Certificate of compliance

Applicant:	**NingBo Deye Inverter Technology Co., Ltd.** **No. 26 South YongJiang Road, Daqi, Beilun, NingBo, China**
Product:	**Photovoltaic inverter**
Model:	**SUN-40K-G04, SUN-45K-G04, SUN-50K-G04, SUN-60K-G04,** **SUN-40K-G04P3-EU-CM3, SUN-45K-G04P3-EU-CM3,** **SUN-50K-G04P3-EU-CM4, SUN-60K-G04P3-EU-CM4**

Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with Engineering Recommendation G99/NI 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, which can be accessed the distribution network provider at any time.

Applied rules and standards:

Engineering Recommendation G99/NI-1
Requirements for the connection of generation equipment in parallel with public distribution networks in Northern Ireland

DIN VDE V 0124-100:2020 (5.5.2.1 Functional safety of network and system protection)
Grid integration of generator plants - Low-voltage - Test requirements for generator units to be connected to and operated in parallel with low-voltage distribution networks

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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Certification Program: **NSOP-0032-DEU-ZE-ES-V10**
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Certification body

Domenik Koll
Head of Energy Systems Germany

Accreditation

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

Appendix A2-3 Compliance Verification Report for Inverter Connected Power Generating Modules			
Extract from test report according to the Engineering Recommendation G99/NI			
Type Approval and declaration of compliance with the requirements of Engineering Recommendation G99/NI.			
PGM Technology	Photovoltaic inverter		
Manufacturer	NingBo Deye Inverter Technology Co., Ltd.		
Address	No. 26 South YongJiang Road, Daqi, Beilun, NingBo, China		
Tel	+852 2884 4318	**Fax**	--
Email	zhaoxt@deye.com.cn	**Website**	--

PGM Model	**SUN-40K-G04**	**SUN-45K-G04**	**SUN-50K-G04**	**SUN-60K-G04**
Input (DC photovoltaic)				
MPPT DC voltage range [V]	200-1000	200-1000	200-1000	200-1000
Max. Input DC voltage [V]	1100	1100	1100	1100
Input DC current [A]	40+40+40	40+40+40	40+40+40+40	40+40+40+40
Output (AC)				
Output AC voltage [V]:	3L/N/PE, 230/400V, 50Hz	3L/N/PE, 230/400V, 50Hz	3L/N/PE, 230/400V, 50Hz	3L/N/PE, 230/400V, 50Hz
Rated Output AC current [A]:	58,0	65,2	72,5	87,0
Max. Output AC current [A]:	63,8	71,7	79,7	95,7
Rated output power [kW]:	40,0	45,0	50,0	60,0
Max. output power [kVA]:	44,0	49,5	55,0	66,0

PGM Model	**SUN-40K-G04P3-EU-CM3**	**SUN-45K-G04P3-EU-CM3**	**SUN-50K-G04P3-EU-CM4**	**SUN-60K-G04P3-EU-CM4**
Input (DC photovoltaic)				
MPPT DC voltage range [V]	200-1000	200-1000	200-1000	200-1000
Max. Input DC voltage [V]	1100	1100	1100	1100
Input DC current [A]	40+40+40	40+40+40	40+40+40+40	40+40+40+40
Output (AC)				
Output AC voltage [V]:	3L/N/PE, 230/400V, 50Hz	3L/N/PE, 230/400V, 50Hz	3L/N/PE, 230/400V, 50Hz	3L/N/PE, 230/400V, 50Hz
Rated Output AC current [A]:	58,0	65,3	72,5	87,0
Max. Output AC current [A]:	63,8	71,8	79,8	95,7
Rated output power [kW]:	40,0	45,0	50,0	60,0
Max. output power [kVA]:	44,0	49,5	55,0	66,0

Interface protection system and interface switch (Network and system protection "NS-protection")	
Type of protection	integrated NS-protection
Assigned to generation unit type	SUN-40K-G04, SUN-45K-G04, SUN-50K-G04, SUN-60K-G04, SUN-40K-G04P3-EU-CM3, SUN-45K-G04P3-EU-CM3, SUN-50K-G04P3-EU-CM4, SUN-60K-G04P3-EU-CM4
Integrated interface switch	Type of switching equipment 1: Relay (Model ME101-1A-1-F) Type of switching equipment 2: Relay (Model ME101-1A-1-F)
	Note: The output is switched off by the inverter bridge and two relay in series in each line and neutral.
Firmware version	5412-0326
The above stated Generating Units are tested according the requirements in the Engineering Recommendation G99/NI. 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/NI.	

Operating Range.	
Test 1	Voltage = 85% of nominal (195,5 V) Frequency = 47,0 Hz Power Factor = 1 Period of test 20 seconds
Connection	Always connected
Limit	Always connected
Test 2	Voltage = 85% of nominal (195,5 V) Frequency = 47,5 Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit	Always connected
Test 3	Voltage = 110% of nominal (253,0 V) Frequency = 51,5 Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit	Always connected
Test 4	Voltage = 110% of nominal (253,0 V) Frequency = 52,0 Hz Power Factor = 1 Period of test 15 minutes
Connection:	Always connected
Limit	Always connected
Test 5	Voltage = 100% of nominal (230,0 V) Frequency = 50,0 Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit:	Always connected
Test 6 RoCof withstand	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 500 ms Note that this is not expected to be demonstrated on site.
Connection:	Always connected
Limit:	Always connected

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	184,0	2,5	184,15	2,516	188 V / 5,00 s	No trip
					180 V / 2,45 s	No trip
O/V stage 1	262,2	1,0	262,65	1,061	258,2 V / 5,00 s	No trip
O/V stage 2	273,7	0,5	273,74	0,502	269,7 V / 0,95 s	No trip
					277,7 V / 0,45 s	No trip
Note. For Voltage tests the Voltage required to trip is the setting ±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 ±4V and for the relevant times as shown in the table above to ensure that the protection will not trip in error.						

Protection. Voltage tests.						
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 stage 1	184,0	2,5	183,72	2,531	188 V / 5,00 s	No trip
					180 V / 2,45 s	No trip
O/V stage 1	262,2	1,0	262,24	1,091	258,2 V / 5,00 s	No trip
O/V stage 2	273,7	0,5	273,36	0,509	269,7 V / 0,95 s	No trip
					277,7 V / 0,45 s	No trip

Protection. Voltage tests.						
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 stage 1	184,0	2,5	184,27	2,525	188 V / 5,00 s	No trip
					180 V / 2,45 s	No trip
O/V stage 1	262,2	1,0	262,86	1,037	258,2 V / 5,00 s	No trip
O/V stage 2	273,7	0,5	273,79	0,517	269,7 V / 0,95 s	No trip
					277,7V 0,45s	No trip
Note. For Voltage tests the Voltage required to trip is the setting ±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 ±4V and for the relevant times as shown in the table above to ensure that the protection will not trip in error.						

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	20,0	47,50	20,071	47,7 Hz / 30,00 s	No trip
U/F stage 2	47,0	0,5	47,00	0,539	47,2 Hz / 19,50 s	No trip
					46,8 Hz / 0,45 s	No trip
O/F stage 1	52,0	0,5	52,00	0,521	51,8 Hz / 120,00 s	No trip
					52,2Hz / 0,45s	No trip
Note. For Frequency Trip tests the Frequency required to trip is the setting ±0,1Hz. 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 ±0,2Hz 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]	0,143	0,129	0,346	0,173	0,256	0,333
Note. Trip time limit is 0,5s.						

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 (258,2 V)				
Time delay setting	**Measured delay**			
20s	38,5			
Under Voltage (188,0 V)				
Time delay setting	**Measured delay**			
20s	36,9			
Over Frequency (51,9 V)				
Time delay setting	**Measured delay**			
20s	35,1			
Under Frequency (47,6 V)				
Time delay setting	**Measured delay**			
20s	31,2			
	Checks on no reconnection when voltage or frequency is brought to just outside stage 1 limits of table 1.			
	At 266,2 V	At 180,0 V	At 47,4 Hz	At 52,1 Hz
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

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% Pn							
Frequency [Hz]	50,00	50,45	50,70	51,15	50,70	50,45	50,00
$P_{expected}$ [kW]	60,00	59,40	56,40	51,00	56,40	59,40	60,00
$P_{measured}$ [kW]	60,00	59,40	56,33	51,02	56,33	59,40	60,01
2. Measurement a) to g): Active power output 40% and 60% Pn							
Frequency [Hz]	50,00	50,45	50,70	51,15	50,70	50,45	50,00
$P_{expected}$ [kW]	30,00	29,40	26,40	21,00	26,40	29,40	60,00
$P_{measured}$ [kW]	30,04	29,39	26,38	20,97	26,39	29,39	60,04

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]	60,01	60,01	60,02	60,03	60,03	60,02
ΔP/Pmax [%]		0,02	0,03	0,05	0,05	0,03

Note.

For a CHP the test point a) at 50,00Hz is taken as Registered capacity (P_{max}) due to limited discrete operating points of the CHP's thermal process.

Power Quality. Harmonics.						
Phase 1						
SSEG rating per phase (rpp)			**SUN-60K-G04**			
	At 45-55% of rated output 30,0 kW		**100% of rated output 60,0kW**			
Harmonic	**Measured Value (MV) in [A]**	**Measured Value (%) in [A]**	**Measured Value (MV) in [A]**	**Measured Value (%) in [A]**	Limit in BS EN61000-3-12 in %	
					1 phase	3 phase
2nd	0,425	0,489	0,390	0,448	8%	8%
3rd	0,080	0,092	0,088	0,101	21,6%	N/A
4th	0,208	0,239	0,335	0,386	4%	4%
5th	0,129	0,148	0,160	0,184	10,7%	10,7%
6th	0,041	0,047	0,068	0,079	2,67%	2,67%
7th	0,525	0,603	0,352	0,405	7,2%	7,2%
8th	0,197	0,226	0,351	0,403	2%	2%
9th	0,079	0,091	0,133	0,153	3,8%	N/A
10th	0,162	0,186	0,455	0,523	1,6%	1,6%
11th	0,143	0,165	0,212	0,244	3,1%	3,1%
12th	0,026	0,029	0,075	0,087	1,33%	1,33%
13th	0,604	0,694	0,106	0,122	2%	2%
14th	0,063	0,073	0,181	0,208	N/A	N/A
15th	0,042	0,049	0,122	0,141	N/A	N/A
16th	0,086	0,099	0,149	0,172	N/A	N/A
17th	0,674	0,775	0,202	0,232	N/A	N/A
18th	0,032	0,037	0,075	0,086	N/A	N/A
19th	0,397	0,456	0,226	0,260	N/A	N/A
20th	0,086	0,099	0,033	0,038	N/A	N/A
21th	0,023	0,027	0,040	0,046	N/A	N/A
22th	0,081	0,093	0,102	0,118	N/A	N/A
23th	0,189	0,217	0,399	0,459	N/A	N/A
24th	0,029	0,034	0,051	0,059	N/A	N/A
25th	0,208	0,239	0,368	0,424	N/A	N/A
26th	0,079	0,091	0,172	0,198	N/A	N/A
27th	0,028	0,033	0,087	0,100	N/A	N/A
28th	0,029	0,033	0,056	0,064	N/A	N/A
29th	0,289	0,333	0,307	0,353	N/A	N/A
30th	0,029	0,033	0,085	0,097	N/A	N/A
31th	0,283	0,325	0,185	0,213	N/A	N/A
32th	0,054	0,062	0,035	0,040	N/A	N/A
33th	0,040	0,046	0,057	0,065	N/A	N/A
34th	0,060	0,069	0,077	0,089	N/A	N/A
35th	0,062	0,071	0,046	0,052	N/A	N/A
36th	0,026	0,030	0,079	0,090	N/A	N/A
37th	0,141	0,162	0,052	0,059	N/A	N/A
38th	0,092	0,105	0,099	0,114	N/A	N/A
39th	0,021	0,025	0,049	0,056	N/A	N/A
40th	0,098	0,113	0,106	0,122	N/A	N/A
THD_{40}	-	1,595	--	1,430	23%	13%
PWHD	-	5,167	--	4,732	23%	22%

Power Quality. Harmonics.						
Phase 2						
SSEG rating per phase (rpp)			**SUN-60K-G04**			
	At 45-55% of rated output 30,0 kW		**100% of rated output 60,0kW**			
Harmonic	**Measured Value (MV) in [A]**	**Measured Value (%) in [A]**	**Measured Value (MV) in [A]**	**Measured Value (%) in [A]**	Limit in BS EN61000-3-12 in %	
					1 phase	3 phase
2nd	0,227	0,261	0,142	0,164	8%	8%
3rd	0,056	0,064	0,114	0,131	21,6%	N/A
4th	0,235	0,270	0,265	0,305	4%	4%
5th	0,241	0,278	0,267	0,307	10,7%	10,7%
6th	0,037	0,043	0,074	0,085	2,67%	2,67%
7th	0,553	0,636	0,319	0,367	7,2%	7,2%
8th	0,189	0,217	0,390	0,448	2%	2%
9th	0,057	0,066	0,091	0,104	3,8%	N/A
10th	0,159	0,183	0,351	0,403	1,6%	1,6%
11th	0,168	0,194	0,190	0,219	3,1%	3,1%
12th	0,044	0,050	0,077	0,089	1,33%	1,33%
13th	0,628	0,723	0,064	0,074	2%	2%
14th	0,060	0,069	0,120	0,138	N/A	N/A
15th	0,041	0,047	0,110	0,127	N/A	N/A
16th	0,090	0,103	0,149	0,171	N/A	N/A
17th	0,644	0,740	0,249	0,287	N/A	N/A
18th	0,043	0,049	0,080	0,092	N/A	N/A
19th	0,408	0,469	0,206	0,237	N/A	N/A
20th	0,067	0,077	0,070	0,081	N/A	N/A
21th	0,033	0,037	0,049	0,056	N/A	N/A
22th	0,074	0,085	0,050	0,058	N/A	N/A
23th	0,155	0,178	0,409	0,470	N/A	N/A
24th	0,057	0,066	0,054	0,062	N/A	N/A
25th	0,229	0,263	0,361	0,416	N/A	N/A
26th	0,071	0,082	0,148	0,171	N/A	N/A
27th	0,054	0,063	0,081	0,094	N/A	N/A
28th	0,038	0,043	0,082	0,094	N/A	N/A
29th	0,278	0,320	0,257	0,296	N/A	N/A
30th	0,045	0,052	0,069	0,079	N/A	N/A
31th	0,350	0,403	0,286	0,329	N/A	N/A
32th	0,057	0,066	0,048	0,056	N/A	N/A
33th	0,032	0,037	0,057	0,065	N/A	N/A
34th	0,088	0,101	0,040	0,047	N/A	N/A
35th	0,081	0,093	0,073	0,084	N/A	N/A
36th	0,042	0,048	0,064	0,073	N/A	N/A
37th	0,126	0,145	0,058	0,066	N/A	N/A
38th	0,096	0,110	0,095	0,109	N/A	N/A
39th	0,027	0,031	0,043	0,049	N/A	N/A
40th	0,086	0,099	0,098	0,112	N/A	N/A
THD_{40}	-	1,592	--	1,316	23%	13%
PWHD	-	5,261	--	4,758	23%	22%

Power Quality. Harmonics.						
Phase 3						
SSEG rating per phase (rpp)			**SUN-60K-G04**			
	At 45-55% of rated output 30,0 kW		**100% of rated output 60,0kW**			
Harmonic	**Measured Value (MV) in [A]**	**Measured Value (%) in [A]**	**Measured Value (MV) in [A]**	**Measured Value (%) in [A]**	Limit in BS EN61000-3-12 in %	
					1 phase	3 phase
2nd	0,229	0,263	0,256	0,295	8%	8%
3rd	0,050	0,057	0,067	0,077	21,6%	N/A
4th	0,231	0,266	0,247	0,285	4%	4%
5th	0,194	0,223	0,256	0,295	10,7%	10,7%
6th	0,035	0,041	0,036	0,041	2,67%	2,67%
7th	0,576	0,662	0,234	0,269	7,2%	7,2%
8th	0,232	0,267	0,389	0,447	2%	2%
9th	0,046	0,053	0,109	0,126	3,8%	N/A
10th	0,163	0,188	0,462	0,531	1,6%	1,6%
11th	0,150	0,172	0,140	0,161	3,1%	3,1%
12th	0,028	0,032	0,020	0,023	1,33%	1,33%
13th	0,596	0,685	0,037	0,043	2%	2%
14th	0,044	0,051	0,087	0,100	N/A	N/A
15th	0,022	0,026	0,038	0,044	N/A	N/A
16th	0,076	0,087	0,098	0,113	N/A	N/A
17th	0,684	0,786	0,249	0,287	N/A	N/A
18th	0,025	0,029	0,020	0,024	N/A	N/A
19th	0,420	0,483	0,251	0,288	N/A	N/A
20th	0,091	0,105	0,061	0,071	N/A	N/A
21th	0,027	0,031	0,026	0,030	N/A	N/A
22th	0,104	0,119	0,114	0,131	N/A	N/A
23th	0,118	0,136	0,319	0,366	N/A	N/A
24th	0,040	0,046	0,025	0,029	N/A	N/A
25th	0,194	0,223	0,331	0,380	N/A	N/A
26th	0,039	0,045	0,072	0,083	N/A	N/A
27th	0,037	0,042	0,026	0,030	N/A	N/A
28th	0,024	0,028	0,036	0,041	N/A	N/A
29th	0,277	0,318	0,264	0,304	N/A	N/A
30th	0,031	0,036	0,027	0,031	N/A	N/A
31th	0,336	0,387	0,253	0,291	N/A	N/A
32th	0,046	0,052	0,027	0,031	N/A	N/A
33th	0,023	0,026	0,021	0,024	N/A	N/A
34th	0,090	0,104	0,054	0,062	N/A	N/A
35th	0,091	0,105	0,075	0,086	N/A	N/A
36th	0,030	0,034	0,027	0,031	N/A	N/A
37th	0,133	0,153	0,092	0,105	N/A	N/A
38th	0,104	0,119	0,053	0,061	N/A	N/A
39th	0,028	0,032	0,024	0,028	N/A	N/A
40th	0,059	0,068	0,036	0,041	N/A	N/A
THD_{40}	-	1,590	--	1,258	23%	13%
PWHD	-	5,261	--	4,159	23%	22%

Power Quality. Power factor.				
Output power	216,2V	230V	253V	Measured at three voltage levels and at full output. Voltage to be maintained within ±1,5% of the stated level during the test.
20%	0,9941	0,9938	0,9932	
50%	0,9992	0,9991	0,9988	
75%	0,9997	0,9997	0,9996	
100%	0,9998	0,9998	0,9998	
Limit	> 0,95	> 0,95	> 0,95	

Power Quality. Voltage fluctuation and Flicker.								
	Starting			**Stopping**			**Running**	
	dmax	**dc**	**d(t)**	**dmax**	**dc**	**d(t)**	**Pst**	**Plt 2 hours**
Measured values at test impedance	0,351	0,170	0,00	0,304	0,153	0,00	0,123	0,114
Measured values at standard impedance	0,351	0,170	0,00	0,304	0,153	0,00	0,157	0,158
Values for maximum impedance	0,351	0,170	0,00	0,304	0,153	0,00	0,157	0,158
Limits set under BS EN 61000-3-11	4%	3,3%	3,3% 500ms	4%	3,3%	3,3% 500ms	1,0	0,65

Test impedance	R	0,24	Ω	X_l	0,15	Ω
	Z	0,28	Ω			
Standard impedance	R	0,24	Ω	Xl	0,15	Ω
	Z	0,28	Ω			
Maximum impedance	R	0,24	Ω	Xl	0,15	Ω
	Z_{max}	0,28	Ω			

Power Quality. DC injection.			
Phase 1			
Test level power [%]	10	55	100
Recorded value [A]	0,132	0,140	0,110
As % of rated AC current [%]	0,152	0,161	0,127
Limit [%]	0,25	0,25	0,25
Phase 2			
Test level power [%]	10	55	100
Recorded value [A]	0,116	0,089	0,108
As % of rated AC current [%]	0,133	0,102	0,124
Limit [%]	0,25	0,25	0,25
Phase 3			
Test level power [%]	10	55	100
Recorded value [A]	0,038	0,040	0,048
As % of rated AC current [%]	0,044	0,046	0,055
Limit [%]	0,25	0,25	0,25
Note. Informative measurement of DC-injection of each phase of the inverter and a limit of 0,25% per phase of the rated current per phase as pass criteria.			
Sum of all Phases Tests are carried out at three defined power levels ±5%. At 230 V a 60,0 kW three phase Inverter has a current output of 260,87 A so DC limit is 652,17 mA. These tests is undertaken in accordance with Annex A.7.1.4.4. The % DC injection ("as % of rated AC current" below) is calculated as follows: % DC injection = Recorded DC value in Amps / Base current where the base current is the Registered Capacity (W) / V phase. The % DC injection should not be greater than 0,25%.			
Sum of all Phases			
Test level power [%]	10	55	100
Recorded value Sum [A]	0,286	0,269	0,266
As % of rated AC current [%]	0,110	0,103	0,102
Limit [%]	0,25	0,25	0,25

Fault level Contribution.					
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	86,19V	2,639A
Initial Value of aperiodic current	A	N/A	100ms	39,43V	1,67A
Initial symmetrical short-circuit current*	I_k	N/A	250ms	11,85V	0,45A
Decaying (aperiodic) component of short circuit current*	i_{DC}	N/A	500ms	8,40V	0,41A
Reactance/Resistance Ratio of source*	X/R	N/A	**Time to Trip [s]**	0,142s	In seconds
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.					

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 / VDE 0124-100).	

Wiring functional tests if required by para. 15.2.1	**N/A**
Confirm that the relevant test schedule is attached (tests to be undertaken at time of commissioning).	N/A
Note.. The inverter was tested in a test laboratory. The correct wiring functional test in the field has to be done by the responsible person for the installation of the plant.	

Logic Interface (input port) Required by paragraph 11.1.3.1	**P**
Confirm that an input port is provided and can be used to reduce the Active Power output to zero	Yes
Note. Manufacturer information provided.	
Provide high level description of logic interface, e.g. details in 11.1.3.1 such as AC or DC signal	Yes
The inverter has a DRM logical port,A 15K resistor needs to be connected to PIN 5 of the DRM port.The connection between PIN 1 and PIN 6 can be controlled by a switch,When the switch is closed, the inverter will reduce the active power to 0 within 5 seconds.