

Special Section on:

Photovoltaic Module and Sub-Module Level Power Electronics and Control

IN PHOTOVOLTAIC (PV) systems, distributed module-converter architectures can lead to a higher energy yield by mitigating partial shading, mismatch and ageing, through a higher maximum power point tracking (MPPT) efficiency. Microinverters, which connect a single PV module to the grid, and PV power optimizers, that are DC-DC converters performing the MPPT function at a module level, even operating in a differential way, have attracted the scientific and industrial interest in the last decade. Compared with the conventional central, string and multistring configurations, module-level PV configurations ensure a higher level of harvested energy, but might lead to an overall lower conversion efficiency due to the additional conversion stages and to the high voltage step-up ratios required for the grid connection. The design of efficient and reliable power converters, also having a high power density, has been the main driver of the R&D in this field. More recently, sub-module PV systems have emerged as promising solutions for both DC-DC power optimizers and DC-AC microinverters, by further distributing the power electronics, hence MPPT capabilities, within the PV module. At a sub-module level, aspects related to efficiency, cost, power density, reliability are even more stressed and deserve further investigation. Distributed electronics, at module and sub-module level, is also helpful in monitoring the PV production and for diagnostic purposes. This Special Section is focused on conversion, control and architectural aspects, in order to give the state of the art in this field and show the trends for the next years to come.

Editors invite original manuscripts presenting recent advances in these fields with special reference to the following topics:

- ✓ Microinverters, power optimizers and sub-module topologies
- ✓ Control and modulation of module-level converters
- ✓ Reliability improvement for module and sub-module power electronics
- ✓ Module-level PV system monitoring and diagnosis
- ✓ Module-level PV system cost reduction
- ✓ Power density optimization
- ✓ Grid code compliance
- ✓ Module-level energy storage

Manuscript Preparation and Submission

Check carefully the style of the journal described in the guidelines “Information for Authors” in the IEEE- IES website: <http://www.ieee-ies.org/pubs/transactions-on-industrial-electronics>.

Please submit your manuscript in electronic form through: <https://mc.manuscriptcentral.com/tie-ieee/>.

On the submitting page, in pop-up menu of manuscript type, select: “**SS on Photovoltaic Module and Sub-Module Level Power Electronics and Control**”, then upload all your manuscript files following the instructions given on the screen.

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Timetable

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~~Nov. 30, 2017~~ Feb. 15, 2018

Information about manuscript acceptance:

July, 2018

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