

Overall efficiency of photovoltaic inverters

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NATIONAL FOREWORD

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Overall efficiency of grid connected photovoltaic inverters

Efficacité globale des onduleurs
photovoltaïques raccordés au réseau

Gesamtwirkungsgrad von Photovoltaik-
Wechselrichtern

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Management Centre: Avenue Marnix 17, B - 1000 Brussels

Foreword

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The following dates were fixed:

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1 Scope

This European Standard provides a procedure for the measurement of the efficiency of the maximum power point tracking (MPPT) of inverters, which are used in grid-connected photovoltaic systems. In that case the inverter energizes a low voltage grid with rated AC voltage and rated frequency. Both the static and dynamic MPPT efficiency is considered.

Based on the static MPPT efficiency and conversion efficiency the overall inverter efficiency is calculated. The dynamic MPPT efficiency is indicated separately.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 61683, *Photovoltaic systems – Power conditioners – Procedure for measuring efficiency* (IEC 61683)

EN 50160, *Voltage characteristics of electricity supplied by public distribution networks*

EN 50524, *Data sheet and name plate for photovoltaic inverters*

CLC/TS 61836, *Solar photovoltaic energy systems - Terms, definitions and symbols* (IEC/TS 61836:2007)

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Inverter input (PV generator)

3.1.1

maximum input voltage (U_{DCmax})

allowed maximum voltage at the inverter input

NOTE Exceeding of U_{DCmax} may destroy the equipment under test.

3.1.2

minimum input voltage (U_{DCmin})

minimum input voltage for the inverter to energize the utility grid, independent of mode of operation

3.1.3

rated input voltage ($U_{DC,r}$)

input voltage specified by the manufacturer, to which other data sheet information refers

NOTE If this value is not specified by the manufacturer, $V_{dc,r} = (V_{mppmax} + V_{mppmin})/2$ shall be used.

3.1.4

maximum MPP voltage (U_{MPPmax})

maximum voltage at which the inverter can convert its rated power under MPPT conditions

NOTE If the specified value of the manufacturer for U_{MPPmax} is higher than $0,8 \times U_{DCmax}$, the measurement must be performed with $U_{MPPmax} = 0,8 \times U_{DCmax}$.