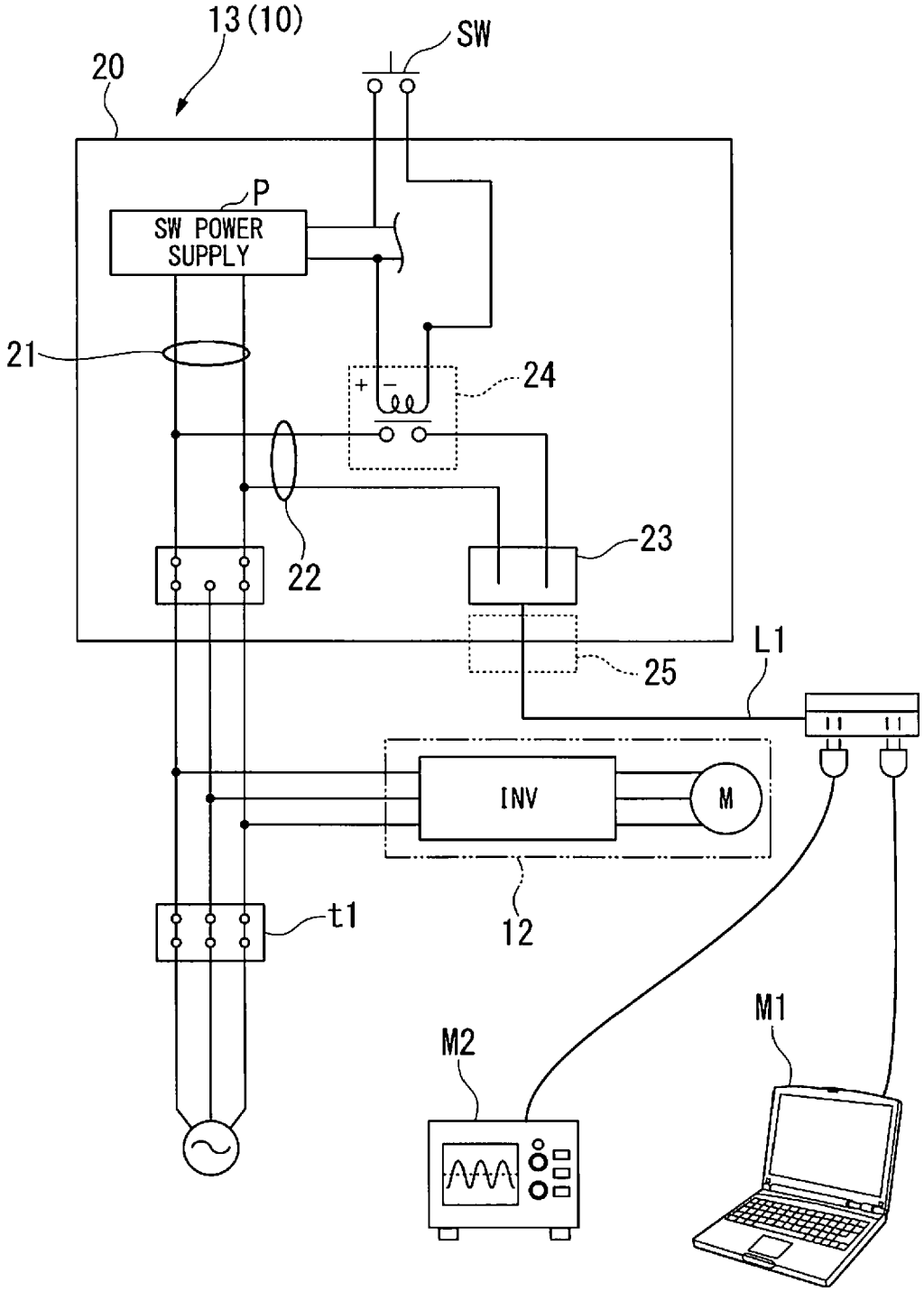


FIG. 3

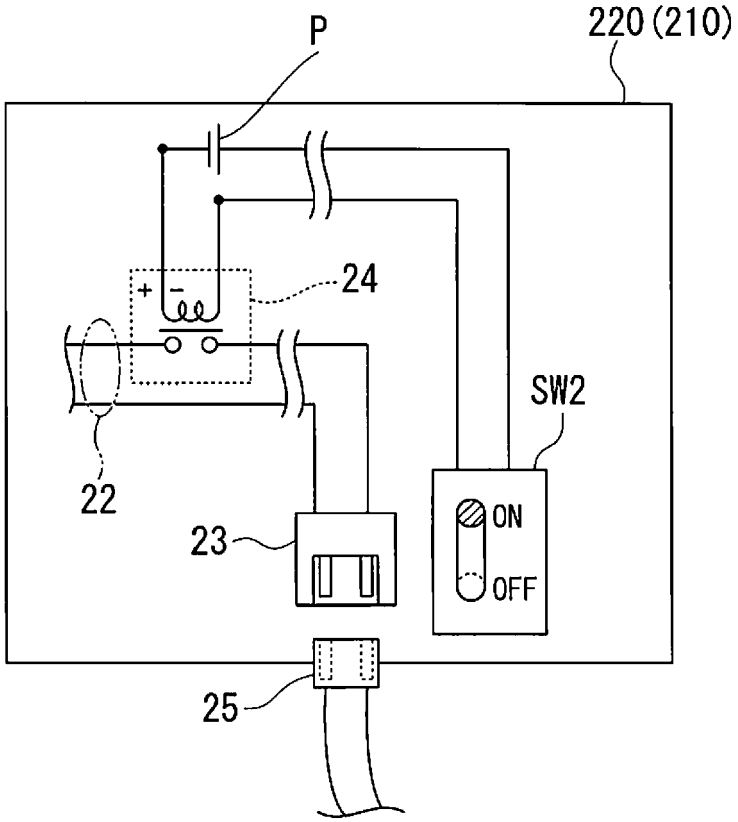
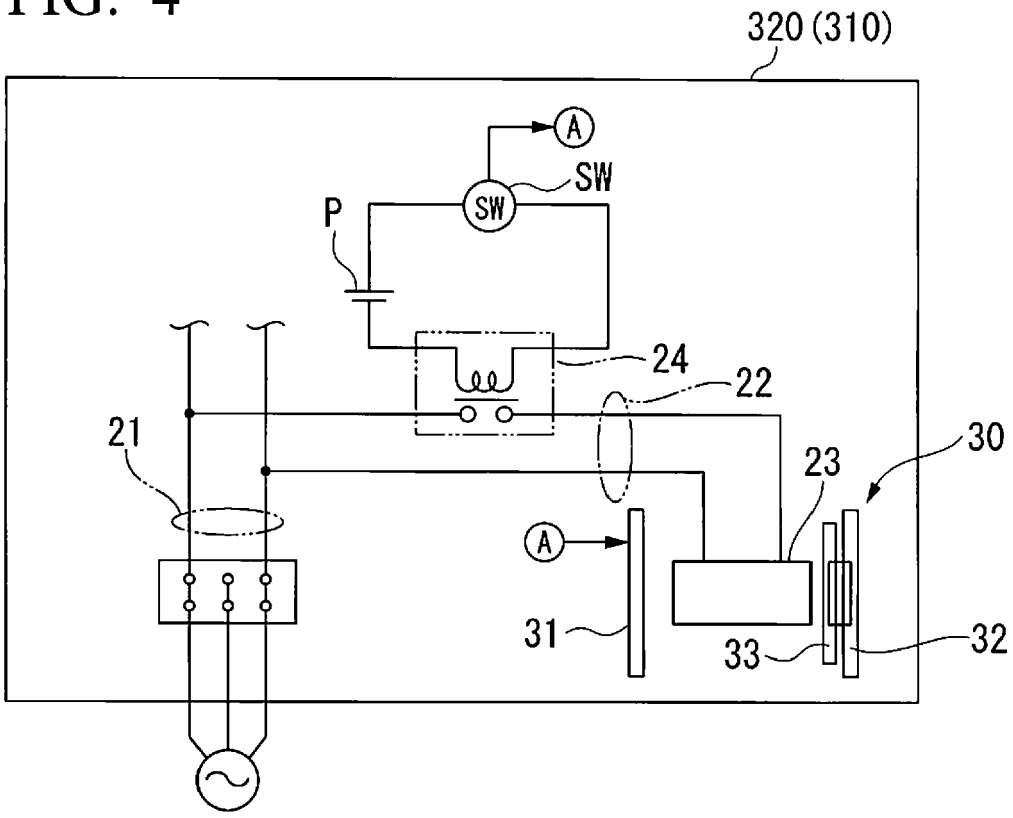


FIG. 4


320 (310)
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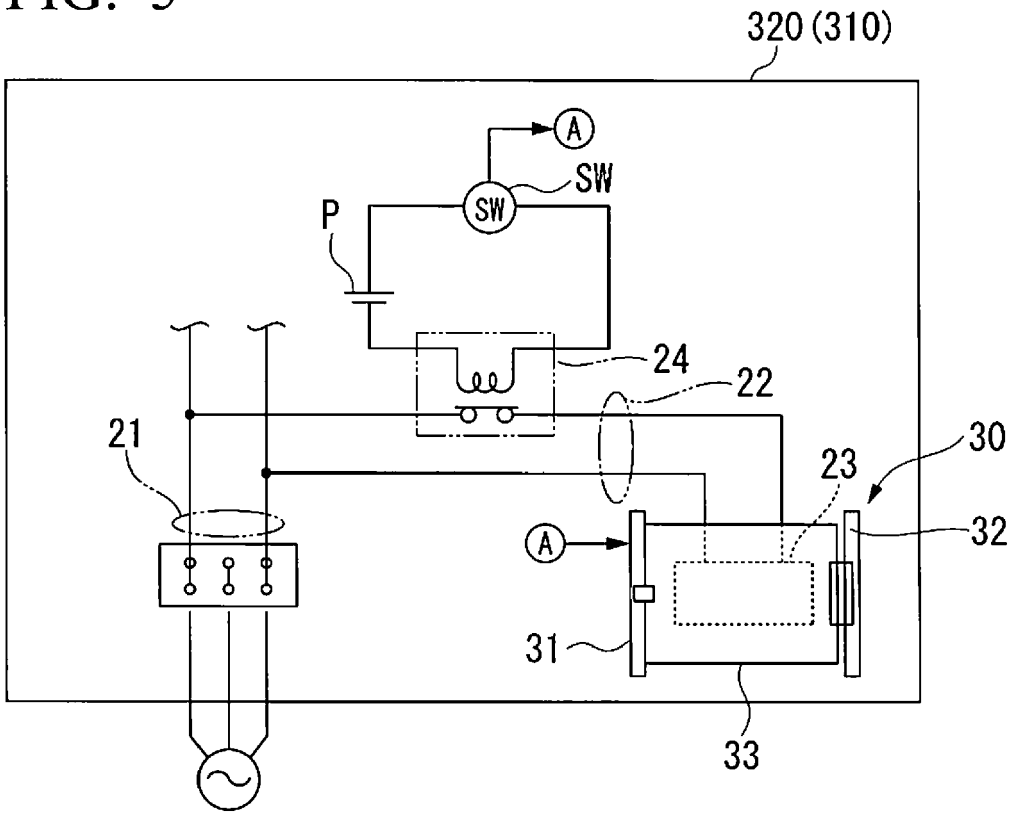
SW
P
24
22
21
30
23
A
31
33
32

FIG. 5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EUROPEAN SEARCH REPORT

Application Number
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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	6 August 2019	Jonda, Sven

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