DESCRIPTION

AIR CONDITIONER AND CONTROL METHOD FOR AIR CONDITIONER

TECHNICAL FIELD

[0001]

The present disclosure relates to an air conditioner and a control method for the air conditioner.

This application claims priority based on International Application No. PCT/JP2021/026385 filed on July 14, 2021, the contents of which are incorporated herein.

BACKGROUND ART

[0002]

Conventionally, heat-pump air conditioners using a refrigerant circuit are known, some of which have a function of performing a dehumidifying operation (see, for example, Patent Document 1). Patent Document 1 discloses an air conditioner that controls a rotation speed of an indoor fan during the dehumidifying operation, thereby controlling a temperature of a heat exchanger and a latent heat ratio.

CITATION LIST

[Patent Document]

[0003]

[Patent Document 1] Japanese Patent Application Publication No. 2014-153008

SUMMARY OF THE INVENTION

[Problems to be Solved by the Invention]

[0004]

When only the rotation speed of one indoor fan is controlled as in Patent Document 1, however, a control range of an air volume is narrow. For this reason, there are cases where a balance between latent heat and sensible heat taken from indoor air deteriorates, and moisture adhering to the heat exchanger re-evaporates, so that an indoor temperature drops too much, while an indoor humidity does not drop so much despite the dehumidifying operation.

[0005]

The present disclosure has been made in view of the circumstances described

above, and one of the objects thereof is to provide an air conditioner that can dehumidify a room while suppressing an excessive drop in an indoor temperature.

[Means for Solving the Problems]

[0006]

An air conditioner according to the present disclosure includes: one outdoor unit; and at least two indoor units connected with a refrigerant pipe through which a refrigerant sent from the one outdoor unit flows. Each of the at least two indoor units includes: a refrigerant circuit in which at least an evaporator is connected to the refrigerant pipe; an operation controller configured to control the refrigerant circuit according to an operating state; a temperature sensor configured to measure an indoor temperature; and at least two indoor fans configured to blow air to the evaporator. The operation controller is configured to, during a dehumidifying operation, when the temperature measured by the temperature sensor is higher than a preset temperature threshold, control each of the at least two indoor fans to rotate at a first rotation speed. The operation controller is configured to, during the dehumidifying operation, when the temperature is equal to or lower than the preset temperature threshold, control at least one indoor fan among the at least two indoor fans to rotate at the first rotation speed, and other indoor fans than the at least one indoor fan to rotate at a second rotation speed lower than the first rotation speed.

[0007]

Further, an air conditioner according to the present disclosure includes: a humidity sensor configured to measure an indoor humidity; one outdoor unit; and at least two indoor units connected with a refrigerant pipe through which a refrigerant sent from the one outdoor unit flows. Each of the at least two indoor units includes: a refrigerant circuit in which at least an evaporator is connected to the refrigerant pipe; an operation controller configured to control the refrigerant circuit according to an operating state; and at least two indoor fans configured to blow air to the evaporator. The operation controller is configured to, during a dehumidifying operation, when the indoor humidity measured by the humidity sensor is equal to or lower than a preset humidity threshold, control at least one indoor fan among the at least two indoor fans to stop rotating. The operation controller is configured to, during the dehumidifying operation, when the indoor humidity measured by the humidity sensor is higher than the preset humidity threshold, control the at least two indoor fans to keep rotating.

Further, a control method according to the present disclosure is for an air conditioner including one outdoor unit and at least two indoor units, each of the at least two indoor units including at least two indoor fans. The control method includes: during a dehumidifying operation, when an indoor humidity is equal to or lower than a preset humidity threshold, controlling at least one indoor fan among at least two indoor fans to stop rotating; and during the dehumidifying operation, when the indoor humidity is higher than the preset humidity threshold, controlling the at least two indoor fans to keep rotating.

[Effects of the Invention]

[0028]

Further, when an indoor fan is rotating after the set humidity is reached, the moisture adhering to the indoor heat exchanger 32 evaporates, so that the room may be humidified even though the dehumidifying operation is being performed.

[0029]

For this reason, the operation controller 40 not only controls the two indoor fans 33A and 33B to rotate at different rotation speeds to expand the setting range of the air volume, but also may control one of the indoor fans 33A and 33B to rotate and the other one of them to stop rotating. For example, the operation controller 40 controls the indoor fan 33A to rotate to keep the air blown to the temperature sensor 41 and the humidity sensor 42, thereby enabling measurements of an indoor temperature and a humidity, while controlling the indoor fan 33B to stop to suppress the amount of air blown to the indoor heat exchanger 32, thereby enabling suppression of re-evaporation of the moisture.

[0030]

FIG. 4 is a schematic diagram showing a setting example of modes for controlling the indoor fans 33A and 33B during the dehumidifying operation. In this figure, a vertical axis indicates an indoor temperature Tin measured by the temperature sensor 41, and a first temperature threshold T1ref and a second temperature threshold T2ref lower than the first temperature threshold T1ref are preset. On the other hand, a horizontal axis indicates an indoor humidity RH measured by the humidity sensor 42, and a first humidity threshold RH1ref and a second humidity threshold RH2ref lower than the first humidity threshold RH1ref are preset. The modes for controlling the indoor fans 33A and 33B are classified and set according to the thresholds of the indoor temperature and the indoor humidity.

[0031]

Here, settings of the number of rotations as the modes for controlling the indoor fans 33A and 33B are classified into “high speed rotation,” “low speed rotation,” and “stop.” The “high-speed rotation” is a mode for controlling the rotation speed to be relatively higher than the “low-speed rotation.” The “low-speed rotation” is a mode for controlling the rotation speed to be relatively lower than the “high speed rotation.” The “stop” is a state in which the rotation is stopped.

[0032]

When the indoor temperature Tin is higher than the first temperature threshold T1ref, both the indoor fans 33A and 33B are set to the high-speed rotation, regardless of