

Abstract

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Modified Variable step Incremental Conductance Maximum Power Point Tracking Technique for Photovoltaic Systems

Email Print Request Permissions Among various photovoltaic (PV) maximum power point tracking (MPPT) techniques, variable-step incremental conductance (Inc.Cond.) method is widely employed with the merits of high tracking accuracy and fast convergence speed. Yet, mathematical division computations are mandatory for the algorithm's structure which in turn adds more complexity to its implementation. Moreover, conventional variable step, depending on the change of the array power with respect to the array voltage, encounters steady-state oscillations and dynamic problems especially under sudden irradiance changes. This paper proposes a modified variable-step Inc.Cond. MPPT technique featuring division-free algorithm, simplified implementation, and enhanced transient performance with minimal steady-state power oscillations around the MPP. Simulation and experimental results are presented for concept realization and performance evaluation.