

Maximum power point tracking (MPPT) is important in photovoltaic systems for effective solar energy harvesting. One of the most popular MPPT techniques is the widely adapted perturb and observe (P&O) method owing to its simple and low-cost implementation. The downside is that the steady-state performance is compromised by the inherent perturbation. The magnitude of the steady-state oscillation can be lessened by reducing the perturbation size. However, the approach slows down the tracking speed during rapidly changing atmospheric conditions. Thus, the selection of perturbation value becomes difficult since it always involves the tradeoff between the tracking speed and steady-state ripple. This paper proposes a novel start-stop mechanism to eliminate the compromise of the traditional P&O MPPT method. Thanks to the advantages of simplicity and ease of implementation, the mechanism targets the MPPT solution for submodule integrated converters, which demand for a low-cost solution. The experimental evaluation of the proposed algorithm is compared with the benchmark P&O algorithm showing the claimed advantages.