

AIR-CONDITIONING APPARATUS AND AIR-CONDITIONING METHOD

ABSTRACT

An air-conditioning apparatus includes: room temperature sensors (106); room temperature setting units (107); a variable displacement type compressor (101) that causes refrigerant to circulate through an outdoor heat exchanger (103), electric expansion valves (104), and indoor heat exchangers (105); a required-capacity calculation unit (4) including an integrator for a temperature deviation; an electric expansion-valve total opening degree output unit (2) that outputs a total opening degree; a temporary electric expansion-valve opening degree calculation unit (5) that uses a required capacity and the total opening degree; an evaluation function derivation unit (201) that obtains a distance function with a valve opening degree and a temporary valve opening degree as an evaluation function; an equality constraint derivation unit (202) that obtains equality constraints for equalizing the sum of opening degrees as a variable to the total opening degree; a valve opening degree upper/lower limit calculation unit (3) that calculates upper and lower limits of each opening degree; an inequality constraint derivation unit (203) that obtains inequality constraints in which each opening degree falls within the range between the upper and lower limits; and an optimization problem calculation unit (204) that calculates the opening degrees from the evaluation function and the equality and inequality constraints, whereby the room temperature deviation can be made to approach the minimum value.

Fig. 3