# Certificate of compliance

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|---|---|
| **Applicant:** | **SMA Solar Technology AG**<br>Sonnenallee 1<br>34266 Niestetal<br>**Germany** |
| **Product:** | **Photovoltaic (PV) inverter** |
| **Model:** | **SB1.5-1VL-40**<br>**SB2.0-1VL-40**<br>**SB2.5-1VL-40** |

**Use in accordance with regulations:**

Automatic disconnection device with single-phase mains surveillance in accordance with EN50549-1:2019 for photovoltaic systems with a single-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.

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|---|---|---|---|
| **Report number:** | **14TH0397-EN50549-1_2** | **Certification Program:** | **NSOP-0032-DEU-ZE-V01** |
| **Certificate number:** | **U19-0610** | **Date of issue:** | **2019-11-20** |

**Certification body**

Holger Schaffer

DAkkS Deutsche Akkreditierungsstelle D-ZE-12024-01-00

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

## Appendix

**Extract from test report according to EN 50549-1** **Nr. 14TH0397-EN50549-1_2**

| **Type Approval and declaration of compliance with the requirements of EN 50549-1.** | | | |
|---|---|---|---|
| **Manufacturer / applicant:** | SMA Solar Technology AG<br>Sonnenallee 1<br>34266 Niestetal<br>Germany | | |
| **Micro-generator Type** | Photovoltaic (PV) inverter | | |
| **Rated values** | SB1.5-1VL-40 | SB2.0-1VL-40 | SB2.5-1VL-40 |
| **MPP DC voltage range [V]** | 160 – 500 | 210 – 500 | 260 – 500 |
| **Input DC voltage range [V]** | 100 – 600 | 100 – 600 | 100 – 600 |
| **Input DC current [A]** | 10 | 10 | 10 |
| **Output AC voltage [V]** | 230 @ 50Hz / 60Hz (N,PE) | 230 @ 50Hz / 60Hz (N,PE) | 230 @ 50Hz / 60Hz (N,PE) |
| **Output AC current [A]** | 7 | 9 | 11 |
| **Output power [VA]** | 1500 | 2000 | 2500 |
| **Firmware version** | V03.10.00.R | | |
| **Measurement period:** | 2019-08-02 to 2019-08-23 | | |

**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 line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error.

## Appendix

**Extract from test report according to EN 50549-1** **Nr. 14TH0397-EN50549-1_2**

**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) [a] | 0,1s | 100s | 1,0$V_n$ | 1,2$V_n$ | 0,2s/1,2$V_n$ |
| Over voltage (stage 2) | 0,1s | 5s | 1,0$V_n$ | 1,3$V_n$ | 0,1s/1,25$V_n$ |
| Under voltage (stage 1) | 0,1s | 100s | 0,2$V_n$ | 1,0$V_n$ | 10s/0,2$V_n$ |
| Under voltage (stage 2) | 0,1s | 5s | 0,2$V_n$ | 1,0$V_n$ | 3s/0,8$V_n$ |
| Over frequency | 0,1s | 100s | 1,0$f_n$ | 1,04$f_n$ | 0,1s/1,03$f_n$ |
| Over frequency (stage 1) | 0,1s | 5s | 1,0$f_n$ | 1,04$f_n$ | 0,1s/1,03$f_n$ |
| Under frequency | 0,1s | 100s | 0,94$f_n$ | 1,04$f_n$ | 0,1s/0,95$f_n$ |
| Under frequency (stage 2) | 0,1s | 5s | 0,94$f_n$ | 1,04$f_n$ | 0,1s/0,95$f_n$ |
| Reconnection settings for voltage | 0,85Vn min, 1,1Vn max<br>Adjustement range Min: 0-1Vn, Max:1-2Vn | | | | 0,85$V_n$ (195,5V) ≤ V ≤ 1,10$V_n$ (253V) |
| Reconnection settings for frequency | 49,5Hz min,50,2Hz max<br>Adjustement range: Min: 44-60 Hz, Max: 50-66 Hz | | | | 49,5Hz ≤ f ≤ 50,2Hz |
| Reconnection time | 60s<br>Adjustement range: 0-6000s | | | | ≥ 60s |
| Active power gradient after reconnection | 10%<br>Adjustement range: 1-10000% | | | | 10%PEmax / per minute |
| Permanent DC-injection | 0,5% of rated inverter output current | | | | |
| Loss of mains according EN 62116 (LoM) | 2s | | | | |

**Note:**

[a] 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.