

List of accredited test procedures (D-K-11140-02-00)

Revision date: 08.05.2025

Monofacial PV modules

Standard	Title	Edition	Release	Status
IEC 60904-1	Photovoltaic devices - Part 1: Measurement of photovoltaic current-voltage characteristics	2,0	2006-09	Revised
		3,0	2020-09	Valid

Measurement quantity / Calibration item	Range		Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾
Short-circuit current Solar modules	16 mA	to 50 A	IEC 60904-1:2020	0,9%
Open-circuit voltage Solar modules	10 mV	to 420 V	IEC 60904-1:2020	0,6%
Current at maximum power Solar modules	16 mA	to 50 A	IEC 60904-1:2020	1,3%
Voltage at maximum power Solar modules	10 mV	to 420 V	IEC 60904-1:2020	1,0%
Maximum power Solar modules	0.2 W	to 5 kW	IEC 60904-1:2020	1,1%
Fill factor of IV-curve Solar modules	0%	to 100%	IEC 60904-1:2020	1,0%
Efficiency Solar modules	0%	to 100%	IEC 60904-1:2020	1,3%

Bifacial PV modules

Standard	Title	Edition	Release	Status
IEC TS 60904-1-2	Photovoltaic devices - Part 1-2: Measurement of current-voltage characteristics of bifacial photovoltaic (PV) devices	1,0	2019-01	Revised
		2,0	2024-11	Valid

Measurement quantity / Calibration item	Range		Measurement conditions / procedure	Expanded uncertainty of measurement ¹⁾
Short-circuit current Solar modules	16 mA	to 50 A	IEC TS 60904-1-2:2024	1,2%
Open-circuit voltage Solar modules	10 mV	to 420 V	IEC TS 60904-1-2:2024	0,6%
Current at maximum power Solar modules	16 mA	to 50 A	IEC TS 60904-1-2:2024	1,6%
Voltage at maximum power Solar modules	10 mV	to 420 V	IEC TS 60904-1-2:2024	1,0%
Maximum power Solar modules	0.2 W	to 5 kW	IEC TS 60904-1-2:2024	1,4%
Fill factor of IV-curve Solar modules	0%	to 100%	IEC TS 60904-1-2:2024	1,1%
Efficiency Solar modules	0%	to 100%	IEC TS 60904-1-2:2024	1,6%
Short-circuit current bifaciality Solar modules	0%	to 100%	IEC TS 60904-1-2:2024	0,7%
Open-circuit voltage bifaciality Solar modules	0%	to 100%	IEC TS 60904-1-2:2024	0,9%
Maximum power bifaciality Solar modules	0%	to 100%	IEC TS 60904-1-2:2024	1,3%
Rear irradiance power gain (BiFi) Solar modules	0 W/(W/m ²)	to 5 W/(W/m ²)	IEC TS 60904-1-2:2024	11,7%

Abbreviations used:
 IEC International Electrotechnical Commission
 TS Technical Specification
 CMC Calibration and measurement capabilities

¹⁾ The expanded uncertainties according to EA-4/02 M:2022 are part of CMC and are the best measurement uncertainties within accreditation. They have a coverage probability of approximately 95 % and have a coverage factor of k = 2 unless stated otherwise. Uncertainties without unit are relative uncertainties referring to the measurement value unless stated otherwise.