[0018] PTL 1: Japanese Patent No. 4649934

SUMMARY

[0019] A ceiling fan according to one embodiment of the present disclosure includes a brushless direct-current (DC) motor, an inverter circuit, a drive logic controller, a duty instruction unit, and a motor current detector. The brushless DC motor has a drive coil. The inverter circuit includes an upper stage and a lower stage, each of which forms a bridge connection by a plurality of switching elements. The drive logic controller performs pulse width modulation (PWM) control to a DC voltage to be applied to the inverter circuit, and controls a drive logic for sequentially energizing the drive coil. The duty instruction unit instructs an ON/OFF duty in the PWM control. The motor current detector detects current flowing through the drive coil. Then, the duty instruction unit determines a duty instruction value based on a detection value of the motor current detector.

[0019A] A ceiling fan according to one aspect of the present disclosure comprises a brushless direct-current (DC) motor equipped with a drive coil; an inverter circuit that includes an upper stage and a lower stage, each of which forms a bridge connection by a plurality of switching elements; a drive logic controller that performs pulse width modulation (PWM) control to a DC voltage to be applied to the inverter circuit, and controls a drive logic for sequentially energizing the drive coil; a duty instruction unit that instructs an ON/OFF duty in the PWM control; and a power supply current detector that detects current supplied to the inverter circuit, a rotating speed detector that detects a rotating speed of the brushless DC motor, wherein the duty instruction unit determines a duty instruction value, based on a detection value of a rotating speed detected by the rotating speed detector, when a detection value of current detected by the

power supply current detector is smaller than a predetermined value, and the duty instruction unit determines the duty instruction value, based on the detection value of current detected by the power supply current detector, when the detection value of current detected by the power supply current detector is larger than the predetermined value.

voltage detector, wherein the duty instruction unit determines the duty instruction value, based on a calculation value of the power supply power calculator.

[0020]

The ceiling fan according to one embodiment of the present disclosure can make motor torque constant, thereby providing an effect of exerting maximum performance of the ceiling fan without being affected by the distance between blades and the ceiling due to an installation state.

BRIEF DESCRIPTION OF DRAWINGS

[0021]

FIG. 1 is a view illustrating an outer appearance of a ceiling fan according to the present invention.

CLAIMS

1. A ceiling fan comprising:

a brushless direct-current (DC) motor equipped with a drive coil;

an inverter circuit that includes an upper stage and a lower stage, each of which forms a bridge connection by a plurality of switching elements;

a drive logic controller that performs pulse width modulation (PWM) control to a DC voltage to be applied to the inverter circuit, and controls a drive logic for sequentially energizing the drive coil;

a duty instruction unit that instructs an ON/OFF duty in the PWM control;

a power supply current detector that detects current supplied to the inverter circuit; a rotating speed detector that detects a rotating speed of the brushless DC motor,

wherein

the duty instruction unit determines a duty instruction value, based on a detection value of a rotating speed detected by the rotating speed detector, when a detection value of current detected by the power supply current detector is smaller than a predetermined value, and the duty instruction unit determines the duty instruction value, based on the detection value of current detected by the power supply current detector, when the detection value of current detected by the power supply current detector is larger than the predetermined value.