[Technical Problem]

[0004]

However, in a power supply system including a plurality of distributed power supplies, Qv control is often performed to suppress reactive power Q circulating between the distributed power supplies. In the Qv control, the amplitude Vv of the AC voltage output from the inverter is controlled such that the reactive power Q output from the inverter approaches the command value. On the other hand, in the VSG control, the frequency fv of the AC voltage output from the inverter is controlled such that the active power P output from the inverter approaches the command value. Here, the frequency fv, the amplitude Vv, and the apparent power S (power corresponding to a square root of a sum obtained by adding a square of the active power P and a square of the reactive power Q) have a close relationship, and when one of the frequency fv and the amplitude Vv is operated, both the active power P and the reactive power Q are affected. Therefore, the VSG control and the Qv control interfere with each other, and it may be difficult to appropriately control the inverter.

[0005]

Embodiments of the present disclosure provide a control device and a control method capable of appropriately controlling an inverter even in a case where both VSG control and Qv control are performed.

[Solution to Problem]

[0006]

According to a first aspect of the present disclosure, there is provided a control device control device that controls an inverter that converts a direct current (DC) voltage from a storage battery into an alternating current (AC) voltage, the control device including: a virtual synchronous generator (VSG) controller that controls a frequency of the AC voltage so as to have a virtual inertial force; and a Qv controller that controls an amplitude of the AC voltage to reduce a difference between a command value and a measured value in reactive power, wherein the Qv controller determines a control amount of the amplitude of the AC voltage according to a relationship between a frequency band of a Qv control system and a frequency band of a VSG control system, the Qv control system controlling to reduce the difference, and the VSG control system controlled by the VSG controller.

[0006a]

According to a second aspect of the present disclosure, there is provided a control device that controls an inverter that converts a direct current (DC) voltage from a storage battery into an alternating current (AC) voltage, the control device including: a virtual synchronous generator (VSG) controller that controls a frequency of the AC voltage so as to have a virtual inertial force; a Qv controller that controls an amplitude of the AC voltage to reduce a difference between a command value and a measured value in reactive power;

and a reactive power command setter that calculates a command value of reactive power on an assumption that a frequency of the AC voltage output from the inverter equals a frequency of the AC voltage at a coupling point with a power system, the power system being a connection target via the inverter, by using a measured value of active power and a measured value of reactive power.

[0007]

According to a third aspect of the present disclosure, there is provided a control method control method that is performed by a control device for controlling an inverter that converts a direct current (DC) voltage from a storage battery into an alternating current (AC) voltage, the control method including: controlling, by a virtual synchronous generator (VSG) controller, a frequency of the AC voltage so as to have a virtual inertial force, controlling, by a Qv controller, an amplitude of the AC voltage to reduce a difference between a command value and a measured value in reactive power, and determining, by the Qv controller, a control amount of the amplitude of the AC voltage according to a relationship between a frequency band of a Qv control system and a frequency band of a VSG control system, the Qv control system controlling to reduce the difference, and the VSG control system controlled by the VSG controller.

[0007a]

According to a fourth aspect of the present disclosure, there is provided a control method that is performed by a control device for controlling an inverter that converts a direct current (DC) voltage from a storage battery into an alternating current (AC) voltage, the control method including: controlling, by a virtual synchronous generator (VSG) controller, a frequency of the AC voltage so as to have a virtual inertial force, controlling, by a Qv controller, an amplitude of the AC voltage to reduce a difference between a command value and a measured value in reactive power, and calculating, by a reactive power command setter, a command value of reactive power on an assumption that a frequency of the AC voltage output from the inverter equals a frequency of the AC voltage at a coupling point with a power system, the power system being a connection target via the inverter, by using a measured value of active power and a measured value of reactive power.

[Advantageous Effects of Invention]

[0008]

According to embodiments of the present disclosure, the inverter can be appropriately controlled even in a case where both VSG control and Qv control are performed.

[Brief Description of Drawings]