



# TS IEC 62804-1:2015

Photovoltaic (PV) Modules - Test Methods for the detection of potential-induced degradation

Part 1: Crystalline silicone  
Confirmation of test results

**Ref.:** 10056/2017-40205

**Applicant:** SolarWorld Americas, Inc.  
25300 NW Evergreen Rd, Hillsboro OR 97124, USA

**Product:** Crystalline silicon Photovoltaic (PV)-Modules

**Type:** C) Sunmodule Protect SWA XXX mono Y  
D) Sunmodule Bisun SWA XXX duo Y  
E) Sunmodule Bisun SWA XXX XL duo Y

XXX in the type replace the power in watt and can be any number between:

200 – 320 for C) and D), 305 – 385 for E)

Y in the type replaces a potential suffix and can be black or clear

**Manufacturer:** SolarWorld Americas, Inc.

**Standard:** TS IEC 62804-1:2015, modified

## Test conditions

Testing time: 96h

Chamber temperature: 60°C

Relative Humidity: 85%

Potential to ground: -1000V for Protect SWA XXX mono Y  
and Bisun SWA XXX duo Y  
-1500V for Bisun SWA XXX XL duo Y

## Pass criteria

Power degradation: < 5%

Dry Insulation: > 40 MΩm<sup>2</sup>

Wet insulation: > 40 MΩm<sup>2</sup>



### Summary of test results:

**Maximum power degradation:** allowed max. 5%  
measured max. 0,52% for Protect SWA XXX mono Y  
and Bisun SWA XXX duo Y  
measured max. 2,07% for Bisun SWA XXX XL duo Y

The measured degradation is below the allowed degradation.

**Dry insulation resistance:** required 23,81 M $\Omega$  for Protect SWA XXX mono Y  
and Bisun SWA XXX duo Y  
required 20,10 M $\Omega$  for Bisun SWA XXX XL duo Y  
measured >500 M $\Omega$

The measured dry insulation resistance is above the limit.

**Wet insulation resistance:** required 23,81 M $\Omega$  for Protect SWA XXX mono Y  
and Bisun SWA XXX duo Y  
required 20,10 M $\Omega$  for Bisun SWA XXX XL duo Y  
measured >500 M $\Omega$

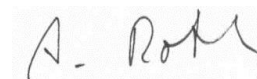
The measured wet insulation resistance is above the limit.

**Visual inspection:** No findings

The complete test results are given in Test Report No.: TRPVM-2017-40205-8 and  
TRPVM-2017-40205-9

### VDE Renewables GmbH

  
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