



Certificate of compliance

Applicant: Huawei Technologies Co., Ltd.
Administration Building, Headquarters of Huawei Technologies Co., Ltd.,
Bantian, Longgang District, Shenzhen, 518129,
P.R. China

Product: SOLAR INVERTER

Model: SUN2000-100KTL-M1

Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with Engineering Recommendation G99/1 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. This serves as a replacement for the disconnection device with isolating function that can access the distribution network provider at any time.

Applied rules and standards:

Engineering Recommendation G99/1-6:2020

Requirements for the connection of generation equipment in parallel with public distribution networks

DIN V VDE V 0126-1-1:2006-02 (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: PVUK190905N026-R1

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

Certificate number: U20-0172

Date of issue: 2020-03-31

Certification body



Holger Schaffer

Certification body Bureau Veritas Consumer Products Services Germany GmbH accredited according 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 A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVUK190905N026-R1

Type Approval and declaration of compliance with the requirements of Engineering Recommendation G99.

PGM Technology:	SOLAR INVERTER		
Manufacturer / applicant:	Huawei Technologies Co., Ltd.		
Address:	Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R. China		
Tel	+86 0755-28780808	Fax:	+86 0755-28780808
Email:	support@huawei.com	Website:	http://www.huawei.com

Rated values	SUN2000-100KTL-M1
MPP DC voltage range [V]	200-1000
Input DC voltage range [V]	200-1100
Input DC current [A]	10 x max. 26
Output AC voltage [V]	230/400 Vac, 3W+N+PE; 50Hz
Output AC current [A]	max. 160,4
Output power [kVA]	110

Firmware version	V500R001
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Measurement period:	2019-09-05 to 2020-03-16
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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 line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error.

The above stated Generating Units are tested according the requirements in the Engineering Recommendation G99/1. 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 Engineering Recommendation G99/1.

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

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Operating Range.	
Test 1	Voltage = 85% of nominal (195,5V) Frequency = 47Hz Power Factor = 1 Period of test 20 s
Connection:	Always connected
Limit:	Always connected
Test 2	Voltage = 85% of nominal (195,5V) Frequency = 47,5Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit:	Always connected
Test 3	Voltage = 110% of nominal (253V) Frequency = 51,5Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit:	Always connected
Test 4	Voltage = 110% of nominal (253V) Frequency = 52,0Hz Power Factor = 1 Period of test 15 minutes
Connection:	Always connected
Limit:	Always connected
Test 5	Confirm that the Power Generating Module is capable of staying connected to the Distribution Network and operate at rates of change of frequency up to 1 Hzs^{-1} as measured over a period of 500ms. Note that this is not expected to be demonstrated on site.
Connection:	Always connected
Limit:	Always connected

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Protection. Voltage tests.

Phase 1

Function	Setting		Trip test		No trip test	
	Voltage [V]	Time delay [s]	Voltage [V]	Time delay [s]	Voltage / time	Confirm no trip
U/V	184	2,5	182,8	2,524	188V / 5,0s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	261,2	1,040	258,2V 5,0s	No trip
O/V stage 2	273,7	0,5	272,8	0,517	269,7V 0,95s	No trip
					277,7V 0,45s	No trip

Phase 2

Function	Setting		Trip test		No trip test	
	Voltage [V]	Time delay [s]	Voltage [V]	Time delay [s]	Voltage / time	Confirm no trip
U/V	184	2,5	182,8	2,532	188V / 5,0s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	260,7	1,013	258,2V 5,0s	No trip
O/V stage 2	273,7	0,5	272,5	0,529	269,7V 0,95s	No trip
					277,7V 0,45s	No trip

Phase 3

Function	Setting		Trip test		No trip test	
	Voltage [V]	Time delay [s]	Voltage [V]	Time delay [s]	Voltage / time	Confirm no trip
U/V	184	2,5	183,9	2,525	188V / 5,0s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	261,6	1,034	258,2V 5,0s	No trip
O/V stage 2	273,7	0,5	273,5	0,525	269,7V 0,95s	No trip
					277,7V 0,45s	No trip

Note. For Voltage tests the Voltage required to trip is the setting $\pm 3,45V$. The time delay can be measured at a larger deviation than the minimum required to operate the protection. The No trip tests need to be carried out at the setting $\pm 4V$ and for the relevant times as shown in the table above to ensure that the protection will not trip in error.

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Protection. Frequency tests.						
Function	Setting		Trip test		No trip test	
	Frequency [Hz]	Time delay [s]	Frequency [Hz]	Time delay [s]	Frequency / time	Confirm no trip
U/F stage 1	47,5	20	47,49	20,023	47,7Hz / 30s	No trip
U/F stage 2	47	0,5	47,00	0,521	47,2Hz / 19,5s	No trip
					46,8Hz / 0,45s	No trip
O/F stage 2	52	0,5	52,01	0,523	51,8Hz / 120s	No trip
					52,2Hz / 0,45s	No trip

Note. For Frequency Trip tests the Frequency required to trip is the setting $\pm 0,1\text{Hz}$. In order to measure the time delay a larger deviation than the minimum required to operate the projection can be used. The "No-trip tests" need to be carried out at the setting $\pm 0,2\text{Hz}$ and for the relevant times as shown in the table above to ensure that the protection will not trip in error.

Protection. Loss of Mains.						
Inverters tested according to BS EN 62116.						
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. Ph1 fuse removed [s]	0,305	0,368	0,398	0,329	0,402	0,678
Trip time. Ph2 fuse removed [s]	0,305	0,368	0,398	0,329	0,402	0,679
Trip time. Ph3 fuse removed [s]	0,305	0,368	0,398	0,329	0,402	0,679

Note. Trip time limit is 0,5s. For technologies, which have a substantial shut down time this can be added to the 0,5s in establishing that the trip occurred in less than 0,5s maximum. Shut down time could therefore be up to 1,0s for these technologies.

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Protection. Re-connection timer.

Test should prove that the reconnection sequence starts in no less than 20 seconds for restoration of voltage and frequency to within the stage 1 settings of table 10.1.

Over Voltage				
Time delay setting		Measured delay		
20s		69,8s		
Under Voltage				
Time delay setting		Measured delay		
20s		67,6s		
Over Frequency				
Time delay setting		Measured delay		
20s		68,0s		
Under Frequency				
Time delay setting		Measured delay		
20s		67,4s		
	Checks on no reconnection when voltage or frequency is brought to just outside stage 1 limits of table 1.			
	At 266,2V	At 180,0V	At 47,4Hz	At 52,1Hz
Confirmation that the Generating Unit does not re-connect.	No reconnection	No reconnection	No reconnection	No reconnection

Protection. Frequency change, Stability test.

	Start Frequency [Hz]	Change	Test Duration	Confirm no trip
Positive Vector Shift	49,5	+50 degrees		No trip
Negative Vector Shift	50,5	-50 degrees		No trip
Positive Frequency drift	49,0 to 51,0	+0,95Hz/sec	2,1s	No trip
Negative Frequency drift	51,0 to 49,0	-0,95Hz/sec	2,1s	No trip

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Limited Frequency Sensitive Mode – Over Frequency							
1-min mean value [Hz]:	a) 50,00	b) 50,45	c) 50,70	d) 51,15	e) 50,70	f) 50,45	g) 50,00
1. Measurement a) to g): Active power output > 80% P_n							
Frequency [Hz]:	50,00	50,45	50,70	51,15	50,70	50,45	50,00
P _{expected} [kW]:	N/A	108,900	103,400	93,500	103,400	108,900	N/A
P _{measured} [kW]:	110,208	109,064	103,570	93,671	103,578	109,069	110,203
2. Measurement a) to g): Active power output 40% and 60% P_n							
Frequency [Hz]:	50,00	50,45	50,70	51,15	50,70	50,45	50,00
P _{expected} [kW]:	N/A	53,900	48,400	38,500	48,400	53,900	N/A
P _{measured} [kW]:	55,180	54,118	48,639	38,668	48,641	54,120	110,232

Output Power with falling Frequency						
Frequency setpoint [Hz]:	50,00	49,50	49,00	48,00	47,60	47,10
Frequency [Hz]:	50,00	49,50	49,00	48,00	47,60	47,10
Active power [kW]:	110,304	110,304	110,303	110,304	110,307	110,302
ΔP/P _{max} [%]:		0,276	0,276	0,276	0,279	0,275

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Nr. PVUK190905N026-R1

Power Quality. Harmonics.						
Phase 1						
Generating Unit rating per phase (rpp)						
	At 45-55% of rated output 16,6 kW		100% of rated output 33,3 kW			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-12 in %	
					1 phase	3 phase
2nd	0,219	0,151	0,063	0,043	8%	8%
3rd	0,251	0,173	0,563	0,389	21,6%	N/A
4th	0,060	0,041	0,082	0,057	4%	4%
5th	0,125	0,086	0,363	0,250	10,7%	10,7%
6th	0,054	0,037	0,053	0,036	2,67%	2,67%
7th	0,113	0,078	0,230	0,158	7,2%	7,2%
8th	0,056	0,039	0,030	0,021	2%	2%
9th	0,084	0,058	0,044	0,030	3,8%	N/A
10th	0,046	0,032	0,041	0,028	1,6%	1,6%
11th	0,193	0,133	0,288	0,198	3,1%	3,1%
12th	0,041	0,028	0,030	0,021	1,33%	1,33%
13th	0,197	0,136	0,188	0,130	2%	2%
14th	0,036	0,025	0,039	0,027	N/A	N/A
15th	0,088	0,061	0,076	0,053	N/A	N/A
16th	0,049	0,034	0,050	0,034	N/A	N/A
17th	0,223	0,154	0,264	0,182	N/A	N/A
18th	0,039	0,027	0,029	0,020	N/A	N/A
19th	0,184	0,127	0,231	0,160	N/A	N/A
20th	0,045	0,031	0,065	0,045	N/A	N/A
21th	0,051	0,035	0,041	0,028	N/A	N/A
22th	0,041	0,028	0,030	0,021	N/A	N/A
23th	0,184	0,127	0,179	0,123	N/A	N/A
24th	0,055	0,038	0,047	0,032	N/A	N/A
25th	0,201	0,139	0,277	0,191	N/A	N/A
26th	0,043	0,030	0,031	0,021	N/A	N/A
27th	0,071	0,049	0,049	0,033	N/A	N/A
28th	0,044	0,030	0,030	0,021	N/A	N/A
29th	0,171	0,118	0,149	0,103	N/A	N/A
30th	0,044	0,031	0,028	0,020	N/A	N/A
31th	0,233	0,161	0,284	0,196	N/A	N/A
32th	0,042	0,029	0,031	0,022	N/A	N/A
33th	0,094	0,065	0,048	0,033	N/A	N/A
34th	0,041	0,028	0,029	0,020	N/A	N/A
35th	0,141	0,098	0,168	0,116	N/A	N/A
36th	0,049	0,034	0,043	0,030	N/A	N/A
37th	0,221	0,152	0,258	0,178	N/A	N/A
38th	0,038	0,026	0,032	0,022	N/A	N/A
39th	0,097	0,067	0,053	0,036	N/A	N/A
40th	0,044	0,030	0,035	0,024	N/A	N/A

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVUK190905N026-R1

Power Quality. Harmonics.

Phase 2

Generating Unit rating per phase (rpp)

Harmonic	At 45-55% of rated output 16,6 kW		100% of rated output 33,3 kW		Limit in BS EN61000-3-12 in %	
	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]		
					1 phase	3 phase
2nd	0,198	0,137	0,130	0,090	8%	8%
3rd	0,232	0,160	0,536	0,370	21,6%	N/A
4th	0,078	0,054	0,080	0,055	4%	4%
5th	0,127	0,087	0,323	0,223	10,7%	10,7%
6th	0,056	0,039	0,043	0,029	2,67%	2,67%
7th	0,069	0,048	0,120	0,083	7,2%	7,2%
8th	0,056	0,039	0,032	0,022	2%	2%
9th	0,075	0,052	0,125	0,086	3,8%	N/A
10th	0,046	0,031	0,034	0,024	1,6%	1,6%
11th	0,220	0,152	0,231	0,160	3,1%	3,1%
12th	0,042	0,029	0,032	0,022	1,33%	1,33%
13th	0,166	0,115	0,205	0,142	2%	2%
14th	0,037	0,026	0,036	0,025	N/A	N/A
15th	0,047	0,032	0,141	0,098	N/A	N/A
16th	0,073	0,050	0,040	0,027	N/A	N/A
17th	0,198	0,137	0,232	0,160	N/A	N/A
18th	0,039	0,027	0,029	0,020	N/A	N/A
19th	0,179	0,124	0,296	0,204	N/A	N/A
20th	0,064	0,044	0,041	0,028	N/A	N/A
21th	0,052	0,036	0,102	0,070	N/A	N/A
22th	0,044	0,030	0,032	0,022	N/A	N/A
23th	0,194	0,134	0,198	0,137	N/A	N/A
24th	0,079	0,055	0,034	0,024	N/A	N/A
25th	0,192	0,132	0,296	0,204	N/A	N/A
26th	0,047	0,033	0,033	0,023	N/A	N/A
27th	0,086	0,059	0,098	0,068	N/A	N/A
28th	0,050	0,034	0,030	0,021	N/A	N/A
29th	0,169	0,117	0,192	0,133	N/A	N/A
30th	0,046	0,031	0,030	0,020	N/A	N/A
31th	0,246	0,170	0,290	0,200	N/A	N/A
32th	0,049	0,034	0,031	0,022	N/A	N/A
33th	0,099	0,068	0,099	0,068	N/A	N/A
34th	0,046	0,031	0,030	0,021	N/A	N/A
35th	0,135	0,093	0,182	0,126	N/A	N/A
36th	0,069	0,048	0,036	0,025	N/A	N/A
37th	0,236	0,163	0,289	0,199	N/A	N/A
38th	0,042	0,029	0,031	0,022	N/A	N/A
39th	0,103	0,071	0,086	0,059	N/A	N/A
40th	0,067	0,046	0,034	0,024	N/A	N/A

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVUK190905N026-R1

Power Quality. Harmonics.

Phase 3

Generating Unit rating per phase (rpp)

Harmonic	At 45-55% of rated output 16,6 kW		100% of rated output 33,3 kW		Limit in BS EN61000-3-12 in %	
	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	1 phase	3 phase
2nd	0,173	0,120	0,112	0,077	8%	8%
3rd	0,187	0,129	0,371	0,256	21,6%	N/A
4th	0,064	0,044	0,064	0,044	4%	4%
5th	0,115	0,079	0,439	0,303	10,7%	10,7%
6th	0,056	0,039	0,042	0,029	2,67%	2,67%
7th	0,088	0,061	0,122	0,084	7,2%	7,2%
8th	0,051	0,035	0,035	0,024	2%	2%
9th	0,062	0,043	0,127	0,088	3,8%	N/A
10th	0,047	0,032	0,053	0,036	1,6%	1,6%
11th	0,216	0,149	0,364	0,251	3,1%	3,1%
12th	0,038	0,026	0,031	0,021	1,33%	1,33%
13th	0,192	0,133	0,242	0,167	2%	2%
14th	0,035	0,024	0,043	0,029	N/A	N/A
15th	0,080	0,056	0,056	0,038	N/A	N/A
16th	0,046	0,032	0,042	0,029	N/A	N/A
17th	0,207	0,143	0,209	0,144	N/A	N/A
18th	0,039	0,027	0,030	0,021	N/A	N/A
19th	0,171	0,118	0,302	0,209	N/A	N/A
20th	0,043	0,030	0,042	0,029	N/A	N/A
21th	0,079	0,054	0,074	0,051	N/A	N/A
22th	0,040	0,027	0,030	0,021	N/A	N/A
23th	0,196	0,135	0,197	0,136	N/A	N/A
24th	0,051	0,035	0,036	0,025	N/A	N/A
25th	0,210	0,145	0,298	0,206	N/A	N/A
26th	0,042	0,029	0,031	0,022	N/A	N/A
27th	0,089	0,062	0,070	0,049	N/A	N/A
28th	0,042	0,029	0,029	0,020	N/A	N/A
29th	0,194	0,134	0,156	0,108	N/A	N/A
30th	0,043	0,030	0,029	0,020	N/A	N/A
31th	0,250	0,173	0,280	0,193	N/A	N/A
32th	0,040	0,028	0,028	0,019	N/A	N/A
33th	0,101	0,070	0,073	0,050	N/A	N/A
34th	0,039	0,027	0,029	0,020	N/A	N/A
35th	0,165	0,114	0,137	0,095	N/A	N/A
36th	0,044	0,030	0,035	0,024	N/A	N/A
37th	0,243	0,168	0,257	0,177	N/A	N/A
38th	0,036	0,025	0,031	0,022	N/A	N/A
39th	0,137	0,094	0,089	0,061	N/A	N/A
40th	0,041	0,028	0,035	0,024	N/A	N/A

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Power Quality. Power factor.

Output power	216,2V	230V	253V	Measured at three voltage levels and at full output. Voltage to be maintained within $\pm 1,5\%$ of the stated level during the test.
20%	0,9989	0,9990	0,9986	
50%	0,9997	0,9997	0,9997	
75%	0,9997	0,9998	0,9998	
100%	0,9996	0,9998	0,9998	
Limit	>0,95	>0,95	>0,95	

Power Quality. Voltage fluctuation and Flicker.
Phase 1

	Starting			Stopping			Running	
	dmax	dc	d(t)	dmax	dc	d(t)	Pst	Plt 2 hours
Measured values at test impedance	0,54%	0,04%	---	0,54%	0,11%	---	0,15	0,14
Measured values at standard impedance	0,54%	0,04%	---	0,54%	0,11%	---	0,15	0,14
Values for maximum impedance	0,54%	0,04%	---	0,54%	0,11%	---	0,15	0,14
Limits set under BS EN 61000-3-11	4%	3,3%	3,3% 500ms	4%	3,3%	3,3% 500ms	1,0	0,65

Phase 2

	Starting			Stopping			Running	
	dmax	dc	d(t)	dmax	dc	d(t)	Pst	Plt 2 hours
Measured values at test impedance	0,46%	0,02%	---	0,37%	0,11%	---	0,22	0,18
Measured values at standard impedance	0,46%	0,02%	---	0,37%	0,11%	---	0,22	0,18
Values for maximum impedance	0,46%	0,02%	---	0,37%	0,11%	---	0,22	0,18
Limits set under BS EN 61000-3-11	4%	3,3%	3,3% 500ms	4%	3,3%	3,3% 500ms	1,0	0,65

Phase 3

	Starting			Stopping			Running	
	dmax	dc	d(t)	dmax	dc	d(t)	Pst	Plt 2 hours
Measured values at test impedance	1,25%	0,06%	---	0,56%	0,01%	---	0,19	0,17
Measured values at standard impedance	1,25%	0,06%	---	0,56%	0,01%	---	0,19	0,17
Values for maximum impedance	1,25%	0,06%	---	0,56%	0,01%	---	0,19	0,17
Limits set under BS EN 61000-3-11	4%	3,3%	3,3% 500ms	4%	3,3%	3,3% 500ms	1,0	0,65

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Extract from test report according to the Engineering Recommendation G99

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Test impedance	R	0,24	Ω	XI	0,15	Ω
	Z	0,283	Ω			
Standard impedance	R	0,24	Ω	XI	0,15	Ω
	Z	0,283	Ω			
Maximum impedance	R	0,24	Ω	XI	0,15	Ω
	Z	0,283	Ω			

Power Quality. DC injection.			
Phase 1			
Test level power [%]	10	55	100
Recorded value [mA]	170	170	57
Recorded value [%]	0,117	0,117	0,039
Limit [%]	0,25	0,25	0,25
Phase 2			
Test level power [%]	10	55	100
Recorded value [mA]	200	210	65
Recorded value [%]	0,138	0,145	0,045
Limit [%]	0,25	0,25	0,25
Phase 3			
Test level power [%]	10	55	100
Recorded value [mA]	120	130	79
Recorded value [%]	0,083	0,090	0,055
Limit [%]	0,25	0,25	0,25
Note. DC-injection is tested at each phase of the inverter and a limit of 0,25% per phase was used as pass criteria.			

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

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Fault level Contribution.

Phase 1

For a directly coupled SSEG			For a Inverter SSEG		
Parameter	Symbol	Value	Time after fault	Volts [V]	Amps [A]
Peak Short Circuit current	I_p	N/A	20ms	3,73	130,453
Initial Value of aperiodic current	A	N/A	100ms	0,87	0,564
Initial symmetrical short-circuit current*	I_k	N/A	250ms	0,87	0,513
Decaying (aperiodic) component of short circuit current*	i_{DC}	N/A	500ms	0,92	0,570
Reactance/Resistance Ratio of source*	X/R	N/A	Time to Trip [s]	0,068	

Phase 2

For a directly coupled SSEG			For a Inverter SSEG		
Parameter	Symbol	Value	Time after fault	Volts [V]	Amps [A]
Peak Short Circuit current	I_p	N/A	20ms	29,94	128,098
Initial Value of aperiodic current	A	N/A	100ms	0,84	0,459
Initial symmetrical short-circuit current*	I_k	N/A	250ms	0,87	0,517
Decaying (aperiodic) component of short circuit current*	i_{DC}	N/A	500ms	0,76	0,484
Reactance/Resistance Ratio of source*	X/R	N/A	Time to Trip [s]	0,068	

Phase 3

For a directly coupled SSEG			For a Inverter SSEG		
Parameter	Symbol	Value	Time after fault	Volts [V]	Amps [A]
Peak Short Circuit current	I_p	N/A	20ms	31,93	123,399
Initial Value of aperiodic current	A	N/A	100ms	0,93	0,719
Initial symmetrical short-circuit current*	I_k	N/A	250ms	0,97	0,622
Decaying (aperiodic) component of short circuit current*	i_{DC}	N/A	500ms	0,94	0,735
Reactance/Resistance Ratio of source*	X/R	N/A	Time to Trip [s]	0,068	

For rotating machines and linear piston machines the test should produce a 0s – 2s plot of the short circuit current as seen at the Generating Unit terminals.

* Values for these parameters should be provided where the short circuit duration is sufficiently long to enable interpolation of the plot.

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules

Extract from test report according to the Engineering Recommendation G99

Nr. PVUK190905N026-R1

Self Monitoring – Solid state switching.	N/A
It has been verified that in the event of the solid state switching device failing to disconnect the Power Park Module, the voltage on the output side of the switching device is reduced to a value below 50 volts within 0,5 seconds.	N/A
Note. Unit do not provide solid state switching relays. In case the semiconductor bridge is switched off, then the voltage on the output drops to 0. In this case the relays on the output will also open (Functional safety of the internal automatic disconnection device according to VDE 0126-1-1).	

Logic Interface (input port)	P
Confirm that an input port is provided and can be used to shut down the module.	Yes