

(54) Title of the invention : A Single-Stage Single-Phase Non-isolated Microinverter for Residential Rooftop Photovoltaic Applications

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(57) Abstract :
ABSTRACT A Single-Stage Single-Phase Non-isolated Microinverter for Residential Rooftop Photovoltaic Applications The present invention relates to a single-stage single-phase non-isolated photovoltaic microinverter (100) for converting available DC voltage at the output of photovoltaic (PV) into a single-phase AC voltage. The inverter (100) comprises of two inductor coils (Li, Lo), two capacitors (Ci, Co) and four active switches (SA to SD). For a half cycle of AC output voltage only two active switches operate at high frequency (switching frequency) and rest two active switches are completely off for that period. This adds to an advantage of improved efficiency. The inverter is capable of stepping up or stepping down the low input DC voltage, which eliminates the need of bulky power frequency transformer, reduces the overall size and weight of system and makes it suitable for the integration of small-scale intermittent DC output renewable sources. Moreover, the proposed inverter can be mounted on the PV panels, providing a modular plug and play solution. The inverter has a common ground terminal between the input and the output ports, assisting in the elimination of common mode noise which is one of the most critical problems associated with a grid connected PV system. [figure 1]

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