

Certificate of Conformity

Reingetragene Nr.:
Registered No.:

COCVP03004/23B-04

Aktenzeichen
File reference

PVP03004/23B-08

Testbericht Nr.
Test report No.

TRPVP03004/23B/08

Ausstellungsdatum
Date of issue

2022-08-27

Auf der Grundlage der durchgeführten Prüfungen wurde festgestellt, dass die Muster des/der folgenden Produkte(s) zum Zeitpunkt der Durchführung der Prüfungen die wesentlichen Anforderungen der genannten Spezifikationen erfüllten:

On the basis of the tests undertaken, the samples of the below product(s) have been found to comply with the essential requirements of the referenced specifications at the time the tests were carried out:

Antragsteller: **Shenzhen Hopewind Technology Co., Ltd.**
Applicant: Room 101, Building B, No.94, Guangtian Road, Yanchuan Community, Yanluo Street, Bao'an District, Shenzhen.

Hersteller: **Shenzhen Hopewind Technology Co., Ltd.**
Manufacturer: Room 101, Building B, No.94, Guangtian Road, Yanchuan Community, Yanluo Street, Bao'an District, Shenzhen.

Fertigungsstätte : **Heyuan Hopewind Electric Co., Ltd.**
Factory : Room 102, First floor, Complex Building(Plant 1), Xingchen Industrial Park, South Keliu Road, High-tech Development District, Heyuan, Guangdong, China

Produkt: Netzgekoppelter PV-Wechselrichter
Product: **GRID-CONNECTED PV INVERTER**

Typenbezeichnung: HSNV100K-G01, HSNV110K-G01
Type designation:

Zertifizierungsprogramm: BOS-P-01 Rev. 00
Certification program:

Zertifizierungsgrundlage(n): DIN VDE V 0124-100:2020-06
Certification fundamental(s): VDE-AR-N 4105:2018

Detaillierte Informationen finden Sie im Testbericht.
See test report for detailed information.



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This document is based on the evaluation of the samples of the above mentioned product(s). It does not imply an assessment of the mass-production of the product(s), and it does not permit the use of a TÜV NORD mark. The holder of this document may use it in connection with the related test report(s).



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E.4 Einheitenzertifikat E.4 Unit certificate		
Hersteller: Manufacturer:	Shenzhen Hopewind Technology Co., Ltd. Room 101, Buliding B, No.94, Guangtian Road, Yanchuan Community, Yanluo Street, Bao'an District, Shenzhen	
Typ Erzeugungseinheit: Power generation unit type:	HSNV100K-G01, HSNV110K-G01	
	<input checked="" type="checkbox"/> Umrichter Inverter <input type="checkbox"/> Asynchrongenerator Asynchronous generator <input type="checkbox"/> Synchrongenerator Synchronous generator <input type="checkbox"/> Stirlinggenerator Stirling generator <input type="checkbox"/> Brennstoffzelle Fuel cell <input type="checkbox"/> andere: _____ Other: _____	
Modell: Model:	HSNV100K-G01	
Bemessungswerte: Assessment values:	Max. Wirkleistung $P_{E_{max}}$ Max. active power $P_{E_{max}}$	110759W
	Max. Scheinleistung $S_{E_{max}}$: Max. apparent power $S_{E_{max}}$:	110807VA
	Bemessungsspannung: Rated voltage:	230V/400V, 3P/N/PE
Bemessungswerte: Rated values:	Bemessungsstrom (AC) I_r Rated current (AC) I_r	144.3A
	Anfangs-Kurzschlusswechselstrom: Initial short-circuit AC current:	158.8A
Modell: Model:	HSNV110K-G01	



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Bemessungswerte: Assessment values:	Max. Wirkleistung $P_{E_{max}}$ Max. active power $P_{E_{max}}$	120270W
	Max. Scheinleistung $S_{E_{max}}$ Max. apparent power $S_{E_{max}}$	120335VA
	Bemessungsspannung: Rated voltage:	230V/400V, 3P/N/PE
Bemessungswerte: Rated values:	Bemessungsstrom (AC) I_r Rated current (AC) I_r	158.8A
	Anfangs-Kurzschlusswechselstrom: Initial short-circuit AC current:	174.7A



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<p>Netzanschlussregel: Network connection rule:</p>	<p>VDE-AR-N 4105:2018 "Erzeugungsanlagen am Niederspannungsnetz" VDE-AR-N 4105:2018 "Generators connected to the low-voltage distribution network"</p> <p>Technische Mindestanforderungen für Anschluss und Parallelbetrieb von Erzeugungsanlagen mit Anschluss an das Niederspannungsnetz. <i>Test requirements for power generation units intended for connection to and parallel operation on the low-voltage network.</i></p>
<p>Prüfanforderung: Test requirement:</p>	<p>DIN VDE V 0124-100 (VDE V 0124-100):2020-06 "Netzintegration von Erzeugungsanlagen - Niederspannung" DIN VDE V 0124-100 (VDE V 0124-100):2020-06 "Network integration of power generation systems - Low voltage"</p> <p>Prüfanforderungen für Erzeugungseinheiten zum Anschluss und Parallelbetrieb am Niederspannungsnetz <i>Test requirements for power generation units intended for connection to and parallel operation on the low-voltage network</i></p>
<p>Prüfbericht: Test report:</p>	<p>TRPVP03004/23B/08 ausgestellt am 2023-09-22 TRPVP03004/23B/08 issued on 2023-09-22</p>
<p>Die oben bezeichnete Erzeugungseinheit erfüllt die Anforderungen der VDE-AR-N 4105. <i>The above designated power generation unit meets the requirements of VDE-AR-N 4105.</i></p> <p>Dieser Anteilschein darf nicht auszugsweise verwendet werden. <i>This unit certificate shall not be used in extracts.</i></p>	

E.5 Prüfbericht "Netzrückwirkungen" für Erzeugungseinheiten mit einem Eingangsstrom > 75 A E.5 Test report "Network interactions" for power generation units with an input current > 75 A			
Systemhersteller: System manufacturer:	Shenzhen Hopewind Technology Co., Ltd. Room 101, Buliding B, No.94, Guangtian Road, Yanchuan Community, Yanluo Street, Bao'an District, Shenzhen		
Herstellerangaben: Manufacturer indications:	Anlagentyp (BHKW, PV-WR, ...): System type (BHKW, PV-WR, ...):	NETZGEKOPPELTER PV-WECHSELRICHTER GRID-CONNECTED PV INVERTER	
	Modell: Model:	HSNV100K-G01	HSNV110K-G01
	Max. Wirkleistung $P_{E_{max}}$: Max. active power $P_{E_{max}}$:	110kW	121kW
	Bemessungsspannung Rated voltage	230V/400V, 3P/N/PE	230V/400V, 3P/N/PE
Messzeitraum: Measurement period:	Von 2023-07-07 bis 2023-08-17 From 2023-07-07 to 2023-08-17		
Schnelle Spannungsänderungen Rapid voltage changes			
Model: HSNV110K-G01			
Einschalten ohne Vorgabe (zum Primärenergieträger): Connection without provisions (regarding the primary energy carrier):		$k_i = 0.09$	
Ungünstigster Fall beim Umschalten der Generatorstufen: Most adverse case when switching between generator levels:		N/A	
Einschalten bei Nennbedingungen (des Primärenergieträgers): Connection at nominal conditions (of the primary energy carrier):		$k_i = 0.14$	
Ausschalten bei Bemessungsleistung: Disconnection at rated power:		$k_i = 0.95$	
Schlechtester Wert aller Schaltvorgänge: Worst value of all switching operations:		$K_{i_{max}} = 0.95$	



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Oberschwingungen Harmonics HSNV110K-G01											
P/Pn [%]	0	10	20	30	40	50	60	70	80	90	100
Ordnung Order	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]
2	3.524	0.277	0.682	0.453	0.292	0.207	0.169	0.145	0.137	0.133	0.117
3	1.461	0.072	0.326	0.219	0.162	0.127	0.119	0.096	0.080	0.075	0.068
4	1.236	0.082	0.238	0.163	0.126	0.120	0.100	0.086	0.080	0.072	0.070
5	1.955	1.219	3.262	3.394	2.966	2.576	2.292	2.067	1.898	1.754	1.634
6	0.773	0.045	0.104	0.089	0.077	0.065	0.059	0.049	0.049	0.037	0.031
7	9.835	0.813	1.885	1.613	1.627	1.363	1.177	1.095	1.024	0.956	0.903
8	0.779	0.070	0.219	0.126	0.072	0.079	0.084	0.074	0.058	0.045	0.038
9	0.882	0.075	0.256	0.185	0.143	0.125	0.104	0.088	0.073	0.067	0.061
10	0.364	0.028	0.149	0.141	0.156	0.138	0.089	0.081	0.078	0.074	0.064
11	4.588	0.396	2.120	0.937	0.630	0.620	0.573	0.492	0.447	0.429	0.399
12	0.362	0.028	0.127	0.097	0.059	0.041	0.037	0.035	0.028	0.024	0.020
13	3.591	0.333	1.486	0.819	0.497	0.365	0.393	0.364	0.313	0.285	0.268
14	0.405	0.024	0.080	0.067	0.047	0.052	0.050	0.026	0.027	0.027	0.023
15	0.578	0.047	0.188	0.126	0.092	0.067	0.060	0.050	0.049	0.042	0.039
16	0.408	0.019	0.120	0.081	0.048	0.045	0.050	0.034	0.036	0.036	0.035
17	2.204	0.183	0.667	0.663	0.439	0.258	0.169	0.185	0.188	0.175	0.152
18	0.265	0.021	0.087	0.054	0.042	0.036	0.031	0.024	0.019	0.019	0.017
19	1.895	0.171	0.635	0.444	0.354	0.257	0.154	0.144	0.156	0.159	0.138
20	0.322	0.027	0.135	0.099	0.074	0.036	0.042	0.042	0.028	0.022	0.023
21	0.833	0.063	0.226	0.154	0.106	0.087	0.081	0.064	0.059	0.050	0.050
22	0.323	0.026	0.120	0.056	0.042	0.045	0.039	0.026	0.030	0.031	0.026
23	1.491	0.114	0.406	0.232	0.208	0.187	0.140	0.093	0.082	0.097	0.090
24	0.223	0.017	0.068	0.051	0.041	0.030	0.024	0.018	0.015	0.013	0.013



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25	1.251	0.097	0.299	0.208	0.130	0.140	0.115	0.068	0.054	0.063	0.066
26	0.335	0.019	0.063	0.059	0.030	0.027	0.026	0.028	0.017	0.014	0.014
27	0.427	0.033	0.109	0.069	0.053	0.043	0.035	0.030	0.026	0.024	0.022
28	0.248	0.021	0.051	0.050	0.028	0.022	0.020	0.019	0.018	0.014	0.012
29	0.786	0.054	0.209	0.103	0.085	0.068	0.065	0.052	0.035	0.028	0.033
30	0.173	0.012	0.053	0.040	0.025	0.023	0.019	0.018	0.015	0.012	0.012
31	0.727	0.053	0.187	0.084	0.074	0.052	0.055	0.051	0.032	0.025	0.025
32	0.181	0.013	0.045	0.028	0.026	0.017	0.015	0.017	0.017	0.013	0.013
33	0.549	0.048	0.102	0.086	0.065	0.054	0.041	0.032	0.027	0.025	0.023
34	0.179	0.010	0.042	0.030	0.019	0.018	0.015	0.012	0.010	0.009	0.008
35	0.459	0.039	0.149	0.080	0.056	0.047	0.034	0.034	0.032	0.029	0.027
36	0.139	0.010	0.031	0.022	0.018	0.014	0.012	0.011	0.010	0.009	0.007
37	0.589	0.049	0.175	0.114	0.089	0.070	0.056	0.048	0.041	0.037	0.031
38	0.146	0.009	0.034	0.021	0.018	0.013	0.014	0.012	0.009	0.009	0.008
39	0.455	0.040	0.181	0.114	0.090	0.073	0.062	0.054	0.048	0.043	0.038
40	0.137	0.008	0.029	0.021	0.016	0.013	0.011	0.010	0.008	0.008	0.006

**Zwischenharmonische
Inter-harmonics**

P/Pn [%]	0	10	20	30	40	50	60	70	80	90	100
Freq. [Hz]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]
75	1.654	0.143	0.521	0.395	0.334	0.290	0.260	0.240	0.225	0.214	0.207
125	1.251	0.098	0.371	0.252	0.206	0.165	0.142	0.127	0.115	0.103	0.094
175	0.999	0.078	0.279	0.194	0.153	0.124	0.104	0.092	0.083	0.074	0.068
225	0.695	0.052	0.209	0.153	0.125	0.104	0.088	0.078	0.071	0.065	0.059
275	0.648	0.049	0.200	0.149	0.122	0.098	0.086	0.077	0.066	0.059	0.054
325	0.602	0.047	0.191	0.138	0.112	0.090	0.076	0.068	0.062	0.056	0.051
375	0.602	0.046	0.175	0.126	0.104	0.085	0.070	0.061	0.055	0.051	0.046
425	0.545	0.041	0.165	0.118	0.093	0.075	0.063	0.054	0.050	0.045	0.041

475	0.545	0.042	0.166	0.121	0.096	0.077	0.064	0.056	0.049	0.044	0.040
525	0.511	0.040	0.166	0.111	0.089	0.071	0.062	0.052	0.048	0.044	0.040
575	0.544	0.043	0.173	0.116	0.091	0.076	0.064	0.055	0.048	0.043	0.039
625	0.501	0.040	0.161	0.108	0.085	0.069	0.059	0.051	0.046	0.042	0.038
675	0.499	0.040	0.153	0.109	0.084	0.068	0.058	0.051	0.044	0.040	0.036
725	0.476	0.037	0.140	0.097	0.078	0.061	0.053	0.045	0.042	0.038	0.034
775	0.468	0.037	0.140	0.100	0.078	0.063	0.053	0.045	0.040	0.036	0.032
825	0.454	0.035	0.132	0.096	0.075	0.058	0.049	0.042	0.039	0.036	0.032
875	0.504	0.037	0.142	0.101	0.079	0.062	0.051	0.045	0.040	0.035	0.032
925	0.455	0.035	0.136	0.094	0.074	0.058	0.047	0.041	0.037	0.034	0.030
975	0.461	0.036	0.133	0.096	0.072	0.058	0.047	0.041	0.037	0.033	0.030
1025	0.425	0.033	0.123	0.085	0.066	0.052	0.044	0.038	0.035	0.031	0.027
1075	0.493	0.033	0.123	0.088	0.066	0.054	0.044	0.038	0.034	0.031	0.027
1125	0.390	0.031	0.113	0.077	0.061	0.047	0.040	0.034	0.031	0.028	0.025
1175	0.440	0.033	0.120	0.082	0.065	0.051	0.042	0.036	0.033	0.029	0.026
1225	0.397	0.033	0.116	0.078	0.060	0.048	0.040	0.034	0.030	0.027	0.024
1275	0.482	0.031	0.105	0.072	0.055	0.044	0.036	0.031	0.027	0.025	0.023
1325	0.370	0.028	0.102	0.069	0.052	0.041	0.034	0.030	0.026	0.024	0.021
1375	0.398	0.029	0.102	0.068	0.052	0.042	0.035	0.030	0.025	0.023	0.020
1425	0.324	0.029	0.102	0.069	0.048	0.037	0.032	0.027	0.024	0.022	0.019
1475	0.383	0.028	0.097	0.066	0.053	0.042	0.037	0.031	0.028	0.024	0.020
1525	0.341	0.028	0.100	0.069	0.054	0.042	0.035	0.030	0.026	0.024	0.020
1575	0.354	0.026	0.085	0.057	0.044	0.035	0.030	0.025	0.022	0.020	0.018
1625	0.364	0.029	0.088	0.062	0.047	0.037	0.031	0.026	0.023	0.020	0.018
1675	0.411	0.035	0.090	0.068	0.052	0.042	0.033	0.027	0.023	0.021	0.020
1725	0.287	0.025	0.091	0.059	0.045	0.035	0.029	0.025	0.023	0.021	0.017
1775	0.338	0.026	0.093	0.060	0.046	0.036	0.030	0.026	0.022	0.021	0.019
1825	0.341	0.027	0.096	0.062	0.048	0.037	0.031	0.027	0.023	0.020	0.017
1875	0.373	0.032	0.112	0.076	0.061	0.047	0.038	0.033	0.027	0.025	0.021



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1925	0.302	0.024	0.090	0.056	0.044	0.034	0.029	0.025	0.023	0.020	0.018
1975	0.376	0.033	0.141	0.090	0.071	0.057	0.048	0.042	0.037	0.034	0.030
Höhere Frequenzen											
Higher frequencies											
P/Pn [%]	0	10	20	30	40	50	60	70	80	90	100
Freq. [kHz]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]
2.1	0.875	0.070	0.251	0.156	0.120	0.095	0.081	0.061	0.054	0.051	0.048
2.3	0.696	0.052	0.190	0.117	0.089	0.069	0.059	0.050	0.042	0.039	0.036
2.5	0.614	0.049	0.169	0.104	0.079	0.063	0.054	0.045	0.038	0.034	0.032
2.7	0.696	0.052	0.196	0.119	0.100	0.080	0.068	0.062	0.053	0.047	0.044
2.9	0.587	0.035	0.130	0.087	0.063	0.049	0.041	0.036	0.031	0.026	0.023
3.1	0.599	0.030	0.099	0.069	0.049	0.040	0.034	0.029	0.025	0.021	0.018
3.3	0.699	0.023	0.081	0.053	0.043	0.036	0.030	0.026	0.023	0.019	0.017
3.5	0.588	0.013	0.043	0.030	0.025	0.020	0.017	0.014	0.012	0.011	0.009
3.7	0.524	0.008	0.025	0.019	0.017	0.014	0.011	0.010	0.008	0.007	0.006
3.9	0.690	0.007	0.021	0.014	0.012	0.010	0.008	0.007	0.006	0.006	0.005
4.1	0.620	0.005	0.014	0.010	0.008	0.007	0.006	0.005	0.004	0.004	0.004
4.3	0.682	0.003	0.011	0.008	0.006	0.005	0.004	0.004	0.003	0.003	0.003
4.5	0.888	0.003	0.010	0.007	0.006	0.005	0.004	0.004	0.003	0.003	0.003
4.7	0.883	0.002	0.008	0.006	0.005	0.004	0.003	0.003	0.003	0.003	0.003
4.9	1.006	0.002	0.007	0.005	0.004	0.004	0.003	0.003	0.003	0.003	0.002
5.1	1.370	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
5.3	1.296	0.002	0.006	0.005	0.005	0.004	0.004	0.004	0.005	0.004	0.004
5.5	1.059	0.002	0.007	0.005	0.005	0.005	0.004	0.004	0.005	0.004	0.004
5.7	0.747	0.003	0.007	0.006	0.005	0.005	0.004	0.004	0.005	0.004	0.004
5.9	0.504	0.002	0.008	0.006	0.005	0.005	0.004	0.004	0.005	0.004	0.004
6.1	0.361	0.003	0.010	0.007	0.006	0.006	0.005	0.004	0.005	0.005	0.005
6.3	0.357	0.003	0.010	0.007	0.006	0.006	0.005	0.004	0.005	0.004	0.004

6.5	0.231	0.003	0.009	0.007	0.007	0.006	0.005	0.005	0.005	0.004	0.004
6.7	0.140	0.004	0.014	0.010	0.009	0.007	0.006	0.005	0.005	0.005	0.005
6.9	0.125	0.006	0.021	0.014	0.012	0.010	0.008	0.007	0.007	0.007	0.006
7.1	0.098	0.006	0.019	0.014	0.011	0.009	0.008	0.007	0.006	0.006	0.005
7.3	0.073	0.006	0.022	0.015	0.013	0.009	0.008	0.007	0.007	0.006	0.005
7.5	0.080	0.008	0.026	0.017	0.013	0.013	0.010	0.008	0.008	0.008	0.007
7.7	0.055	0.006	0.019	0.012	0.010	0.009	0.007	0.006	0.006	0.006	0.005
7.9	0.092	0.005	0.018	0.013	0.010	0.008	0.007	0.006	0.006	0.006	0.005
8.1	0.042	0.005	0.019	0.012	0.010	0.008	0.007	0.006	0.006	0.006	0.005
8.3	0.046	0.005	0.021	0.013	0.010	0.009	0.008	0.007	0.006	0.006	0.006
8.5	0.024	0.004	0.013	0.009	0.008	0.007	0.006	0.005	0.005	0.005	0.005
8.7	0.020	0.003	0.012	0.008	0.008	0.006	0.006	0.005	0.005	0.005	0.005
8.9	0.016	0.003	0.010	0.007	0.006	0.006	0.006	0.005	0.005	0.005	0.005

Hinweis: Der Normalisierungsstrom beträgt 158.8A.

Note: The normalization current is 158.8A.

Die Oberwellen werte sind Maximalwerte aus allen Phasen.

The harmonic values are maximum values from all phases.



Renewable Energy

BOS-T-023 COC



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