



**BUREAU
VERITAS**

Certificate of compliance

Applicant: SMA Solar Technology AG
Sonnenallee 1
34266 Niestetal
Germany

Product: Grid-tied photovoltaic (PV) inverter

Model: SB3.0-1AV-41
SB3.6-1AV-41
SB4.0-1AV-41
SB5.0-1AV-41
SB6.0-1AV-41

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.

Report number: 16TH0348-EN50549-1_0

Certification Program: NSOP-0032-DEU-ZE-V01

Certificate number: U20-0311

Date of issue:

2020-04-28

Certification body



Thomas Lammel



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

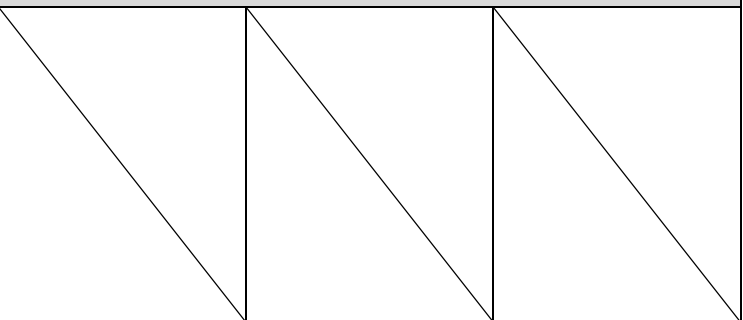
Extract from test report according to EN 50549-1

Nr. 16TH0348-EN50549-1_0

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

Manufacturer / applicant:	SMA Solar Technology AG Sonnenallee 1 34266 Niestetal Germany
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Micro-generator Type	Grid-tied photovoltaic inverter			
	SB3.0-1AV-41	SB3.6-1AV-41	SB4.0-1AV-41	SB5.0-1AV-41
MPP DC voltage range [V]	110 - 500	130 - 500	140 - 500	175 - 500
Input DC voltage range [V]	max. 600			
Input DC current [A]	2 x 15			
Output AC voltage [V]	220 / 230 / 240; 50/60 Hz			
Output AC current [A]	13	16	18	22
Output power [VA]	3000	3680	4000	5000

	SB6.0-1AV-41	
MPP DC voltage range [V]	210 - 500	
Input DC voltage range [V]	max. 600	
Input DC current [A]	2 x 15	
Output AC voltage [V]	220 / 230 / 240; 50/60 Hz	
Output AC current [A]	26,1	
Output power [VA]	6000	

Firmware version	Beginning with 03.10.16.R
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Measurement period:	2020-03-27 to 2020-04-27
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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.

Appendix

Extract from test report according to EN 50549-1

Nr. 16TH0348-EN50549-1_0

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	1,0V _n	1,2V _n	0,2s/1,2V _n
Over voltage (stage 2)	0,1s	5s	1,0V _n	1,3V _n	0,1s/1,25V _n
Under voltage (stage 1)	0,1s	100s	0,2V _n	1,0V _n	10s/0,2V _n
Under voltage (stage 2)	0,1s	5s	0,2V _n	1,0V _n	3s/0,8V _n
Over frequency	0,1s	100s	1,0f _n	1,04f _n	0,1s/1,03f _n
Over frequency (stage 1)	0,1s	5s	1,0f _n	1,04f _n	0,1s/1,03f _n
Under frequency	0,1s	100s	0,94f _n	1,04f _n	0,1s/0,95f _n
Under frequency (stage 2)	0,1s	5s	0,94f _n	1,04f _n	0,1s/0,95f _n
Reconnection settings for voltage (normal operational startup)	Ajustement range: min: 0-1V _n , max: 1-2V _n				0,85V _n (195,5V) ≤ V ≤ 1,10V _n (253V)
Reconnection settings for frequency (normal operational startup)	Adjustment range: min: 44-60Hz, max: 50-66Hz				49,5Hz ≤ f ≤ 50,1Hz
Reconnection time (normal operational startup)	Adjustment range: 0-6000s				≥ 60s
Reconnection settings for voltage (automatic reconnection after tripping)	Ajustement range: min: 0-1V _n , max: 1-2V _n				0,85V _n (195,5V) ≤ V ≤ 1,10V _n (253V)
Reconnection settings for frequency (automatic reconnection after tripping)	Adjustment range: min: 44-60Hz, max: 50-66Hz				49,5Hz ≤ f ≤ 50,1Hz
Reconnection time (automatic reconnection after tripping)	Adjustment range: 0-6000s				≥ 60s
Active power gradient after reconnection	Adjustment range: 1-10000%				10% P _E max / per minute
Active power delivery at under frequency	electronic inverter, no active power reduction				
Power response to over frequency (frequency / droop s)	Adjustment range: 44-60Hz / 1-10000%				50,2Hz / 5%
Permanent DC-injection	≤ 0,5% of rated inverter output current or ≤ 20mA				
Rate of change of frequency (ROCOF)	Adjustment range: 0,01-100Hz/s				2,5Hz/s
Loss of mains according EN 62116 (LoM)	Adjustment range: 0-6000s				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.