



**BUREAU  
VERITAS**

# Certificate of compliance

**Applicant:** SMA Solar Technology AG  
Sonnenallee 1  
34266 Niestetal  
Germany

**Product:** Grid-tied photovoltaic (PV) inverter

**Model:** STP 50-40

## Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with EN50549-1:2019 for photovoltaic systems with a three-phase parallel coupling via an inverter in the public mains supply. The automatic disconnection device is an integral part of the aforementioned inverter.

## Applied rules and standards:

### EN 50549-1:2019

Requirements for parallel connection of installations with distribution networks - Part 1: Connection to an LV distribution network - Production of installations up to and including Type B

### DIN V VDE V 0126-1-1:2006 (4.1 Functional safety)

Automatic disconnection device between a generator and the public low-voltage grid

At the time of issue of this certificate the safety concept of an aforementioned representative product corresponds to the valid safety specifications for the specified use in accordance with regulations.

**Report number:** 17TH0199-EN50549-1\_0  
**Certificate number:** U20-0085

**Certification Program:** NSOP-0032-DEU-ZE-V01  
**Date of issue:** 2020-02-21

**Certification body**



Holger Schaffer



Certification body Bureau Veritas Consumer Products Services Germany GmbH accreditation to DIN EN ISO/IEC 17065

A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH

**Appendix**

Extract from test report according to EN 50549-1

Nr. 17TH0199-EN50549-1\_0

**Type Approval and declaration of compliance with the requirements of EN 50549-1.**

<b>Manufacturer / applicant:</b>	SMA Solar Technology AG Sonnenallee 1 34266 Niestetal Germany
<b>Micro-generator Type</b>	Grid-tied photovoltaic inverter
	STP 50-40
<b>MPP DC voltage range [V]</b>	500 – 800
<b>Input DC voltage range [V]</b>	max. 1000
<b>Input DC current [A]</b>	6 x 20
<b>Output AC voltage [V]</b>	400
<b>Output AC current [A]</b>	72,5
<b>Output power [VA]</b>	50000
<b>Firmware version</b>	Beginning with V03.10.03.R
<b>Measurement period:</b>	2019-12-27 to 2020-02-12

**Description of the structure of the power generation unit:**

The power generation unit is equipped with a PV and line-side EMC filter. The power generation unit has no galvanic isolation between DC input and AC output. Output switch-off is performed with single-fault tolerance based on two series-connected relays in each line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error.

**Setting of the interface protection:**

Parameter	Min. disconnection time	Max. disconnection time	Min. operate value	Max. operate value	Standard set value
Over voltage (stage 1) <sup>a</sup>	0,1s	100s	1,0V <sub>n</sub>	1,2V <sub>n</sub>	0,2s/1,2V <sub>n</sub>
Over voltage (stage 2)	0,1s	5s	1,0V <sub>n</sub>	1,3V <sub>n</sub>	0,1s/1,25V <sub>n</sub>
Under voltage (stage 1)	0,1s	100s	0,2V <sub>n</sub>	1,0V <sub>n</sub>	10s/0,2V <sub>n</sub>
Under voltage (stage 2)	0,1s	5s	0,2V <sub>n</sub>	1,0V <sub>n</sub>	3s/0,8V <sub>n</sub>
Over frequency	0,1s	100s	1,0f <sub>n</sub>	1,04f <sub>n</sub>	0,1s/1,03f <sub>n</sub>
Over frequency (stage 1)	0,1s	5s	1,0f <sub>n</sub>	1,04f <sub>n</sub>	0,1s/1,03f <sub>n</sub>
Under frequency	0,1s	100s	0,94f <sub>n</sub>	1,04f <sub>n</sub>	0,1s/0,95f <sub>n</sub>
Under frequency (stage 2)	0,1s	5s	0,94f <sub>n</sub>	1,04f <sub>n</sub>	0,1s/0,95f <sub>n</sub>
Reconnection settings for voltage	0,85V <sub>n</sub> min, 1,1V <sub>n</sub> max Adjustement range Min: 0-1V <sub>n</sub> , Max:1-2V <sub>n</sub>				0,85V <sub>n</sub> (195,5V) ≤ V ≤ 1,10V <sub>n</sub> (253V)
Reconnection settings for frequency	49,5Hz min,50,2Hz max Adjustement range: Min: 44-60 Hz, Max: 50-66 Hz				49,5Hz ≤ f ≤ 50,1Hz
Reconnection time	60s Adjustement range: 0-6000s				≥ 60s
Active power gradient after reconnection	10% Adjustement range: 1-10000%				10%PE <sub>max</sub> / per minute
Permanent DC-injection	0,5% of rated inverter output current				
Loss of mains according EN 62116 (LoM)	2s				



BUREAU  
VERITAS

## Annex to the EN 50549-1 certificate of compliance No. U20-0085

### Appendix

Extract from test report according to EN 50549-1

Nr. 17TH0199-EN50549-1\_0

#### Note:

<sup>a</sup> Over voltage – stage1: 10 min-mean-value corresponding to EN 50160.

The settings of the interface protection are password protected adjustable in the stated range above.

In case the above stated generators are used with an external protection device, the protection settings of the inverters are to be adjusted according to the manufacturer's declaration.

The above stated generators are tested according to the requirements in the EN 50549-1:2019. Any modification that affects the stated tests must be named by the manufacturer/supplier of the product to ensure that the product meets all requirements of the EN 50549-1:2019.