noise, for example.

[0005]

Embodiments of the present invention provide an arc detection device and the like that can accurately detect arc faults that occur in a transmission line.

[Solution to Problem]

[0006]

According to a first aspect of the present invention, there is provided an arc detection device that detects an arc fault that occurs in a transmission line connecting a DC power supply that generates DC power and a power converter that converts the DC power to AC power, the arc detection device including: a first determination unit configured to determine whether or not there is a possibility of an arc fault occurrence according to current flowing in the transmission line; a shutoff unit configured to temporarily stop flow of current in the transmission line when the first determination unit determines there is a possibility of an arc fault occurrence; and a second determination unit configured to determine whether or not an arc fault has occurred according to an input voltage, of the power converter supplied from the DC power supply, after lifting temporary stoppage of the flow of current in the transmission line.

[0007]

According to a second aspect of the present invention, there is provided a breaker that includes the arc detection device described above, wherein the breaker interrupts the flow of current in the transmission line when the arc detection device detects that an arc fault has occurred.

[0008]

According to a third aspect of the present invention, there is provided a power conditioner that includes the arc detection device and the power converter described above.

[0009]

According to a fourth aspect of the present invention, there is provided a solar panel that includes the arc detection device described above, wherein the solar panel is the DC power supply

described above.

[0010]

According to a fifth aspect of the present invention, there is provided a solar-panel-attached module that includes the arc detection device described above, wherein the solar-panel-attached module converts a signal output from a solar panel, which is the DC power supply described above.

[0011]

According to a sixth aspect of the present invention, there is provided a junction box that includes the arc detection device described above, wherein junction box connects a solar panel described above, which is the DC power supply described above, and a power conditioner including the power converter described above.

[0012]

According to a seventh aspect of the present invention, there is provided an arc detection system that includes the arc detection device, the DC power supply, and the power converter described above.

[0013]

According to an eighth aspect of the present invention, there is provided an arc detection method of detecting an arc fault that occurs in a transmission line connecting a DC power supply that generates DC power and a power converter that converts the DC power to AC power, the method including: determining whether or not there is a possibility of an arc fault occurrence according to current flowing in the transmission line; temporarily stopping flow of current in the transmission line when it is determined there is a possibility of an arc fault occurrence; and determining whether or not an arc fault has occurred according to an input voltage, of the power converter supplied from the DC power supply, after lifting temporary stoppage of the flow of current in the transmission line.

[Advantageous Effects of Invention]

[0014]

According to embodiments of the present invention, an arc fault that occurs in a transmission line can be accurately detected.

[Brief Description of Drawings]

[0015]

[FIG. 1]

FIG. 1 is a diagram illustrating one example of an arc detection system to which an arc detection device of Embodiment 1 has been applied.

[FIG. 2]

FIG. 2 is a flowchart illustrating one example of an operation of the arc detection device according to Embodiment 1.

[FIG. 3]

FIG. 3 illustrates an application example of the arc detection device according to Embodiment 1.

[Description of Embodiments]

[0016]

The following describes embodiments of the present invention with reference to the drawings. The embodiments described below each show a specific example of the present invention. The numerical values, shapes, materials, elements, the arrangement and connection of the elements, steps, the order of the steps, etc., indicated in the following embodiments are mere examples, and therefore do not intend to limit the present invention.

[0017]

Note that the respective figures are schematic diagrams and are not necessarily precise illustrations. Additionally, like reference signs indicate like elements. As such, overlapping explanations of like elements are omitted or simplified.

[0018]

[Embodiment 1]

The arc detection device and the arc detection system according to Embodiment 1 will be described with reference to the drawings.

[0019]

FIG. 1 is a diagram illustrating one example of arc detection system 1 to which arc detection device 10 of Embodiment 1 has been