Certificate of compliance

Applicant:	**SMA Solar Technology AG** Sonnenallee 1 34266 Niestetal **Germany**
Product:	**Grid-tied photovoltaic (PV) inverter**
Model:	**SB3.0-1AV-40** **SB3.6-1AV-40** **SB4.0-1AV-40** **SB5.0-1AV-40**

Use in accordance with regulations:

Automatic disconnection device with single-phase mains surveillance in accordance with EN 50438:2013 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 50438:2013
Requirements for micro-generating plants to be connected in parallel with public low-voltage distribution networks

DIN V VDE V 0126-1-1:2006-02 (Functional safety)
Automatic disconnection device between a generator and the public low-voltage grid

The generator(s) SB4.0-1AV-40 and SB5.0-1AV-40 are rated >16A per phase. However all requirements of the EN 50438:2013 are fulfilled.

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:	**PV151106N051-2**
Certificate number:	**U17-0129**
Date of issue:	**2017-03-28**

Certification body

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

Holger Schaffer
Certification body of Bureau Veritas Consumer Products Services Germany GmbH
Accredited according to DIN EN ISO/IEC 17065

Appendix E Type Verification Test Report	
Extract from test report according to EN 50438	**Nr. PV151106N051-2**

Type Approval and declaration of compliance with the requirements of EN 50438.				
Manufacturer / applicant:	SMA Solar Technology AG Sonnenallee 1 34266 Niestetal Germany			
Micro-generator Type	Grid-tied photovoltaic inverter			
Rated values	SB3.0-1AV-40	SB3.6-1AV-40	SB4.0-1AV-40	SB5.0-1AV-40
Maximum rated capacity	3,0 kW	3,68 kW	4,0 kW	5,0 kW
Rated voltage	230V	230V	230V	230V
Firmware version	1.1.34.R			
Measurement period:	2015-11-06 to 2016-05-27			

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.

The above stated micro-generators are tested according to the requirements in the EN 50438. 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 50438.

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Type testing of the interface protection

Over-/under-voltage tests

Parameter	Protection limit		Actual setting		Trip value (test result)	
	Voltage [V]	Disconnection time [s]	Voltage [V]	Disconnection time [s]	Voltage [V]	Disconnection time [s]
Over-voltage stage 1	253,0	600*	253,0	600*	253,0	540
Over-voltage stage 2	264,5	0,2	264,5	0,2	264,2	0,131
Under-voltage stage 1	195,5	1,5	195,5	1,5	195,2	1,425

Note.
Minimum operation time according to default interface protection:
Over-voltage stage 1 -
Over-voltage stage 2 0,1s
Under-voltage 1,2s

* The over-voltage-stage 1 is a 10-min-mean-value according to EN 50160. The disconnection after detection of an overvoltage at the 10-min-mean-value takes place within 200ms.

Over-/under-frequency tests

Parameter	Protection limit		Actual setting		Trip value (test result)	
	Frequency [Hz]	Disconnection time [s]	Frequency [Hz]	Disconnection time [s]	Frequency [Hz]	Disconnection time [s]
Over-frequency	52,00	0,5	52,00	0,5	52,01	0,464
Under-frequency	47,50	0,5	47,50	0,5	47,50	0,458

Note.
Minimum operation time according to default interface protection:
Over-frequency 0,5 s
Under-frequency 0,5 s

LoM test

Method used	**EN 62116 SB5.0-1AV-40**					
Balancing load on islanded network	**33% of -5% Q Test 22**	**66% of -5% Q Test 12**	**100% of -5% P Test 5**	**33% of +5% Q Test 31**	**66% of +5% Q Test 21**	**100% of +5% P Test 10**
Trip time. Phase 1 fuse removed	311ms	316ms	232ms	304ms	307ms	280ms
Method used	**EN 62116 SB3.0-1AV-40**					
Balancing load on islanded network	**33% of -5% Q Test 22**	**66% of -5% Q Test 12**	**100% of -5% P Test 5**	**33% of +5% Q Test 31**	**66% of +5% Q Test 21**	**100% of +5% P Test 10**
Trip time. Phase 1 fuse removed	316ms	280ms	370ms	284ms	293ms	374ms

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Type testing of a micro-generator

Operating range

Test 1: U = 195,5 V; f = 47,5 Hz; P = 1,00 Sn; cosφ = 1
Test 2: U = 253,0 V; f = 51,5 Hz; P = 1,00 Sn; cosφ = 1

Test sequence	Voltage [V]	Frequency [Hz]	Output power [W]	Cos φ [1]
1	253,1	51,50	4951	0,995
2	195,9	47,51	4277	0,994

Active power at under-frequency			
5-min mean value (each)	**a) 50 ± 0,01 [Hz]**	**b) - 0,4 to – 0,5 [Hz]**	**c) - 2,4 to - 2,5 [Hz]**
Frequency [Hz]:	50,00	49,55	47,55
Active power [kW]:	4,972	4,970	4,965
ΔP/PM [%] per 1 Hz:			-0,095

Power response to over-frequency							
1-min mean value [Hz]:	**a) 50,00**	**b) 50,25**	**c) 50,70**	**d) 51,15**	**e) 50,70**	**f) 50,25**	**g) 50,00**
1. Measurement a) to g): Active power output > 80% Pn							
Frequency [Hz]:	50,00	50,25	50,70	51,15	50,70	50,25	50,00
PM [kW]:	N/A	4,870	3,975	3,081	3,975	4,870	N/A
PE60 [kW]:	4,969	4,898	4,025	3,136	4,028	4,900	4,969
ΔPE60/PM [%]:	N/A	0,62	1,08	1,20	1,14	0,63	N/A
2. Measurement a) to g): Active power output 40% and 60% after freezing > 80% Pn							
Frequency [Hz]:	50,00	50,25	50,70	51,15	50,70	50,25	N/A
PM [kW]:	N/A	2,446	2,003	1,559	2,003	2,446	N/A
PE60 [kW]:	2,504	2,481	2,044	1,604	2,043	2,485	2,504
ΔPE60/PM [%]:	N/A	0,74	0,89	0,98	0,87	0,84	N/A
Limit ΔP/P1min:	+ 10 % of P_M						

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Reactive power			
Uncontrollable reactive power SB5.0-1AV-40			
Test Voltage / Output power	**211,6V**	**230V**	**248,4V**
25% PN	0,9861	0,9871c	0,9860c
50% PN	0,9958i	0,9949i	0,9951i
75% PN	0,9968i	0,9957i	0,9963i
100% PN	0,9965i	0,9955i	0,9963i
Limit	**>0,95**	**>0,95**	**>0,95**
Uncontrollable reactive power SB3.0-1AV-40			
Test Voltage / Output power	**211,6V**	**230V**	**248,4V**
25% PN	0,9683c	0,9666c	0,9633c
50% PN	0,9988c	0,9904c	0,9901c
75% PN	0,9933c	0,9935c	0,9931c
100% PN	0,9945i	0,9949i	0,9946i
Limit	**>0,95**	**>0,95**	**>0,95**

Appendix E Type Verification Test Report

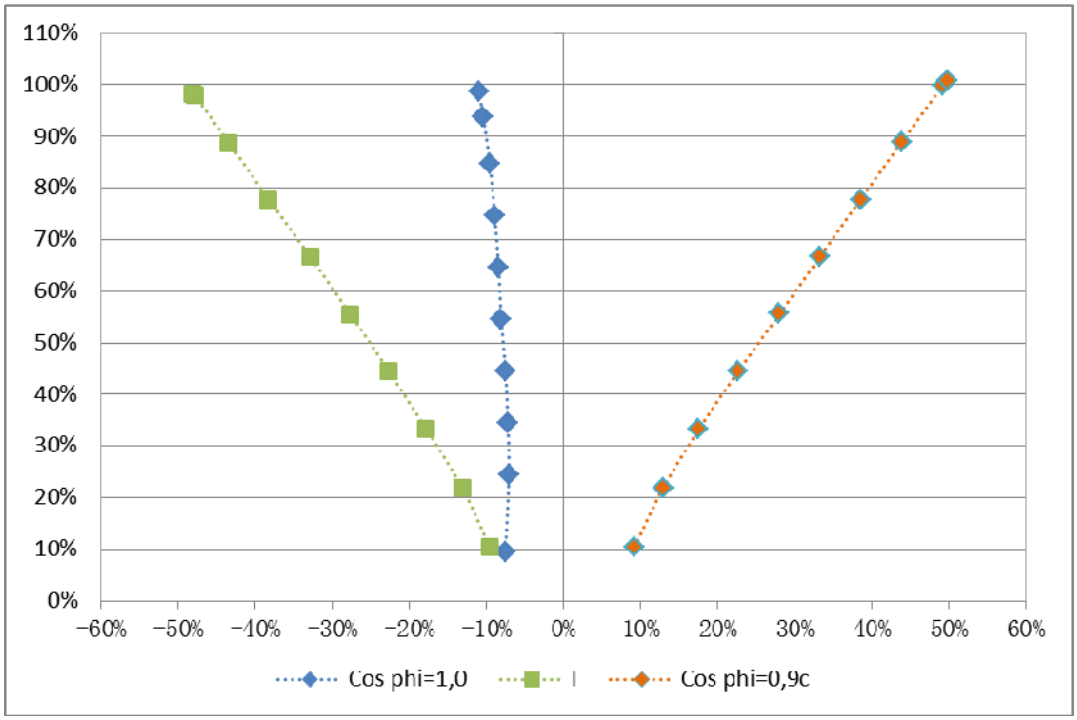
Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Controllable reactive power SB3.0-1AV-40 (Option 1)				
Inductive (supply reactive power)				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,279	-0,258	0,7348	0,299
10% - 20%	0,590	-0,354	0,8576	0,615
20% - 30%	0,896	-0,479	0,8819	0,929
30% - 40%	1,199	-0,610	0,8914	1,239
40% - 50%	1,498	-0,745	0,8954	1,549
50% - 60%	1,800	-0,887	0,8971	1,858
60% - 70%	2,099	-1,031	0,8975	2,167
70% - 80%	2,397	-1,171	0,8985	2,476
80% - 90%	2,644	-1,292	0,8985	2,733
90% - 100%	2,653	-1,299	0,8981	2,743
Capacitive (supply reactive power)				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,282	0,250	0,7489	0,301
10% - 20%	0,592	0,351	0,8603	0,616
20% - 30%	0,899	0,475	0,8841	0,929
30% - 40%	1,201	0,613	0,8907	1,240
40% - 50%	1,501	0,758	0,8927	1,548
50% - 60%	1,802	0,900	0,8947	1,858
60% - 70%	2,100	1,041	0,8960	2,167
70% - 80%	2,398	1,185	0,8966	2,475
80% - 90%	2,697	1,330	0,8969	2,785
90% - 100%	2,723	1,347	0,8963	2,813
Reactive power supply with set point Q=0				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,287	-0,225	0,7866	0,306
10% - 20%	0,729	-0,212	0,9561	0,756
20% - 30%	1,034	-0,216	0,9779	1,068
30% - 40%	1,337	-0,225	0,9859	1,377
40% - 50%	1,635	-0,242	0,9891	1,683
50% - 60%	1,938	-0,251	0,9916	1,995
60% - 70%	2,239	-0,267	0,9929	2,306
70% - 80%	2,539	-0,286	0,9937	2,615
80% - 90%	2,817	-0,312	0,9939	2,904
90% - 100%	2,960	-0,329	0,9939	3,052

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Diagram of inductive reactive power absorption



Note:
The minimum of Q cannot be less than 43.6% of the total output power.
The inverter is power derated by 10% of the nominal output power to reach the reactive output power.

Appendix E Type Verification Test Report

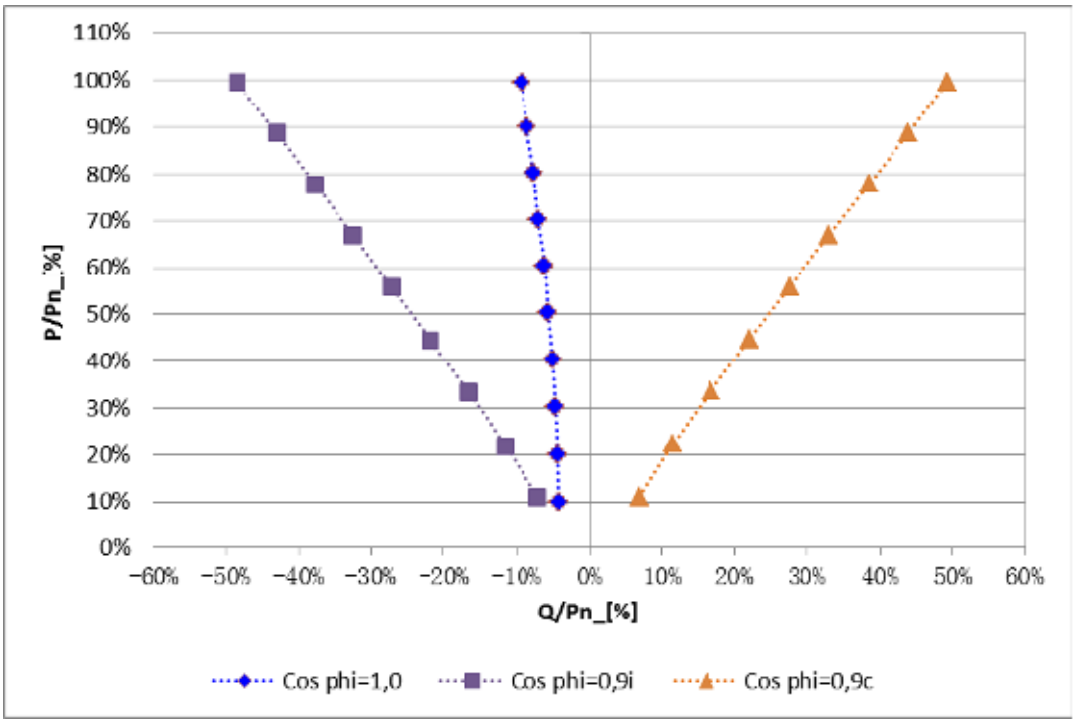
Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Controllable reactive power SB5.0-1AV-40 (Option 1)				
Inductive (supply reactive power)				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,492	-0,319	0,8395	0,508
10% - 20%	0,981	-0,519	0,8829	1,007
20% - 30%	1,506	-0,746	0,8935	1,527
30% - 40%	2,004	-0,987	0,8957	2,045
40% - 50%	2,507	-1,225	0,8973	2,565
50% - 60%	3,009	-1,462	0,8985	3,088
60% - 70%	3,501	-1,700	0,8984	3,596
70% - 80%	3,995	-1,935	0,8993	4,125
80% - 90%	4,477	-2,182	0,8989	4,651
90% - 100%	4,479	-2,181	0,8991	4,653
Capacitive (supply reactive power)				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,496	0,310	0,8476	0,510
10% - 20%	1,003	0,518	0,8884	1,029
20% - 30%	1,511	0,751	0,8955	1,551
30% - 40%	2,014	0,992	0,8971	2,071
40% - 50%	2,514	1,237	0,8972	2,589
50% - 60%	3,012	1,484	0,8971	3,107
60% - 70%	3,506	1,734	0,8964	3,625
70% - 80%	3,998	1,978	0,8963	4,143
80% - 90%	4,483	2,216	0,8964	4,654
90% - 100%	4,483	2,214	0,8967	4,654
Reactive power supply with set point Q=0				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,493	-0,210	0,9200	0,511
10% - 20%	1,002	-0,217	0,9773	1,030
20% - 30%	1,511	-0,230	0,9886	1,551
30% - 40%	2,015	-0,252	0,9923	2,069
40% - 50%	2,516	-0,281	0,9938	2,586
50% - 60%	3,017	-0,303	0,9950	3,105
60% - 70%	3,514	-0,351	0,9950	3,621
70% - 80%	4,009	-0,382	0,9955	4,138
80% - 90%	4,502	-0,433	0,9954	4,654
90% - 100%	4,974	-0,464	0,9957	5,150

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Diagram of inductive reactive power absorption



Note:
The minimum of Q cannot be less than 43.6% of the total output power.
The inverter is power derated by 10% of the nominal output power to reach the reactive output power.

Appendix E Type Verification Test Report

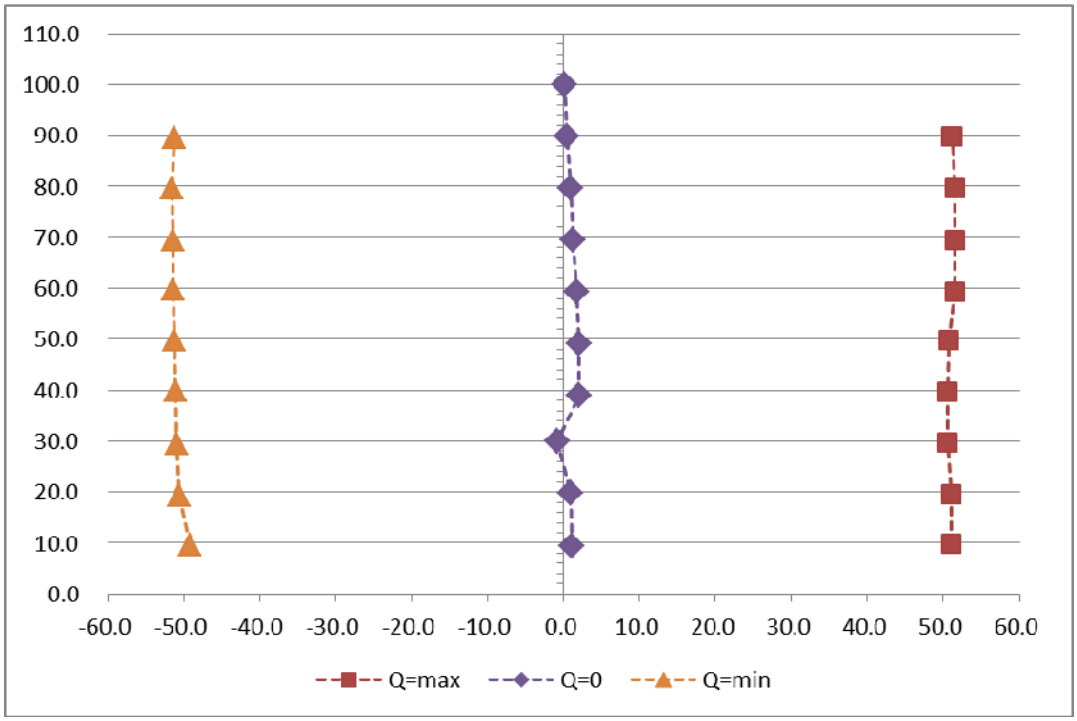
Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Controllable reactive power SB3.0-1AV-40 (Option 2)				
Inductive (supply reactive power)				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,291	-1,474	0,1939	0,324
10% - 20%	0,581	-1,517	0,3578	0,620
20% - 30%	0,885	-1,528	0,5013	0,928
30% - 40%	1,194	-1,533	0,6147	1,242
40% - 50%	1,498	-1,536	0,6983	1,553
50% - 60%	1,793	-1,542	0,7582	1,856
60% - 70%	2,082	-1,543	0,8035	2,154
70% - 80%	2,386	-1,548	0,8390	2,468
80% - 90%	2,690	-1,539	0,8680	2,782
90% - 100%	2,690	-1,539	0,8680	2,782
Capacitive (supply reactive power)				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,299	1,531	0,1915	0,328
10% - 20%	0,588	1,529	0,3587	0,620
20% - 30%	0,891	1,519	0,5060	0,927
30% - 40%	1,191	1,518	0,6172	1,232
40% - 50%	1,495	1,519	0,7013	1,543
50% - 60%	1,782	1,546	0,7555	1,836
60% - 70%	2,088	1,544	0,8040	2,149
70% - 80%	2,392	1,545	0,8401	2,464
80% - 90%	2,695	1,534	0,8691	2,778
90% - 100%	2,695	1,533	0,8691	2,778
Reactive power supply with set point Q=0				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,279	0,035	0,9922	0,287
10% - 20%	0,593	0,030	0,9987	0,604
20% - 30%	0,897	-0,023	0,9997	0,915
30% - 40%	1,171	0,060	0,9987	1,197
40% - 50%	1,475	0,062	0,9991	1,506
50% - 60%	1,780	0,051	0,9996	1,820
60% - 70%	2,084	0,039	0,9998	2,134
70% - 80%	2,389	0,027	0,9999	2,449
80% - 90%	2,693	0,016	1,0000	2,765
90% - 100%	2,998	0,003	1,0000	3,082

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Diagram of inductive reactive power absorption



Note:
The minimum of Q cannot be less than 43.6% of the total output power.
The inverter is power derated by 10% of the nominal output power to reach the reactive output power.

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Controllable reactive power SB5.0-1AV-40 (Option 2)				
Inductive (supply reactive power)				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,483	-2,467	0,1924	0,548
10% - 20%	0,894	-2,518	0,3347	0,966
20% - 30%	1,402	-2,533	0,4844	1,482
30% - 40%	1,909	-2,544	0,6002	2,001
40% - 50%	2,386	-2,557	0,6823	2,493
50% - 60%	2,893	-2,563	0,7485	3,018
60% - 70%	3,401	-2,563	0,7986	3,547
70% - 80%	3,909	-2,564	0,8362	4,079
80% - 90%	4,413	-2,557	0,8652	4,610
90% - 100%	4,443	-2,568	0,8658	4,643
Capacitive (supply reactive power)				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,497	2,537	0,1921	0,557
10% - 20%	0,986	2,592	0,3556	1,055
20% - 30%	1,392	2,583	0,4743	1,464
30% - 40%	1,898	2,578	0,5929	1,983
40% - 50%	2,406	2,570	0,6834	2,505
50% - 60%	2,912	2,574	0,7493	3,030
60% - 70%	3,421	2,572	0,7993	3,560
70% - 80%	3,926	2,581	0,8356	4,090
80% - 90%	4,430	2,571	0,8649	4,620
90% - 100%	4,451	2,569	0,8661	4,643
Reactive power supply with set point Q=0				
Power-BIN	**Active power [kW]**	**Reactive power [kVar]**	**Power factor (cos φ)**	**DC power [kW]**
0% - 10%	0,491	0,033	0,9978	0,496
10% - 20%	0,896	-0,047	0,9986	0,911
20% - 30%	1,404	-0,091	0,9979	1,432
30% - 40%	1,912	0,067	0,9994	1,955
40% - 50%	2,419	0,055	0,9998	2,481
50% - 60%	2,928	0,041	0,9999	3,009
60% - 70%	3,435	0,027	1,0000	3,539
70% - 80%	3,942	0,015	1,0000	4,072
80% - 90%	4,447	0,000	1,0000	4,606
90% - 100%	4,942	-0,015	1,0000	5,132

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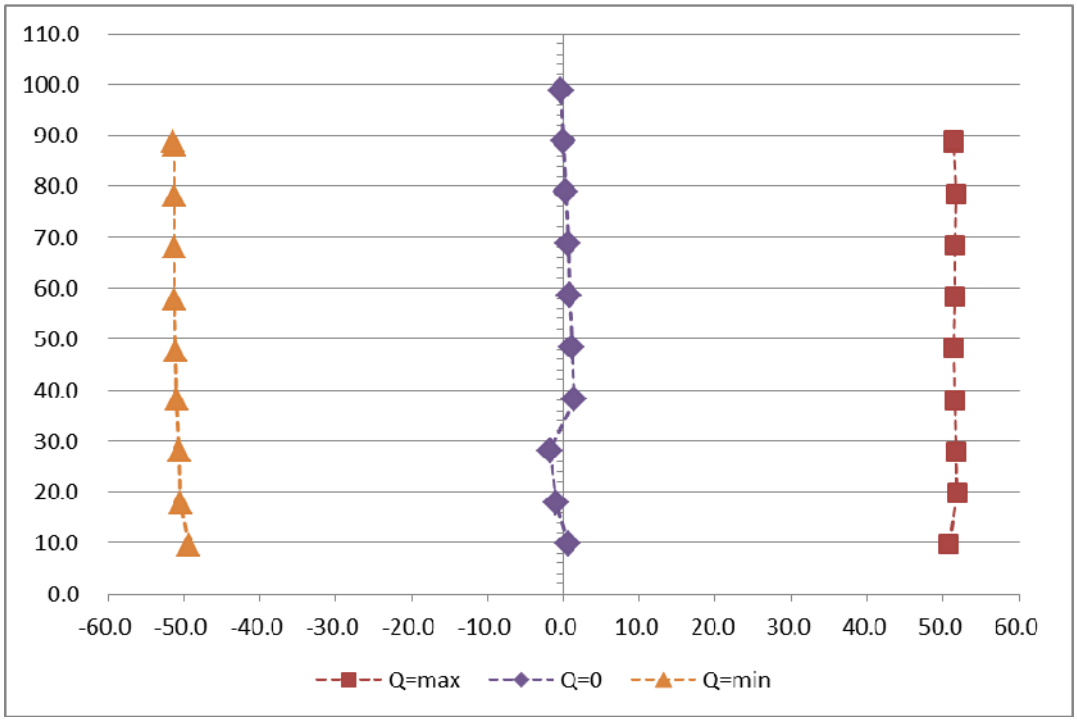
Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Diagram of inductive reactive power absorption



Note:
The minimum of Q cannot be less than 43.6% of the total output power.
The inverter is power derated by 10% of the nominal output power to reach the reactive output power.

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Q adjustment SB3.0-1AV-40				
100% Pn	**Reactive power set point Q [Var]**	**Measured reactive power Q [Var]**	**Measured cos φ**	**Deviation compared to setpoint ΔQ / PN [%]**
- Qmin	-1453	-1531,2	0,8683	2,61
0	0	-25,4	1,0000	0,85
+ Qmax	1453	1540,7	0,8673	2,92
Q adjustment				
50% Pn	**Reactive power set point Q [Var]**	**Measured reactive power Q [Var]**	**Measured cos φ**	**Deviation compared to setpoint ΔQ / PN [%]**
- Qmin	-1453	-1535,0	0,6959	2,73
0	0	-90,3	0,9982	-3,01
+ Qmax	1453	1543,8	0,6952	-3,03

Q adjustment SB5.0-1AV-40				
100% Pn	**Reactive power set point Q [Var]**	**Measured reactive power Q [Var]**	**Measured cos φ**	**Deviation compared to setpoint ΔQ / PN [%]**
- Qmin	2421	-2560,2	0,8669	-2,78
0	0	-196,6	0,9992	-3,93
+ Qmax	2421	2561,6	0,8676	2,81
Q adjustment				
50% Pn	**Reactive power set point Q [Var]**	**Measured reactive power Q [Var]**	**Measured cos φ**	**Deviation compared to setpoint ΔQ / PN [%]**
- Qmin	2421	-2553,5	0,6976	-2,65
0	0	21,7	1,0000	0,43
+ Qmax	2421	2571,3	0,6958	3,01

Appendix E Type Verification Test Report

Extract from test report according to EN 50438 **Nr. PV151106N051-2**

Connection and starting to generate electrical power		
Test according to EN 50438 with setting	**Min. voltage for connection to grid:**	197,8
	Max. voltage for connection to grid:	250,7
	Min. frequency for connection to grid:	47,55
	Max. frequency for connection to grid:	50,05
	Observation time (≥60s)	60s
Test		
	Voltage conditions	
a) Start up for voltage range	**<84% Un for twice of observation time**	**>111% Un for twice of observation time**
Connection:	No connection	No connection
Limit:	No connection allowed	
b) In voltage range at start-up	**≥84% Un within twice setting observation time**	**≤111% Un within twice setting observation time**
Reconnection time [s]	73	93
Limit:	Connected after setting observation time (≥60s)	
Gradient:	For adjustable micro generators the maximum occurring active power gradient after connection respectively start generating electrical power is less than the configured maximum active power per minute Max gradient: 10%Pn/min. For recorded gradient see diagram below.	
c) In voltage range after voltage failure	**≥84% Un for twice of setting observation time**	**≤111% Un for twice of setting observation time**
Reconnection time [s]	74	95
Limit:	Reconnection after setting observation time (≥60s)	
Gradient:	For adjustable micro generators the maximum occurring active power gradient after connection respectively start generating electrical power is less than the configured maximum active power per minute Max gradient: 10%Pn/min. For recorded gradient see diagram below.	
	Frequency conditions	
d) Start up for frequency range	**<47,45 Hz for twice of setting observation time**	**>50,15 Hz for twice of setting observation time**
Connection:	No connection	No connection
Limit	No connection allowed	
e) In frequency range at start-up	**≥47,45 Hz within twice of setting observation time**	**≤51,15 Hz within twice of setting observation time**
Reconnection time [s]	74	78
Limit:	Connected after setting delay time(≥60s)	
Gradient:	For adjustable micro generators the maximum occurring active power gradient after connection respectively start generating electrical power is less than the configured maximum active power per minute Max gradient: 10%Pn/min. For recorded gradient see diagram below.	

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f) In frequency range after frequency failure	≥47,45 Hz for twice of setting observation time	≤51,15 Hz for twice of setting observation time
Reconnection time [s]	74	72
Limit:	Reconnection after setting observation time (≥60s)	
Gradient:	For adjustable micro generators the maximum occurring active power gradient after connection respectively start generating electrical power is less than the configured maximum active power per minute Max gradient: 10%Pn/min. For recorded gradient see diagram below.	

Short-circuit current contribution					
Short-circuit current parameters					
For a directly coupled micro-generator			**For a Inverter micro-generator**		
Parameter	**Symbol**	**Value**	**Time after fault**	**Volts**	**Amps**
Peak Short Circuit current	I_p	N/A	20ms	26,06	25,221
Initial Value of aperiodic current	A	N/A	100ms	25,59	23,848
Initial symmetrical short-circuit current*	I_k	N/A	250ms	25,72	23,666
Decaying (aperiodic) component of short circuit current*	i_{DC}	N/A	500ms	25,95	23,665
Reactance/Resistance Ratio of source*	X/R	N/A	**Time to trip**	0,603	In seconds

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Power Quality. Harmonic current emission					
micro-generator		SB5.0-1AV-40			
Harmonic order n	**Current Magnitude [A] at 100% rated output power**	**% of Fundamental**	**Phase**	**Harmonic current limit EN61000-3-12 [%]**	
				1 phase	**3 phase**
1st	21,656	99,706	Phase 1	-	-
2nd	0,044	0,202	Phase 1	8	8
3rd	0,113	0,518	Phase 1	21,6	N/A
4th	0,004	0,017	Phase 1	4	4
5th	0,010	0,046	Phase 1	10,7	10,7
6th	0,003	0,016	Phase 1	2,67	2,67
7th	0,005	0,023	Phase 1	7,2	7,2
8th	0,004	0,017	Phase 1	2	2
9th	0,040	0,185	Phase 1	3,8	N/A
10th	0,004	0,018	Phase 1	1,6	1,6
11th	0,037	0,169	Phase 1	3,1	3,1
12th	0,004	0,017	Phase 1	1,33	1,33
13th	0,030	0,139	Phase 1	2	2
14th	0,004	0,019	Phase 1	N/A	N/A
15th	0,025	0,117	Phase 1	N/A	N/A
16th	0,004	0,017	Phase 1	N/A	N/A
17th	0,019	0,088	Phase 1	N/A	N/A
18th	0,004	0,018	Phase 1	N/A	N/A
19th	0,017	0,079	Phase 1	N/A	N/A
20th	0,004	0,018	Phase 1	N/A	N/A
21th	0,015	0,070	Phase 1	N/A	N/A
22th	0,004	0,019	Phase 1	N/A	N/A
23th	0,012	0,055	Phase 1	N/A	N/A
24th	0,004	0,020	Phase 1	N/A	N/A
25th	0,013	0,060	Phase 1	N/A	N/A
26th	0,005	0,021	Phase 1	N/A	N/A
27th	0,012	0,056	Phase 1	N/A	N/A
28th	0,004	0,020	Phase 1	N/A	N/A
29th	0,011	0,049	Phase 1	N/A	N/A
30th	0,005	0,021	Phase 1	N/A	N/A
31th	0,013	0,059	Phase 1	N/A	N/A
32th	0,004	0,018	Phase 1	N/A	N/A
33th	0,010	0,045	Phase 1	N/A	N/A
34th	0,005	0,022	Phase 1	N/A	N/A
35th	0,011	0,049	Phase 1	N/A	N/A
36th	0,005	0,021	Phase 1	N/A	N/A
37th	0,012	0,056	Phase 1	N/A	N/A
38th	0,004	0,021	Phase 1	N/A	N/A
39th	0,009	0,041	Phase 1	N/A	N/A
40th	0,005	0,022	Phase 1	N/A	N/A
THD_{40}	-	0,679	Phase 1	13	13
PWHD	-	1,215	Phase 1	22	22

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Voltage fluctuation and Flicker.					
SB3.0-1AV-40	Maximum permissible flicker and voltage fluctuation as per EN 61000-3-3				
Value	**Pst**	**Plt 2 hours**	**d(t) $_{500ms}$**	**dc**	**dmax**
Limit	1,0	0,65	3,3%	3,3%	4%
Test value	0,296	0,256	0,0%	0,46%	0,51
SB5.0-1AV-40	Maximum permissible flicker and voltage fluctuation as per EN 61000-3-11				
Value	**Pst**	**Plt 2 hours**	**d(t) $_{500ms}$**	**dc**	**dmax**
Limit	1,0	0,65	3,3%	3,3%	4%
Test value	0,281	0,246	0,0%	0,69%	0,79

DC-Injection.				
Protection limit SB3.0-1AV-40	Tested at four power levels, limit 0,5% of IAC_{nom} (65mA)			
Output power	**~20%**	**~50%**	**75%**	**~100%**
Max. test value (phase L1) [mA]	-45,9	-44,7	-41,6	-35,8
Protection limit SB5.0-1AV-40	Tested at four power levels, limit 0,5% of IAC_{nom} (435mA)			
Output power	**~20%**	**~50%**	**75%**	**~100%**
Max. test value (phase L1) [mA]	-61,8	-61,9	-63,4	-59,1