ZERTIFIKAT ◆ CERTIFICATE ◆ 認證證書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

DAkkS Deutsche Akkreditierungsstelle D-ZE-11321-01-00

TÜV SÜD Product Service

Certificate of Conformity

No. ESY 099567 0061 Rev. 00

Holder of Certificate: **AISWEI Technology (Shanghai) Co., Ltd.**
Room 905B,757 Mengzi Road
Huangpu District
200023 Shanghai
PEOPLE'S REPUBLIC OF CHINA

Product: **Converter (Grid-connected PV Inverter)**

Model(s): **ASW3K-LT-G2 Pro, ASW4K-LT-G2 Pro, ASW5K-LT-G2 Pro, ASW6K-LT-G2 Pro, ASW8K-LT-G2 Pro, ASW10K-LT-G2 Pro, ASW12K-LT-G2 Pro, ASW15K-LT-G2 Pro, ASW17K-LT-G2 Pro, ASW20K-LT-G2 Pro**

Parameters: See below pages

Applicable standards: VDE-AR-N 4105:2018
DIN VDE V 0124-100 (VDE V 0124-100):2020

This Certificate of Conformity confirms the compliance with the above listed standards on a voluntary basis. It refers only to the sample submitted to TÜV SÜD Product Service GmbH and does not certify the quality or safety of the serial products. It was issued according to TÜV SÜD Product Service certification program Photovoltaics and Grid Integration. For details see: www.tuvsud.com/ps-cert

Test report no.: 64290223080501

Date, 2022-07-08

(Billy Qiu)

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Parameters:

Model Name	ASW3K-LT-G2 Pro	ASW4K-LT-G2 Pro	ASW5K-LT-G2 Pro
PV Input Parameters			
Max. Input Voltage	1100 Vd.c.		
MPPT Voltage Range	150-1000 Vd.c.		
Max. Input Current	16/16 Ad.c.		
Isc PV	25/25 Ad.c.		
A.C. Output Parameters			
Output Rated Voltage	3/N/PE~, 230/400 Va.c.		
Output Rated Frequency	50 Hz		
Output Rated Power	3000 W	4000 W	5000 W
Output Rated Apparent Power	3000 VA	4000 VA	5000 VA
Output Max. Apparent Power	3000 VA	4000 VA	5000 VA
Output Max. Current	4.8 Aa.c.	6.4 Aa.c.	8.0 Aa.c.
Power factor	0.8 leading…0.8 lagging		

Model Name	ASW6K-LT-G2 Pro	ASW8K-LT-G2 Pro	ASW10K-LT-G2 Pro
PV Input Parameters			
Max. Input Voltage	1100 Vd.c.		
MPPT Voltage Range	150-1000 Vd.c.		
Max. Input Current	16/16 Ad.c.	20/16 Ad.c.	20/16 Ad.c.
Isc PV	25/25 Ad.c.	30/25 Ad.c.	30/25 Ad.c.
A.C. Output Parameters			
Output Rated Voltage	3/N/PE~, 230/400 Va.c.		
Output Rated Frequency	50 Hz		
Output Rated Power	6000 W	8000 W	10000 W
Output Rated Apparent Power	6000 VA	8000 VA	10000 VA
Output Max. Apparent Power	6000 VA	8000 VA	10000 VA
Output Max. Current	9.6 Aa.c.	12.8 Aa.c.	16 Aa.c.
Power factor	0.8 leading…0.8 lagging		

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Model Name	ASW12K-LT-G2 Pro	ASW15K-LT-G2 Pro	ASW17K-LT-G2 Pro
PV Input Parameters			
Max. Input Voltage	1100 Vd.c.		
MPPT Voltage Range	150-1000 Vd.c.		
Max. Input Current	32/20 Ad.c.	32/20 Ad.c.	32/32 Ad.c.
Isc PV	48/30 Ad.c.	48/30 Ad.c.	48/48 Ad.c.
A.C. Output Parameters			
Output Rated Voltage	3/N/PE~, 230/400 Va.c.		
Output Rated Frequency	50 Hz		
Output Rated Power	12000 W	15000 W	17000 W
Output Rated Apparent Power	12000 VA	15000 VA	17000 VA
Output Max. Apparent Power	12000 VA	15000 VA	17000 VA
Output Max. Current	19.1 Aa.c.	24 Aa.c.	27.1 Aa.c.
Power factor	0.8 leading…0.8 lagging		

Model Name	ASW20K-LT-G2 Pro
PV Input Parameters	
Max. Input Voltage	1100 Vd.c.
MPPT Voltage Range	150-1000 Vd.c.
Max. Input Current	32/32 Ad.c.
Isc PV	48/48 Ad.c.
A.C. Output Parameters	
Output Rated Voltage	3/N/PE~, 230/400 Va.c.
Output Rated Frequency	50 Hz
Output Rated Power	20000 W
Output Rated Apparent Power	20000 VA
Output Max. Apparent Power	20000 VA
Output Max. Current	31.9 Aa.c.
Power factor	0.8 leading…0.8 lagging

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Certificate of Conformity

No. ESY 099567 0061 Rev. 00

Unit Certificate		
Manufacturer	AISWEI Technology (Shanghai) Co., Ltd.	
Power generation unit type	[Inverter]: ASW3K-LT-G2 Pro, ASW4K-LT-G2 Pro, ASW5K-LT-G2 Pro, ASW6K-LT-G2 Pro, ASW8K-LT-G2 Pro, ASW10K-LT-G2 Pro, ASW12K-LT-G2 Pro, ASW15K-LT-G2 Pro, ASW17K-LT-G2 Pro, ASW20K-LT-G2 Pro Remark: certified on representative model ASW8K-LT-G2 Pro of family design products, results of the measurement of ASW8K-LT-G2 Pro can be transferred to other models based on transferability rule of measurements in DIN VDE V 0124-100 (VDE V 0124-100):2020.	
Technical data	Max. active power P_{Emax}	8000 W (ASW8K-LT-G2 Pro)
	Max. apparent power S_{Emax}	8000 VA (ASW8K-LT-G2 Pro)
	Rated voltage	230 V
	Max. current (AC) Ir	12.8 A (ASW8K-LT-G2 Pro)
	Initial short-circuit AC current	12.8 A (ASW8K-LT-G2 Pro)
Network connection rule	**VDE-AR-N 4105 "Generators connected to the low-voltage distribution network"** Technical minimum requirements for connection and parallel operation of power generation systems connected to the low-voltage network	
Test requirement	**DIN VDE V 0124-100 (VDE V 0124-100) "Network integration of power generation systems – Low voltage"** Test requirements for power generation units intended for connection to and parallel operation on the low-voltage network	
Test report	64.290.22.30805.01 from 05.07.2022	
The above designated power generation unit meets the requirements of VDE-AR-N 4105		
This unit certificate includes extract report information of E.5 of VDE-AR-N 4105 for the power generation unit(s)		

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Certificate of NS protection		
Manufacturer	AISWEI Technology (Shanghai) Co., Ltd.	
Type of NS protection	Integrated NS protection	
Central NS protection	No	
Integrated NS protection	Yes	Assigned to power generation unit of type: ASW3K-LT-G2 Pro, ASW4K-LT-G2 Pro, ASW5K-LT-G2 Pro, ASW6K-LT-G2 Pro, ASW8K-LT-G2 Pro, ASW10K-LT-G2 Pro, ASW12K-LT-G2 Pro, ASW15K-LT-G2 Pro, ASW17K-LT-G2 Pro, ASW20K-LT-G2 Pro
Network connection rule	**VDE-AR-N 4105 "Generators connected to the low-voltage distribution network"** Technical minimum requirements for connection and parallel operation of power generation systems connected to the low-voltage network	
Test requirement	**DIN VDE V 0124-100 (VDE V 0124-100) "Network integration of power generation systems – Low voltage"** Test requirements for power generation units intended for connection to and parallel operation on the low-voltage network	
Test report	64.290.22.30805.01 from 05.07.2022	
The network and system protection designated above meets the requirements of VDE-AR-N 4105.		
This certificate of NS protection includes extract report information of E.7 of VDE-AR-N 4105 for the NS protection.		

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No. ESY 099567 0061 Rev. 00

E.5 Test report "Network interactions " for generating units with an input current > 75 A

Extract from test report for unit certificate "Determination of electrical properties"		No. 64.290.22.30805.01
Generation unit manufacturer:	AISWEI Technology (Shanghai) Co., Ltd. Room 905B,757 Mengzi Road, Huangpu District, 200023 Shanghai, PEOPLE'S REPUBLIC OF CHINA	
Manufacturer indications:	Type of system	Grid-connected PV Inverter for PV system
	Max. active power P_{Emax}	3000 W (ASW3K-LT-G2 Pro) 4000 W (ASW4K-LT-G2 Pro) 5000 W (ASW5K-LT-G2 Pro) 6000 W (ASW6K-LT-G2 Pro) 8000 W (ASW8K-LT-G2 Pro) 10000 W (ASW10K-LT-G2 Pro) 12000 W (ASW12K-LT-G2 Pro) 15000 W (ASW15K-LT-G2 Pro) 17000 W (ASW17K-LT-G2 Pro) 20000 W (ASW20K-LT-G2 Pro)
	Rated voltage	230 V
Period of measurement:	From 2022-06-15 to 2022-06-30	

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Flicker – DIN EN 61000-3-3(ASW3K-LT-G2 Pro)					
Test items	$d_{(t)\ -\ 500ms}$ [%]	d_c [%]	d_{max} [%]	P_{st}	P_{lt}
Limit	3.30	3.30	4.00	1.00	0.65
L1	0	0.14	0.64	0.16	0.15
L2	0	0.16	0.67	0.13	0.12
L3	0	0.17	0.68	0.14	0.14

Flicker –DIN EN 61000-3-3(ASW8K-LT-G2 Pro)					
Test items	$d_{(t)\ -\ 500ms}$ [%]	d_c [%]	d_{max} [%]	P_{st}	P_{lt}
Limit	3.30	3.30	4.00	1.00	0.65
L1	0	0.20	0.70	0.16	0.15
L2	0	0.17	0.68	0.14	0.13
L3	0	0.14	0.72	0.15	0.15

Flicker –DIN EN 61000-3-11(ASW20K-LT-G2 Pro)					
Test items	$d_{(t)\ -\ 500ms}$ [%]	d_c [%]	d_{max} [%]	P_{st}	P_{lt}
Limit	3.30	3.30	4.00	1.00	0.65
L1	0	0.17	0.75	0.19	0.19
L2	0	0.19	0.69	0.19	0.19
L3	0	0.18	0.74	0.19	0.18

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No. ESY 099567 0061 Rev. 00

Harmonics-DIN EN 61000-3-2(≤16 A) (ASW3K-LT-G2 Pro)												
Active Power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100	Limit
Ordinal number	A	A	A	A	A	A	A	A	A	A	A	A
2	0.003	0.005	0.007	0.007	0.008	0.009	0.010	0.011	0.010	0.010	0.010	1.080
3	0.002	0.003	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.030	2.300
4	0.002	0.002	0.002	0.005	0.002	0.002	0.001	0.001	0.002	0.002	0.004	0.430
5	0.028	0.025	0.023	0.019	0.024	0.028	0.029	0.027	0.024	0.023	0.022	1.140
6	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.300
7	0.018	0.016	0.016	0.019	0.010	0.007	0.009	0.012	0.012	0.012	0.008	0.770
8	0.001	0.001	0.003	0.003	0.002	0.002	0.001	0.001	0.001	0.001	0.003	0.230
9	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.008	0.400
10	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.184
11	0.010	0.009	0.011	0.001	0.009	0.012	0.010	0.006	0.006	0.006	0.010	0.330
12	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.153
13	0.004	0.003	0.006	0.012	0.001	0.010	0.013	0.008	0.004	0.004	0.008	0.210
14	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.131
15	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.007	0.150
16	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.115
17	0.007	0.007	0.006	0.004	0.009	0.004	0.005	0.008	0.002	0.002	0.005	0.132
18	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.102
19	0.009	0.008	0.009	0.006	0.006	0.007	0.001	0.006	0.003	0.003	0.005	0.118
20	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.092
21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.005	0.107
22	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.084
23	0.012	0.009	0.006	0.005	0.006	0.005	0.006	0.003	0.005	0.005	0.003	0.098
24	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.077
25	0.011	0.009	0.009	0.004	0.007	0.004	0.007	0.002	0.005	0.005	0.004	0.090
26	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.071
27	0.001	0.001	0.001	0.001	0.000	0.000	0.001	0.000	0.001	0.001	0.004	0.083
28	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.066
29	0.010	0.008	0.006	0.009	0.006	0.007	0.005	0.006	0.006	0.005	0.009	0.078
30	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.001	0.003	0.061
31	0.008	0.007	0.009	0.005	0.007	0.007	0.005	0.007	0.005	0.005	0.011	0,073
32	0.001	0.001	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.058
33	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000	0.000	0.004	0.068
34	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.054
35	0.007	0.007	0.007	0.010	0.008	0.007	0.007	0.006	0.005	0.005	0.014	0.064
36	0.001	0.001	0.001	0.001	0.000	0.001	0.001	0.000	0.000	0.000	0.002	0.051
37	0.006	0.007	0.009	0.006	0.007	0.007	0.007	0.005	0.005	0.005	0.014	0.061
38	0.001	0.001	0.000	0.001	0.001	0.000	0.001	0.001	0.001	0.001	0.002	0.048
39	0.000	0.000	0.001	0.001	0.001	0.001	0.000	0.000	0.000	0.000	0.004	0.058
40	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.046

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Inter-harmonics (ASW3K-LT-G2 Pro)											
Active Power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100
Frequency [Hz]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]
75	0.008	0.009	0.010	0.012	0.014	0.016	0.019	0.021	0.028	0.027	0.060
125	0.005	0.005	0.007	0.009	0.013	0.016	0.019	0.022	0.029	0.028	0.062
175	0.004	0.003	0.003	0.004	0.004	0.005	0.005	0.005	0.007	0.006	0.012
225	0.004	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.012
275	0.004	0.004	0.003	0.004	0.004	0.004	0.004	0.005	0.006	0.006	0.010
325	0.003	0.003	0.003	0.004	0.003	0.004	0.004	0.005	0.006	0.006	0.011
375	0.003	0.003	0.002	0.003	0.003	0.003	0.003	0.004	0.005	0.005	0.012
425	0.004	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.009
475	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.010
525	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.008
575	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.008
625	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.011
675	0.002	0.002	0.002	0.003	0.004	0.004	0.005	0.005	0.004	0.004	0.010
725	0.003	0.003	0.003	0.004	0.004	0.005	0.006	0.006	0.005	0.005	0.012
775	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.008
825	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.008
875	0.004	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.009
925	0.002	0.002	0.002	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.010
975	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.012
1025	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005	0.010
1075	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.003	0.003	0.011
1125	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.008
1175	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.009
1225	0.002	0.002	0.002	0.003	0.003	0.003	0.004	0.003	0.004	0.004	0.016
1275	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.010
1325	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.017
1375	0.003	0.003	0.002	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.011
1425	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.008
1475	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.012
1525	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.010
1575	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.009
1625	0.003	0.003	0.003	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.010
1675	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.008
1725	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.008
1775	0.003	0.003	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.009
1825	0.002	0.002	0.002	0.003	0.003	0.002	0.003	0.002	0.003	0.003	0.009
1875	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.008
1925	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.009
1975	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.008

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Higher frequency (ASW3K-LT-G2 Pro)											
Active Power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100
Frequency [kHz]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]
2.1	0.009	0.011	0.013	0.012	0.012	0.011	0.010	0.011	0.009	0.009	0.026
2.3	0.007	0.008	0.009	0.009	0.008	0.007	0.008	0.007	0.007	0.007	0.037
2.5	0.007	0.007	0.009	0.007	0.008	0.007	0.007	0.007	0.007	0.007	0.037
2.7	0.009	0.008	0.009	0.009	0.009	0.008	0.009	0.009	0.008	0.008	0.030
2.9	0.007	0.006	0.006	0.006	0.005	0.006	0.006	0.006	0.006	0.006	0.027
3.1	0.007	0.006	0.005	0.005	0.006	0.005	0.006	0.005	0.006	0.006	0.031
3.3	0.010	0.008	0.007	0.006	0.007	0.007	0.007	0.007	0.007	0.007	0.034
3.5	0.007	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.028
3.7	0.008	0.007	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.031
3,9	0.010	0.009	0.009	0.008	0.007	0.006	0.006	0.006	0.006	0.006	0.042
4.1	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.005	0.005	0.005	0.039
4.3	0.005	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.004	0.004	0.038
4.5	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.034
4.7	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.038
4.9	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.029
5.1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.003
5.3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.019
5,5	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.030
5.7	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.023
5.9	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.024
6.1	0.003	0.003	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.023
6.3	0.004	0.003	0.004	0.003	0.003	0.003	0.002	0.002	0.002	0.002	0.022
6.5	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.002	0.018
6.7	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.017
6.9	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.016
7.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.015
7.3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.014
7.5	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.014
7,7	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.014
7.9	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.013
8.1	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.013
8.3	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.013
8.5	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.000	0.013
8.7	0.001	0.001	0.001	0.001	0.000	0.001	0.000	0.001	0.000	0.000	0.014
8.9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.014

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DAkkS Deutsche Akkreditierungsstelle D-ZE-11321-01-00

TÜV SÜD Product Service

Certificate of Conformity

No. ESY 099567 0061 Rev. 00

Harmonics-DIN EN 61000-3-2(≤16 A) (ASW8K-LT-G2 pro)												
Active Power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100	Limit
Ordinal number	A	A	A	A	A	A	A	A	A	A	A	A
2	0.004	0.007	0.006	0.010	0.009	0.010	0.011	0.011	0.013	0.013	0.017	1.080
3	0.002	0.002	0.002	0.003	0.003	0.004	0.003	0.003	0.003	0.003	0.003	2.300
4	0.003	0.004	0.005	0.002	0.002	0.002	0.003	0.003	0.004	0.004	0.005	0.430
5	0.028	0.020	0.023	0.029	0.028	0.024	0.021	0.019	0.019	0.023	0.042	1.140
6	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.300
7	0.018	0.017	0.020	0.008	0.012	0.013	0.012	0.011	0.010	0.009	0.010	0.770
8	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.002	0.002	0.002	0.005	0.230
9	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.400
10	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.184
11	0.013	0.011	0.001	0.014	0.008	0.006	0.009	0.010	0.010	0.010	0.010	0.330
12	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.153
13	0.014	0.012	0.010	0.012	0.012	0.002	0.009	0.014	0.015	0.016	0.015	0.210
14	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.131
15	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.150
16	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.115
17	0.006	0.004	0.002	0.005	0.008	0.005	0.003	0.007	0.010	0.012	0.010	0.132
18	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.102
19	0.002	0.002	0.003	0.008	0.005	0.006	0.001	0.005	0.008	0.010	0.016	0.118
20	0.001	0.001	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.092
21	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.107
22	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.004	0.084
23	0.005	0.003	0.006	0.004	0.001	0.005	0.002	0.003	0.005	0.007	0.012	0.098
24	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.077
25	0.007	0.005	0.002	0.002	0.002	0.004	0.003	0.003	0.003	0.005	0.005	0.090
26	0.001	0.001	0.002	0.001	0.002	0.002	0.001	0.001	0.001	0.001	0.004	0.071
27	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001	0.001	0.001	0.002	0.083
28	0.001	0.001	0.001	0.001	0.002	0.002	0.002	0.001	0.001	0.001	0.003	0.066
29	0.012	0.007	0.007	0.004	0.003	0.003	0.002	0.001	0.002	0.003	0.007	0.078
30	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.061
31	0.012	0.008	0.002	0.006	0.005	0.003	0.002	0.002	0.002	0.003	0.012	0,073
32	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.001	0.003	0.058
33	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.068
34	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.002	0.001	0.001	0.004	0.054
35	0.015	0.008	0.008	0.005	0.004	0.003	0.002	0.001	0.002	0.003	0.011	0.064
36	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.051
37	0.014	0.009	0.004	0.004	0.004	0.003	0.003	0.001	0.003	0.003	0.007	0.061
38	0.002	0.001	0.001	0.001	0.001	0.002	0.001	0.002	0.001	0.001	0.005	0.048
39	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.004	0.058
40	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.002	0.001	0.001	0.005	0.046

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No. ESY 099567 0061 Rev. 00

Inter-harmonics (ASW8K-LT-G2 Pro)											
Active Power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100
Frequency [Hz]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]
75	0.055	0.011	0.017	0.024	0.031	0.038	0.046	0.053	0.062	0.207	0.096
125	0.075	0.009	0.016	0.026	0.034	0.042	0.051	0.059	0.068	0.207	0.085
175	0.004	0.004	0.004	0.005	0.006	0.007	0.009	0.010	0.012	0.006	0.017
225	0.002	0.004	0.004	0.004	0.005	0.006	0.007	0.008	0.009	0.006	0.003
275	0.003	0.004	0.005	0.004	0.006	0.008	0.009	0.010	0.010	0.006	0.005
325	0.028	0.003	0.005	0.004	0.005	0.007	0.008	0.008	0.008	0.006	0.042
375	0.002	0.003	0.003	0.004	0.004	0.005	0.006	0.007	0.007	0.006	0.002
425	0.018	0.004	0.004	0.004	0.004	0.006	0.006	0.006	0.006	0.006	0.010
475	0.002	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.006	0.005
525	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.006	0.002
575	0.001	0.003	0.003	0.004	0.003	0.003	0.004	0.005	0.005	0.006	0.002
625	0.013	0.003	0.003	0.004	0.004	0.004	0.005	0.006	0.006	0.006	0.010
675	0.001	0.003	0.004	0.005	0.006	0.004	0.006	0.007	0.008	0.006	0.002
725	0.014	0.003	0.004	0.005	0.006	0.005	0.006	0.007	0.008	0.006	0.015
775	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.006	0.002
825	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.006	0.002
875	0.001	0.004	0.004	0.004	0.005	0.004	0.004	0.005	0.006	0.006	0.002
925	0.006	0.002	0.004	0.004	0.005	0.005	0.004	0.005	0.006	0.006	0.010
975	0.001	0.002	0.003	0.004	0.004	0.005	0.004	0.005	0.006	0.006	0.002
1025	0.002	0.003	0.004	0.005	0.005	0.005	0.004	0.005	0.006	0.006	0.016
1075	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.006	0.002
1125	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.006	0.002
1175	0.001	0.004	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.006	0.004
1225	0.005	0.002	0.004	0.004	0.004	0.009	0.017	0.021	0.005	0.007	0.012
1275	0.001	0.002	0.003	0.003	0.004	0.005	0.006	0.006	0.004	0.006	0.002
1325	0.007	0.003	0.004	0.004	0.020	0.029	0.018	0.022	0.005	0.007	0.005
1375	0.001	0.003	0.003	0.003	0.005	0.005	0.003	0.003	0.003	0.007	0.004
1425	0.001	0.003	0.003	0.003	0.021	0.030	0.003	0.003	0.003	0.007	0.002
1475	0.001	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.007	0.003
1525	0.012	0.002	0.004	0.004	0.004	0.005	0.004	0.004	0.004	0.007	0.007
1575	0.001	0.002	0.003	0.003	0.004	0.003	0.004	0.004	0.004	0.007	0.002
1625	0.012	0.003	0.003	0.004	0.004	0.004	0.005	0.004	0.004	0.007	0.012
1675	0.001	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.007	0.003
1725	0.001	0.003	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.007	0.003
1775	0.001	0.004	0.004	0.004	0.003	0.003	0.004	0.004	0.003	0.007	0.004
1825	0.015	0.002	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.007	0.011
1875	0.001	0.002	0.002	0.003	0.003	0.003	0.004	0.004	0.003	0.007	0.003
1925	0.014	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.007	0.007
1975	0.002	0.003	0.003	0.003	0.003	0.002	0.003	0.003	0.003	0.007	0.005

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TÜV SÜD Product Service

Certificate of Conformity

No. ESY 099567 0061 Rev. 00

Higher frequency (ASW8K-LT-G2 Pro)											
Active Power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100
Frequency [kHz]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]
2.1	0.009	0.014	0.014	0.012	0.011	0.010	0.010	0.008	0.008	0.007	0.077
2.3	0.005	0.010	0.014	0.010	0.010	0.009	0.008	0.008	0.007	0.006	0.085
2.5	0.004	0.011	0.009	0.009	0.009	0.009	0.009	0.009	0.007	0.005	0.015
2.7	0.005	0.012	0.015	0.012	0.012	0.011	0.010	0.009	0.008	0.005	0.013
2.9	0.005	0.010	0.011	0.008	0.008	0.007	0.007	0.007	0.006	0.005	0.013
3.1	0.003	0.009	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.005	0.011
3.3	0.003	0.012	0.013	0.009	0.009	0.009	0.008	0.007	0.007	0.004	0.010
3.5	0.005	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.010
3.7	0.004	0.008	0.009	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.009
3.9	0.004	0.009	0.009	0.008	0.008	0.007	0.007	0.006	0.006	0.004	0.009
4.1	0.004	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.004	0.008
4.3	0.003	0.004	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.010
4.5	0.003	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.011
4.7	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.010
4.9	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.008
5.1	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.009
5.3	0.004	0.001	0.001	0.002	0.002	0.002	0.001	0.002	0.001	0.004	0.010
5.5	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.003	0.002	0.004	0.010
5.7	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.011
5.9	0.004	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.004	0.010
6.1	0.004	0.003	0.002	0.003	0.003	0.002	0.002	0.002	0.002	0.004	0.009
6.3	0.003	0.003	0.004	0.003	0.003	0.003	0.003	0.002	0.002	0.004	0.010
6.5	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.011
6.7	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.004	0.010
6.9	0.002	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.011
7.1	0.004	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.004	0.012
7.3	0.004	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.003	0.010
7.5	0.003	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.003	0.010
7.7	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.011
7.9	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.012
8.1	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.011
8.3	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.012
8.5	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.003	0.012
8.7	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.014
8.9	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.003	0.015

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TÜV SÜD Product Service

Certificate of Conformity

No. ESY 099567 0061 Rev. 00

Harmonics-DIN EN 61000-3-12 (ASW20K-LT-G2 Pro)														
Description	Admissible individual harmonic current I_h/I_{ref} % (Minimum R_{sce}=33)												Admissible harmonic parameters (%)	
Harmonic	I_2	I_3	I_4	I_5	I_6	I_7	I_8	I_9	I_{10}	I_{11}	I_{12}	I_{13}	THC / I_{ref}	PWHC /I_{ref}
Limit	8.0	-	4.0	10.7	2.67	7.2	2.0	-	1.6	3.1	1.33	2.0	13	22
Actual Value	0.057	0.041	0.055	0.449	0.020	0.128	0.030	0.027	0.023	0.078	0.019	0.202	0.769	2.719
Note: The harmonic values are maximum values of all phases.														

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No. ESY 099567 0061 Rev. 00

Harmonics-DIN EN 61000-3-12 (ASW20K-LT-G2 Pro)												
Active power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100	Limit
Ordinal number	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	I [%]	[%]
2	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.053	0.057	8.0
3	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.041	-
4	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.038	0.055	4.0
5	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.256	0.449	10.7
6	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.020	2.67
7	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.045	0.128	7.2
8	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.030	2.0
9	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.027	-
10	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.011	0.023	1.6
11	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.078	3.1
12	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.019	1.33
13	0.236	0.236	0.236	0.236	0.236	0.236	0.236	0.236	0.236	0.236	0.202	2.0
14	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.024	-
15	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.012	0.020	-
16	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.022	-
17	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.159	0.193	-
18	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.006	0.019	-
19	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.126	0.354	-
20	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.035	-
21	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.013	0.025	-
22	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.042	-
23	0.113	0.113	0.113	0.113	0.113	0.113	0.113	0.113	0.113	0.113	0.115	-
24	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.019	-
25	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.091	0.190	-
26	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.021	-
27	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.020	-
28	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.029	-
29	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.078	0.214	-
30	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.020	-
31	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.131	-
32	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.022	-
33	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.020	-
34	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.048	-
35	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.147	-
36	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.018	-
37	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.039	0.067	-
38	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.043	-
39	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.020	-
40	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.023	-
41	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.089	-
42	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.019	-
43	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.024	0.090	-
44	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.009	0.047	-
45	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.023	-
46	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.041	-
47	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	-
48	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.020	-
49	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.021	0.064	-
50	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.024	-
THC/I_{ref}	0.459	0.459	0.459	0.459	0.459	0.459	0.459	0.459	0.459	0.459	0.769	13
PWHC/I_{ref}	1.310	1.310	1.310	1.310	1.310	1.310	1.310	1.310	1.310	1.310	2.719	22

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Inter-harmonics (ASW20K-LT-G2 Pro)											
Activee Power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100
Frequency [Hz]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]
75	0.008	0.020	0.038	0.057	0.076	0.096	0.114	0.134	0.153	0.172	0.199
125	0.005	0.020	0.043	0.064	0.085	0.107	0.128	0.150	0.171	0.192	0.206
175	0.004	0.005	0.008	0.011	0.014	0.018	0.021	0.025	0.028	0.032	0.038
225	0.005	0.005	0.006	0.009	0.011	0.014	0.016	0.019	0.021	0.024	0.036
275	0.005	0.005	0.006	0.011	0.013	0.013	0.015	0.017	0.018	0.020	0.033
325	0.005	0.005	0.006	0.011	0.011	0.011	0.012	0.013	0.014	0.015	0.028
375	0.004	0.004	0.005	0.008	0.010	0.010	0.011	0.012	0.013	0.014	0.028
425	0.005	0.004	0.005	0.008	0.009	0.009	0.009	0.010	0.011	0.012	0.028
475	0.005	0.005	0.005	0.006	0.006	0.007	0.008	0.009	0.010	0.011	0.029
525	0.005	0.004	0.005	0.005	0.006	0.007	0.007	0.008	0.009	0.010	0.028
575	0.004	0.004	0.005	0.005	0.007	0.008	0.008	0.009	0.010	0.011	0.022
625	0.005	0.005	0.007	0.008	0.009	0.009	0.010	0.011	0.011	0.012	0.027
675	0.005	0.007	0.009	0.007	0.012	0.013	0.013	0.015	0.016	0.017	0.029
725	0.006	0.007	0.009	0.008	0.012	0.012	0.012	0.013	0.014	0.015	0.028
775	0.004	0.004	0.005	0.005	0.005	0.006	0.006	0.007	0.007	0.008	0.029
825	0.004	0.004	0.005	0.005	0.005	0.006	0.006	0.007	0.007	0.007	0.030
875	0.005	0.005	0.006	0.006	0.009	0.011	0.012	0.013	0.014	0.014	0.031
925	0.004	0.006	0.007	0.007	0.010	0.011	0.011	0.012	0.013	0.013	0.029
975	0.004	0.005	0.005	0.006	0.007	0.009	0.010	0.011	0.012	0.012	0.032
1025	0.005	0.005	0.006	0.007	0.008	0.010	0.010	0.011	0.012	0.012	0.032
1075	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.006	0.006	0.006	0.031
1125	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.006	0.006	0.006	0.030
1175	0.004	0.005	0.007	0.008	0.006	0.009	0.010	0.011	0.012	0.012	0.031
1225	0.004	0.006	0.007	0.008	0.007	0.009	0.010	0.011	0.012	0.012	0.028
1275	0.004	0.004	0.012	0.007	0.005	0.007	0.008	0.009	0.010	0.011	0.027
1325	0.005	0.004	0.011	0.007	0.006	0.008	0.009	0.009	0.010	0.011	0.029
1375	0.004	0.004	0.012	0.005	0.004	0.005	0.005	0.005	0.006	0.006	0.028
1425	0.004	0.004	0.010	0.004	0.004	0.005	0.005	0.005	0.006	0.006	0.030
1475	0.005	0.004	0.005	0.007	0.005	0.007	0.008	0.009	0.010	0.010	0.031
1525	0.004	0.006	0.006	0.007	0.005	0.007	0.008	0.009	0.010	0.011	0.030
1575	0.004	0.004	0.005	0.006	0.005	0.006	0.007	0.007	0.008	0.009	0.031
1625	0.005	0.004	0.006	0.007	0.006	0.006	0.007	0.008	0.009	0.010	0.033
1675	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.005	0.030
1725	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.005	0.006	0.030
1775	0.005	0.004	0.005	0.005	0.005	0.005	0.007	0.007	0.008	0.009	0.030
1825	0.005	0.006	0.006	0.006	0.006	0.005	0.007	0.007	0.008	0.009	0.027
1875	0.004	0.004	0.004	0.004	0.005	0.005	0.006	0.006	0.007	0.007	0.028
1925	0.005	0.004	0.006	0.005	0.005	0.005	0.006	0.006	0.007	0.008	0.028
1975	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.005	0.005	0.026

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Higher frequency (ASW20K-LT-G2 Pro)											
Active Power P/Pn[%]	0	10	20	30	40	50	60	70	80	90	100
Frequency [kHz]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]	[%]
2.1	0.009	0.014	0.014	0.012	0.011	0.010	0.010	0.008	0.008	0.007	0.077
2.3	0.005	0.010	0.014	0.010	0.010	0.009	0.008	0.008	0.007	0.006	0.085
2.5	0.004	0.011	0.009	0.009	0.009	0.009	0.009	0.009	0.007	0.005	0.015
2.7	0.005	0.012	0.015	0.012	0.012	0.011	0.010	0.009	0.008	0.005	0.013
2.9	0.005	0.010	0.011	0.008	0.008	0.007	0.007	0.007	0.006	0.005	0.013
3.1	0.003	0.009	0.011	0.008	0.007	0.007	0.006	0.006	0.005	0.005	0.011
3.3	0.003	0.012	0.013	0.009	0.009	0.009	0.008	0.007	0.007	0.004	0.010
3.5	0.005	0.009	0.008	0.007	0.006	0.006	0.006	0.005	0.005	0.004	0.010
3.7	0.004	0.008	0.009	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.009
3.9	0.004	0.009	0.009	0.008	0.008	0.007	0.007	0.006	0.006	0.004	0.009
4.1	0.004	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.005	0.004	0.008
4.3	0.003	0.004	0.006	0.006	0.006	0.006	0.006	0.005	0.005	0.004	0.010
4.5	0.003	0.004	0.004	0.005	0.005	0.005	0.005	0.005	0.005	0.004	0.011
4.7	0.004	0.003	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.010
4.9	0.004	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.008
5.1	0.004	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.004	0.009
5.3	0.004	0.001	0.001	0.002	0.002	0.002	0.001	0.002	0.001	0.004	0.010
5.5	0.002	0.002	0.002	0.002	0.002	0.003	0.002	0.003	0.002	0.004	0.010
5.7	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.011
5.9	0.004	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.002	0.004	0.010
6.1	0.004	0.003	0.002	0.003	0.003	0.002	0.002	0.002	0.002	0.004	0.009
6.3	0.003	0.003	0.004	0.003	0.003	0.003	0.003	0.002	0.002	0.004	0.010
6.5	0.004	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.011
6.7	0.002	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.001	0.004	0.010
6.9	0.002	0.003	0.003	0.002	0.002	0.002	0.002	0.002	0.002	0.004	0.011
7.1	0.004	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.004	0.012
7.3	0.004	0.002	0.002	0.002	0.001	0.001	0.001	0.001	0.001	0.003	0.010
7.5	0.003	0.002	0.002	0.002	0.002	0.002	0.001	0.001	0.001	0.003	0.010
7.7	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.011
7.9	0.003	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.012
8.1	0.002	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.011
8,3	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.012
8.5	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.003	0.012
8.7	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.003	0.014
8.9	0.004	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.000	0.003	0.015

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E.7 Requirement for the test report for the NS protection

Extract from test report for NS protection "Determination of electrical properties"			No. 64.290.22.30805.01
NS protection test report			
Type of NS system:	Integrated NS protection		Other Manufacturer indications
Software version:	Main DSP: V610-03043-02 Slave DSP: V610-60009-00		
Manufacturer:	AISWEI Technology (Shanghai) Co., Ltd Room 905B,757 Mengzi Road, Huangpu District, 200023 Shanghai, PEOPLE'S REPUBLIC OF CHINA		
Measuring period:	From2022-06-15 to 2022-06-30		
	Inverter		
Protection function	**Setting value**	**Tripping value**	**Break time NS protection ***
Rise-in-voltage protection *U* >>	1.25 * U_n	L1-N: 287.5 V; L2-N: 287.4 V; L3-N: 287.9 V;	L1-N: 113 ms; L2-N: 107 ms; L3-N: 122 ms;
Rise-in-voltage protection *U* >	1.10 * U_n	1,10 * U_n	ms**
Voltage drop protection *U* <	0.8 * U_n	L1-N: 184.0 V; L2-N: 183.6 V; L3-N: 184.8 V;	L1-N: 3030 ms; L2-N: 3080 ms; L3-N: 3060 ms;
Voltage drop protection *U* <<	0.45 * U_n	L1-N: 104.2 V; L2-N: 103.9 V; L3-N: 104.0 V;	L1-N: 312 ms; L2-N: 307 ms; L3-N: 302 ms;
Frequency decrease protection *f* <	47.5 Hz	47.52 Hz	148.81 ms
Frequency increase protection *f* >	51.5 Hz	51.47 Hz	100.79 ms

*: The tripping time includes the period from the limit value violation *U*/*f* until the tripping signal to the interface switch.

When planning the power generation system, the response time of the interface switch shall be added to the maximum time value obtained as indicated above.

The disconnection time (sum of tripping time of the NS protection plus response time of the interface switch) shall not exceed 200 ms.

**: Verification disconnection time of moving 10-min-average value.

Disconnecting time as below:

1. 493.90 s (L1-N from 600s@Un to 112%Un) / 502.75 s (L2-N from 600s@Un to 112%Un) / 504.69 s (L3-N from 600s@Un to 112%Un)
2. Continuous operation (L1-N from 600s@Un to 108%Un) / Continuous operation (L2-N from 600s@Un to 108%Un) / Continuous operation (L3-N from 600s@Un to 108%Un)
3. 278.17 (L1-N from 600s@106%Un to 114%Un) / 292.35 s (L2-N from 600s@106%Un to 114%Un) / 278.15 s (L3-N from 600s@106%Un to 114%Un)

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☑ **as integrated NS protection**	
Assigned to power generation unit type	Grid-connected PV Inverter: ASW3K-LT-G2 Pro, ASW4K-LT-G2 Pro, ASW5K-LT-G2 Pro, ASW6K-LT-G2 Pro, ASW8K-LT-G2 Pro, ASW10K-LT-G2 Pro, ASW12K-LT-G2 Pro, ASW15K-LT-G2 Pro, ASW17K-LT-G2 Pro, ASW20K-LT-G2 Pro
Integrated interface switch type	Series-connected relays for both the neutral conductor and the line conductor Relay type: CHFN-V-112HA2F
Response time of interface switch for integrated NS protection	CHFN-V-112HA2F: Release time: Max. 10 ms
Verification of the entire functional chain “integrated NS protection – interface switch” has resulted in successful disconnection.	☑