an increase of the stress may lead to element breakdown of the thyristors. This results in a problem of reduction in life of the thyristor switch.

Embodiments of the present invention are made to solve the above-described problems. Embodiments of the present invention prevent unwanted stress from being applied to a plurality of thyristors constituting a thyristor switch in a static switch.

SOLUTION TO PROBLEM

According to an aspect of the present invention, there is provided a static switch for switching between electrical connection and disconnection between an alternating-current power supply and a load. The static switch includes: a thyristor switch connected between the alternating-current power supply and the load and constituted of a pair of arms connected in anti-parallel, each of the arms including a plurality of thyristors connected in series; and a controller configured to perform on-off control of the thyristor switch. The thyristor switch is configured to be turned on in response to a gate signal supplied from the controller, and turned off in response to a current coming to zero in a state in which the gate signal is interrupted. The controller includes a phase detecting unit configured to detect a phase of a power supply voltage supplied from the alternating-current power supply, and a gate signal generating unit configured to interrupt the gate signal when an open command is provided to the static switch and the phase of the power supply voltage detected by the phase detecting unit matches a target phase. The target phase is set outside of a phase range where interruption of the gate signal is prohibited, the phase range being set so as to include a zero crossing point at which a load current is switched in polarity.

ADVANTAGEOUS EFFECTS OF INVENTION

According to embodiments of the present invention, in a static switch, a plurality of thyristors constituting a thyristor switch can be turned off at the same timing. This can prevent unwanted stress from being applied to the plurality of thyristors. As a result, the life of the thyristor switch can be prolonged.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a circuit configuration diagram of a static switch according to an embodiment of the present invention.

Fig. 2 is a waveform diagram for explaining an operation of a thyristor switch when a gate signal is in an on-state.