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SIMULATION OF MAXIMUM POWER POINT TRACKING DIGITAL CONTROL BASED ON OPTIMIZED GRADIENT METHOD

Abstract

Maximum Power Point Tracking(MPPT) can use the output power of the solar array in a maximum extent. The MPPT control is especially suitable for the applications such as deep-space and high-power LEO spacecraft whose light intensity received and temperature variation are in a wide range. The traditional method using hardware chips for MPPT is simple but its tracing precision is low due to parameters-drifting. To overcome the above shortcoming and meet the intelligent management and control demands for future electrical power systema new MPPT full digital control strategy based on optimized gradient method is presented. The digital realization logic for MPPT is introduced and the electrical power system model is built in Matlab/simulink. The cases in which the solar array works following two specific characteristic curves are simulated to validate the above MPPT control method. The analysis results prove its validity and high tracing precision.

Key words: MPPT; optimized gradient method; full digital control