Certificate of compliance

Applicant:	**EcoFlow Inc.** 1st Floor, Building 1, Plant E, Jiehe Industrial City, Shuitian Community, Shiyan Street, Bao'an District, Shenzhen, Guangdong **China**
Product:	**Photovoltaic (PV) and battery inverter**
Model:	EF HD-P3-10K-S1 EF HD-P3-8K0-S1 EF HD-P3-6K0-S1

Use in accordance with regulations:

Automatic disconnection device with three-phase mains surveillance in accordance with Engineering Recommendation G98/1 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, which can be accessed the distribution network provider at any time.

Applied rules and standards:

Engineering Recommendation G98/1-7:2022
Requirements for the connection of Fully Type Tested Micro-generators (up to and including 16 A per phase) in parallel with public Low Voltage Distribution Networks

DIN V VDE V 0126-1-1:2006 (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:	**CKVN-ESH-P23100048-2**	**Certification program:**	**NSOP-0032-DEU-ZE-V01**
Certificate number:	**U24-0313**	**Date of issue:**	**2024-04-29**

Certification body

Domenik Koll
Head of Energy Systems

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

Certification body Bureau Veritas Consumer Products Services Germany GmbH accredited according to DIN EN ISO/IEC 17065

Testing laboratory accredited according to DIN EN ISO/IEC 17025

A partial representation of the certificate requires the written approval of Bureau Veritas Consumer Products Services Germany GmbH

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

Type Approval and declaration of compliance with the requirements of Engineering Recommendation G98/1.				
PGM Technology	Photovoltaic and battery inverter			
Manufacturer	**EcoFlow Inc.**			
Address	1st Floor, Building 1, Plant E, Jiehe Industrial City, Shuitian Community, Shiyan Street, Bao'an District, Shenzhen, Guangdong **China**			
Tel	--	**Fax**	--	
Email	--	**Website**	--	
Rated values	**EF HD-P3-6K0-S1**	**EF HD-P3-8K0-S1**	**EF HD-P3-10K-S1**	--
PV Input (DC)				
MPP DC voltage range [V]	200-850	200-850	200-850	--
Max. input DC voltage range [V]	1000	1000	1000	--
Max. input DC current [A]	16*2	16*2	16*2	--
Battery (DC)				
Battery DC voltage [V]	800	800	800	--
Battery charge current [A]	12,5	12,5	12,5	--
Battery discharge current [A]	12,5	12,5	12,5	--
Grid Output (AC)				--
Output AC voltage [V]	3L/N/PE, 230/400, 50/60 Hz	3L/N/PE, 230/400, 50/60 Hz	3L/N/PE, 230/400, 50/60 Hz	--
Max AC current [A]	8,7	11,5	14,4	--
Max. apparent power [VA]	6000	8000	10000	--
Firmware version	V1.0.0.0			

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 (each) line and neutral. This enables a safe disconnection of the power generation unit from the network in case of error.

Differences between Generating Units:

None

The above stated Generating Units are tested according the requirements in the Engineering Recommendation G98/1. 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 G98/1.

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

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:	No disconnection allowed
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:	No disconnection allowed
Test 3	Voltage = 110% of nominal (253 V) Frequency = 51,5 Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit:	No disconnection allowed
Test 4	Voltage = 110% of nominal (253 V) Frequency = 52,0 Hz Power Factor = 1 Period of test 15 minutes
Connection:	Always connected
Limit:	No disconnection allowed
Test 5	Voltage = 100% of nominal (230 V) Frequency = 50,0 Hz Power Factor = 1 Period of test 90 minutes
Connection:	Always connected
Limit:	No disconnection allowed
Test 6	Confirm that the Micro-Generating Plant 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.
Connection:	Always connected
Limit:	No disconnection allowed

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

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	183,5	2,556	188V / 5s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	263,6	1,047	258,2V 5,0s	No trip
O/V stage 2	273,7	0,5	275,1	0,562	269,7V 0,95s	No trip
					277,7V 0,45s	No trip

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	184,0	2,5	182,7	2,560	188V / 5s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	264,0	1,081	258,2V 5,0s	No trip
O/V stage 2	273,7	0,5	274,7	0,565	269,7V 0,95s	No trip
					277,7V 0,45s	No trip

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

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	184,0	2,5	182,9	2,560	188V / 5s	No trip
					180V / 2,45s	No trip
O/V stage 1	262,2	1,0	263,6	1,062	258,2V 5,0s	No trip
O/V stage 2	273,7	0,5	274,5	563	269,7V 0,95s	No trip
					277,7V 0,45s	No trip

Note. For Voltage tests the Voltage required to trip is the setting ± 3,45 V. 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	47,49	20,064	47,7Hz / 30s	No trip
U/F stage 2	47	0,5	46,99	0,556	47,2Hz / 19,5s	No trip
					46,8Hz / 0,45s	No trip
O/F stage 2	52	0,5	52,01	0,509	51,8Hz / 120s	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.

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

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]	198	220	278	216	249	289
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 2.	
Over Voltage	
Time delay setting [s]	**Measured delay [s]**
20	51,8
Under Voltage	
Time delay setting [s]	**Measured delay [s]**
20	63,8
Over Frequency	
Time delay setting [s]	**Measured delay [s]**
20	59,0
Under Frequency	
Time delay setting [s]	**Measured delay [s]**
20	58,5

	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

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

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% P_n							
Frequency [Hz]:	50,00	50,45	50,70	51,15	50,70	50,45	50,00
$P_{expected}$ [kW]:	10000	9900	9400	8500	9400	9900	10000
$P_{measured}$ [kW]:	10063,8	9983,9	9479,2	8572,6	9427,5	9980,9	10057,3
2. Measurement a) to g): Active power output 40% and 60% after freezing > 80% P_n							
Frequency [Hz]:	50,00	50,45	50,70	51,15	50,70	50,45	50,00
$P_{expected}$ [kW]:	5000	4900	4400	3500	4400	4900	10000
$P_{measured}$ [kW]:	5028,6	4930,2	4428,2	3526,2	4425,9	4926,3	10053,1

Output Power with falling Frequency			
5-min mean value (each)	**a) 50 ± 0,01 Hz**	**b) - 0,4 to - 0,5 Hz**	**c) - 2,4 to - 2,5 Hz**
Frequency [Hz]:	50,00	49,49	47,49
Active power [W]:	10050,4	10059,3	10055,3
ΔP/Pmax [%]:			-0,04
Note. No Power reduction takes place for electronic inverter.			

Annex to the G98/1 certificate of compliance No. U24-0313

Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Power Quality. Harmonics.

EF HD-P3-10K-S1, L1

SSEG rating per phase (rpp)						
	At 45-55% of rated outputs 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,007	0,047	0,017	0,118	1,080	
3rd	0,005	0,038	0,003	0,019	2,300	
4th	0,009	0,062	0,017	0,117	0,430	
5th	0,109	0,754	0,099	0,682	1,140	
6th	0,010	0,069	0,007	0,049	0,300	
7th	0,110	0,762	0,105	0,721	0,770	
8th	0,007	0,047	0,014	0,098	0,230	
9th	0,008	0,058	0,010	0,067	0,400	
10th	0,011	0,078	0,003	0,023	0,184	
11th	0,119	0,822	0,195	1,346	0,330	
12th	0,008	0,055	0,005	0,034	0,153	
13th	0,095	0,656	0,155	1,072	0,210	
14th	0,009	0,059	0,025	0,175	0,131	
15th	0,010	0,068	0,013	0,086	0,150	
16th	0,011	0,073	0,016	0,109	0,115	
17th	0,043	0,297	0,088	0,605	0,132	
18th	0,006	0,041	0,004	0,028	0,102	
19th	0,025	0,170	0,057	0,396	0,118	
20th	0,012	0,085	0,017	0,115	0,092	
21th	0,007	0,046	0,008	0,054	0,107	0,160
22th	0,017	0,121	0,021	0,147	0,084	
23th	0,025	0,172	0,038	0,261	0,098	0,147
24th	0,005	0,036	0,003	0,023	0,077	
25th	0,024	0,165	0,024	0,167	0,090	0,135
26th	0,017	0,117	0,021	0,145	0,071	
27th	0,007	0,049	0,005	0,032	0,083	0,124
28th	0,007	0,050	0,031	0,214	0,066	
29th	0,024	0,163	0,022	0,149	0,078	0,117
30th	0,006	0,040	0,003	0,019	0,061	
31th	0,017	0,114	0,009	0,059	0,073	0,109
32th	0,010	0,069	0,029	0,201	0,058	
33th	0,001	0,010	0,004	0,027	0,068	0,102
34th	0,008	0,058	0,003	0,024	0,054	
35th	0,011	0,075	0,012	0,081	0,064	0,096
36th	0,003	0,022	0,004	0,026	0,051	
37th	0,010	0,068	0,001	0,009	0,061	0,091
38th	0,010	0,071	0,006	0,044	0,048	
39th	0,003	0,018	0,005	0,034	0,058	0,087
40th	0,014	0,096	0,010	0,072	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Power Quality. Harmonics.

EF HD-P3-10K-S1, L2

SSEG rating per phase (rpp)						
	At 45-55% of rated output 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,006	0,044	0,018	0,125	1,080	
3rd	0,010	0,072	0,015	0,105	2,300	
4th	0,017	0,120	0,030	0,210	0,430	
5th	0,106	0,735	0,094	0,650	1,140	
6th	0,007	0,046	0,007	0,049	0,300	
7th	0,106	0,732	0,101	0,697	0,770	
8th	0,006	0,045	0,013	0,088	0,230	
9th	0,007	0,049	0,006	0,042	0,400	
10th	0,010	0,067	0,013	0,089	0,184	
11th	0,109	0,753	0,187	1,288	0,330	
12th	0,007	0,047	0,007	0,050	0,153	
13th	0,096	0,663	0,158	1,092	0,210	
14th	0,018	0,121	0,023	0,160	0,131	
15th	0,008	0,056	0,008	0,056	0,150	
16th	0,008	0,058	0,017	0,116	0,115	
17th	0,035	0,240	0,073	0,506	0,132	
18th	0,006	0,040	0,005	0,031	0,102	
19th	0,026	0,180	0,067	0,461	0,118	
20th	0,013	0,087	0,016	0,113	0,092	
21th	0,006	0,043	0,007	0,051	0,107	0,160
22th	0,020	0,141	0,024	0,166	0,084	
23th	0,019	0,131	0,027	0,187	0,098	0,147
24th	0,005	0,037	0,004	0,029	0,077	
25th	0,021	0,148	0,030	0,210	0,090	0,135
26th	0,015	0,105	0,021	0,148	0,071	
27th	0,004	0,028	0,006	0,042	0,083	0,124
28th	0,008	0,053	0,033	0,226	0,066	
29th	0,020	0,139	0,014	0,098	0,078	0,117
30th	0,008	0,055	0,006	0,038	0,061	
31th	0,011	0,076	0,010	0,066	0,073	0,109
32th	0,012	0,080	0,032	0,223	0,058	
33th	0,003	0,022	0,005	0,036	0,068	0,102
34th	0,008	0,054	0,008	0,052	0,054	
35th	0,012	0,080	0,013	0,093	0,064	0,096
36th	0,003	0,024	0,002	0,017	0,051	
37th	0,007	0,052	0,001	0,008	0,061	0,091
38th	0,012	0,083	0,006	0,039	0,048	
39th	0,003	0,020	0,002	0,011	0,058	0,087
40th	0,012	0,079	0,011	0,073	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Power Quality. Harmonics.

EF HD-P3-10K-S1, L3

SSEG rating per phase (rpp)						
	At 45-55% of rated output 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,004	0,025	0,015	0,101	1,080	
3rd	0,011	0,073	0,012	0,079	2,300	
4th	0,018	0,121	0,030	0,206	0,430	
5th	0,107	0,739	0,099	0,685	1,140	
6th	0,012	0,080	0,014	0,094	0,300	
7th	0,105	0,726	0,099	0,686	0,770	
8th	0,010	0,070	0,020	0,139	0,230	
9th	0,006	0,040	0,008	0,052	0,400	
10th	0,003	0,020	0,015	0,104	0,184	
11th	0,113	0,782	0,202	1,391	0,330	
12th	0,006	0,043	0,008	0,052	0,153	
13th	0,090	0,622	0,159	1,097	0,210	
14th	0,017	0,116	0,030	0,206	0,131	
15th	0,012	0,080	0,019	0,134	0,150	
16th	0,015	0,104	0,024	0,164	0,115	
17th	0,033	0,228	0,087	0,600	0,132	
18th	0,005	0,036	0,004	0,028	0,102	
19th	0,020	0,137	0,064	0,441	0,118	
20th	0,017	0,118	0,016	0,108	0,092	
21th	0,012	0,081	0,018	0,124	0,107	0,160
22th	0,023	0,158	0,027	0,184	0,084	
23th	0,014	0,096	0,034	0,233	0,098	0,147
24th	0,006	0,039	0,002	0,016	0,077	
25th	0,021	0,148	0,025	0,171	0,090	0,135
26th	0,020	0,135	0,019	0,130	0,071	
27th	0,008	0,055	0,017	0,116	0,083	0,124
28th	0,011	0,073	0,035	0,241	0,066	
29th	0,019	0,129	0,010	0,070	0,078	0,117
30th	0,012	0,085	0,006	0,043	0,061	
31th	0,015	0,102	0,016	0,111	0,073	0,109
32th	0,013	0,089	0,032	0,222	0,058	
33th	0,003	0,019	0,007	0,048	0,068	0,102
34th	0,011	0,075	0,008	0,056	0,054	
35th	0,008	0,058	0,014	0,100	0,064	0,096
36th	0,004	0,028	0,004	0,028	0,051	
37th	0,010	0,071	0,003	0,022	0,061	0,091
38th	0,012	0,085	0,004	0,029	0,048	
39th	0,005	0,036	0,005	0,031	0,058	0,087
40th	0,015	0,101	0,011	0,075	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Annex to the G98/1 certificate of compliance No. U24-0313

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

Power Quality. Harmonics.

EF HD-P3-8K0-S1, L1

SSEG rating per phase (rpp)						
	At 45-55% of rated outputs 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,007	0,063	0,021	0,183	1,080	
3rd	0,005	0,041	0,010	0,086	2,300	
4th	0,014	0,122	0,014	0,123	0,430	
5th	0,109	0,938	0,079	0,681	1,140	
6th	0,004	0,035	0,003	0,025	0,300	
7th	0,100	0,864	0,089	0,764	0,770	
8th	0,011	0,095	0,007	0,058	0,230	
9th	0,005	0,045	0,006	0,050	0,400	
10th	0,010	0,086	0,002	0,021	0,184	
11th	0,092	0,795	0,147	1,269	0,330	
12th	0,008	0,068	0,007	0,057	0,153	
13th	0,056	0,481	0,126	1,083	0,210	
14th	0,027	0,236	0,015	0,131	0,131	
15th	0,006	0,053	0,006	0,051	0,150	
16th	0,026	0,223	0,010	0,083	0,115	
17th	0,024	0,204	0,070	0,602	0,132	
18th	0,005	0,047	0,008	0,065	0,102	
19th	0,011	0,091	0,049	0,421	0,118	
20th	0,033	0,281	0,009	0,076	0,092	
21th	0,006	0,055	0,003	0,030	0,107	0,160
22th	0,033	0,285	0,015	0,129	0,084	
23th	0,013	0,113	0,026	0,225	0,098	0,147
24th	0,004	0,038	0,007	0,062	0,077	
25th	0,009	0,077	0,021	0,179	0,090	0,135
26th	0,027	0,236	0,016	0,134	0,071	
27th	0,005	0,044	0,002	0,015	0,083	0,124
28th	0,014	0,117	0,033	0,285	0,066	
29th	0,007	0,058	0,014	0,123	0,078	0,117
30th	0,001	0,007	0,003	0,023	0,061	
31th	0,009	0,075	0,006	0,048	0,073	0,109
32th	0,013	0,108	0,035	0,301	0,058	
33th	0,003	0,024	0,003	0,025	0,068	0,102
34th	0,009	0,078	0,014	0,124	0,054	
35th	0,007	0,058	0,004	0,037	0,064	0,096
36th	0,002	0,020	0,002	0,014	0,051	
37th	0,009	0,076	0,004	0,031	0,061	0,091
38th	0,011	0,091	0,011	0,098	0,048	
39th	0,005	0,041	0,004	0,035	0,058	0,087
40th	0,010	0,089	0,016	0,137	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Power Quality. Harmonics.

EF HD-P3-8K0-S1, L2

SSEG rating per phase (rpp)						
	At 45-55% of rated outputs 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,016	0,142	0,022	0,193	1,080	
3rd	0,007	0,064	0,014	0,124	2,300	
4th	0,015	0,127	0,016	0,135	0,430	
5th	0,111	0,955	0,084	0,727	1,140	
6th	0,014	0,125	0,004	0,032	0,300	
7th	0,105	0,904	0,093	0,802	0,770	
8th	0,008	0,071	0,006	0,048	0,230	
9th	0,011	0,092	0,010	0,087	0,400	
10th	0,008	0,066	0,003	0,027	0,184	
11th	0,087	0,752	0,152	1,307	0,330	
12th	0,012	0,104	0,005	0,046	0,153	
13th	0,067	0,575	0,131	1,132	0,210	
14th	0,019	0,161	0,017	0,142	0,131	
15th	0,014	0,121	0,010	0,083	0,150	
16th	0,023	0,201	0,014	0,119	0,115	
17th	0,023	0,199	0,070	0,607	0,132	
18th	0,003	0,024	0,008	0,066	0,102	
19th	0,024	0,205	0,057	0,490	0,118	
20th	0,026	0,221	0,003	0,026	0,092	
21th	0,010	0,089	0,008	0,067	0,107	0,160
22th	0,034	0,295	0,017	0,145	0,084	
23th	0,018	0,156	0,024	0,209	0,098	0,147
24th	0,003	0,027	0,006	0,054	0,077	
25th	0,016	0,136	0,023	0,200	0,090	0,135
26th	0,026	0,226	0,013	0,109	0,071	
27th	0,008	0,070	0,005	0,042	0,083	0,124
28th	0,018	0,151	0,037	0,317	0,066	
29th	0,011	0,094	0,015	0,133	0,078	0,117
30th	0,002	0,021	0,009	0,074	0,061	
31th	0,004	0,034	0,007	0,061	0,073	0,109
32th	0,009	0,078	0,033	0,286	0,058	
33th	0,004	0,030	0,002	0,020	0,068	0,102
34th	0,011	0,099	0,010	0,089	0,054	
35th	0,006	0,048	0,005	0,047	0,064	0,096
36th	0,001	0,007	0,005	0,039	0,051	
37th	0,006	0,048	0,005	0,040	0,061	0,091
38th	0,010	0,088	0,010	0,087	0,048	
39th	0,004	0,031	0,003	0,025	0,058	0,087
40th	0,012	0,105	0,015	0,129	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Power Quality. Harmonics.

EF HD-P3-8K0-S1, L3

SSEG rating per phase (rpp)						
	At 45-55% of rated outputs 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,013	0,109	0,025	0,212	1,080	
3rd	0,004	0,035	0,005	0,043	2,300	
4th	0,022	0,187	0,017	0,145	0,430	
5th	0,111	0,957	0,074	0,638	1,140	
6th	0,012	0,101	0,002	0,018	0,300	
7th	0,109	0,943	0,092	0,792	0,770	
8th	0,010	0,090	0,010	0,090	0,230	
9th	0,011	0,092	0,002	0,016	0,400	
10th	0,005	0,041	0,003	0,026	0,184	
11th	0,085	0,733	0,149	1,287	0,330	
12th	0,007	0,056	0,003	0,023	0,153	
13th	0,065	0,564	0,130	1,119	0,210	
14th	0,035	0,304	0,025	0,213	0,131	
15th	0,016	0,139	0,009	0,081	0,150	
16th	0,026	0,226	0,010	0,089	0,115	
17th	0,016	0,141	0,072	0,619	0,132	
18th	0,005	0,046	0,002	0,016	0,102	
19th	0,019	0,167	0,054	0,462	0,118	
20th	0,030	0,255	0,010	0,090	0,092	
21th	0,007	0,060	0,009	0,074	0,107	0,160
22th	0,032	0,280	0,012	0,105	0,084	
23th	0,011	0,095	0,026	0,224	0,098	0,147
24th	0,005	0,047	0,003	0,028	0,077	
25th	0,013	0,112	0,021	0,178	0,090	0,135
26th	0,024	0,207	0,023	0,200	0,071	
27th	0,009	0,077	0,009	0,078	0,083	0,124
28th	0,013	0,112	0,033	0,288	0,066	
29th	0,010	0,090	0,013	0,114	0,078	0,117
30th	0,003	0,029	0,004	0,039	0,061	
31th	0,007	0,064	0,004	0,037	0,073	0,109
32th	0,010	0,088	0,037	0,322	0,058	
33th	0,007	0,058	0,005	0,041	0,068	0,102
34th	0,008	0,068	0,012	0,100	0,054	
35th	0,010	0,088	0,005	0,040	0,064	0,096
36th	0,002	0,018	0,002	0,015	0,051	
37th	0,009	0,081	0,004	0,035	0,061	0,091
38th	0,010	0,090	0,015	0,128	0,048	
39th	0,007	0,057	0,003	0,025	0,058	0,087
40th	0,009	0,077	0,014	0,122	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Power Quality. Harmonics.

EF HD-P3-6K0-S1, L1

SSEG rating per phase (rpp)						
	At 45-55% of rated outputs 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,012	0,138	0,020	0,228	1,080	
3rd	0,013	0,145	0,011	0,125	2,300	
4th	0,005	0,053	0,015	0,177	0,430	
5th	0,128	1,472	0,088	1,011	1,140	
6th	0,005	0,059	0,003	0,030	0,300	
7th	0,112	1,286	0,094	1,083	0,770	
8th	0,022	0,258	0,007	0,083	0,230	
9th	0,012	0,142	0,012	0,132	0,400	
10th	0,029	0,330	0,011	0,126	0,184	
11th	0,077	0,883	0,123	1,411	0,330	
12th	0,012	0,143	0,006	0,071	0,153	
13th	0,076	0,878	0,104	1,193	0,210	
14th	0,037	0,431	0,009	0,105	0,131	
15th	0,008	0,089	0,010	0,118	0,150	
16th	0,027	0,312	0,010	0,114	0,115	
17th	0,039	0,446	0,046	0,530	0,132	
18th	0,012	0,135	0,009	0,108	0,102	
19th	0,025	0,289	0,036	0,419	0,118	
20th	0,014	0,164	0,014	0,163	0,092	
21th	0,001	0,016	0,006	0,072	0,107	0,160
22th	0,025	0,288	0,017	0,197	0,084	
23th	0,013	0,151	0,021	0,239	0,098	0,147
24th	0,011	0,125	0,011	0,127	0,077	
25th	0,009	0,103	0,020	0,228	0,090	0,135
26th	0,021	0,240	0,017	0,192	0,071	
27th	0,002	0,027	0,001	0,015	0,083	0,124
28th	0,013	0,148	0,016	0,181	0,066	
29th	0,013	0,148	0,012	0,144	0,078	0,117
30th	0,008	0,090	0,006	0,068	0,061	
31th	0,010	0,120	0,006	0,070	0,073	0,109
32th	0,004	0,047	0,022	0,252	0,058	
33th	0,003	0,036	0,002	0,021	0,068	0,102
34th	0,011	0,131	0,012	0,139	0,054	
35th	0,009	0,104	0,004	0,043	0,064	0,096
36th	0,006	0,064	0,006	0,063	0,051	
37th	0,011	0,123	0,002	0,020	0,061	0,091
38th	0,008	0,093	0,011	0,122	0,048	
39th	0,005	0,058	0,003	0,037	0,058	0,087
40th	0,010	0,111	0,015	0,167	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Power Quality. Harmonics.

EF HD-P3-6K0-S1, L2

SSEG rating per phase (rpp)						
	At 45-55% of rated output 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,017	0,198	0,013	0,153	1,080	
3rd	0,005	0,053	0,016	0,185	2,300	
4th	0,008	0,091	0,019	0,216	0,430	
5th	0,131	1,512	0,099	1,137	1,140	
6th	0,005	0,055	0,006	0,073	0,300	
7th	0,096	1,099	0,103	1,191	0,770	
8th	0,018	0,211	0,009	0,104	0,230	
9th	0,005	0,058	0,014	0,156	0,400	
10th	0,024	0,278	0,006	0,064	0,184	
11th	0,071	0,816	0,133	1,525	0,330	
12th	0,005	0,058	0,008	0,092	0,153	
13th	0,069	0,794	0,113	1,300	0,210	
14th	0,041	0,471	0,012	0,138	0,131	
15th	0,004	0,045	0,013	0,147	0,150	
16th	0,018	0,212	0,008	0,087	0,115	
17th	0,043	0,491	0,051	0,582	0,132	
18th	0,003	0,031	0,011	0,121	0,102	
19th	0,023	0,268	0,039	0,451	0,118	
20th	0,026	0,300	0,004	0,048	0,092	
21th	0,002	0,026	0,008	0,093	0,107	0,160
22th	0,022	0,255	0,013	0,151	0,084	
23th	0,013	0,144	0,017	0,194	0,098	0,147
24th	0,005	0,059	0,010	0,112	0,077	
25th	0,011	0,123	0,018	0,204	0,090	0,135
26th	0,023	0,261	0,005	0,057	0,071	
27th	0,002	0,024	0,005	0,060	0,083	0,124
28th	0,012	0,134	0,025	0,290	0,066	
29th	0,011	0,124	0,011	0,129	0,078	0,117
30th	0,007	0,086	0,018	0,203	0,061	
31th	0,010	0,111	0,006	0,072	0,073	0,109
32th	0,013	0,149	0,024	0,277	0,058	
33th	0,001	0,017	0,002	0,022	0,068	0,102
34th	0,006	0,064	0,011	0,122	0,054	
35th	0,011	0,126	0,005	0,053	0,064	0,096
36th	0,001	0,009	0,006	0,068	0,051	
37th	0,009	0,105	0,004	0,043	0,061	0,091
38th	0,013	0,151	0,010	0,114	0,048	
39th	0,002	0,018	0,003	0,037	0,058	0,087
40th	0,005	0,058	0,014	0,157	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Power Quality. Harmonics.

EF HD-P3-6K0-S1, L3

SSEG rating per phase (rpp)						
	At 45-55% of rated output 1667 W		100% of rated output 3333 W			
Harmonic	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Measured Value (MV) in [A]	Measured Value (MV) in [%]	Limit in BS EN61000-3-2 in Amps	Higher limit for odd harmonics 21 and above
2nd	0,024	0,279	0,020	0,234	1,080	
3rd	0,012	0,139	0,005	0,060	2,300	
4th	0,010	0,111	0,015	0,169	0,430	
5th	0,116	1,339	0,088	1,016	1,140	
6th	0,001	0,009	0,004	0,048	0,300	
7th	0,103	1,182	0,095	1,090	0,770	
8th	0,017	0,193	0,013	0,154	0,230	
9th	0,011	0,126	0,003	0,037	0,400	
10th	0,024	0,271	0,006	0,074	0,184	
11th	0,062	0,710	0,129	1,480	0,330	
12th	0,010	0,114	0,004	0,043	0,153	
13th	0,072	0,834	0,105	1,206	0,210	
14th	0,033	0,379	0,017	0,201	0,131	
15th	0,008	0,092	0,007	0,079	0,150	
16th	0,029	0,329	0,002	0,028	0,115	
17th	0,041	0,468	0,055	0,633	0,132	
18th	0,014	0,158	0,003	0,029	0,102	
19th	0,027	0,312	0,031	0,362	0,118	
20th	0,020	0,231	0,012	0,136	0,092	
21th	0,002	0,020	0,006	0,070	0,107	0,160
22th	0,029	0,332	0,007	0,076	0,084	
23th	0,013	0,150	0,023	0,260	0,098	0,147
24th	0,006	0,070	0,002	0,021	0,077	
25th	0,012	0,140	0,017	0,201	0,090	0,135
26th	0,023	0,270	0,020	0,226	0,071	
27th	0,001	0,011	0,003	0,031	0,083	0,124
28th	0,020	0,229	0,020	0,228	0,066	
29th	0,011	0,131	0,012	0,134	0,078	0,117
30th	0,017	0,199	0,014	0,157	0,061	
31th	0,010	0,114	0,007	0,086	0,073	0,109
32th	0,010	0,110	0,029	0,338	0,058	
33th	0,004	0,042	0,002	0,028	0,068	0,102
34th	0,011	0,122	0,010	0,114	0,054	
35th	0,008	0,096	0,003	0,035	0,064	0,096
36th	0,006	0,071	0,003	0,037	0,051	
37th	0,011	0,122	0,003	0,032	0,061	0,091
38th	0,010	0,114	0,016	0,188	0,048	
39th	0,004	0,051	0,003	0,036	0,058	0,087
40th	0,011	0,122	0,012	0,141	0,046	

Note the higher limits for odd harmonics 21 and above are only allowable under certain conditions, if these higher limits are utilised please state the exemption used as detailed in part 6.2.3.4 of BS EN 61000-3-2 in the box below.

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

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%	0,9967	0,9962	0,9957	
50%	0,9995	0,9994	0,9992	
75%	0,9997	0,9997	0,9996	
100%	0,9997	0,9997	0,9997	
Limit	>0,95	>0,95	>0,95	

Power Quality. Voltage fluctuation and Flicker.								
	Starting			**Stopping**			**Running**	
	d_{max} [%]	**dc [%]**	**$d_{(t)}$ [%]**	**d_{max} [%]**	**dc [%]**	**$d_{(t)}$ [%]**	**Pst**	**Plt 2 hours**
Measured values at test impedance	0,508	0,021	0	0,513	0,103	0	0,020	0,020
Measured values at standard impedance	0,508	0,021	0	0,513	0,103	0	0,020	0,020
Values for maximum impedance	0,508	0,021	0	0,513	0,103	0	0,020	0,020
Limits set under BS EN 61000-3-11	4,0	3,3	3,3 500ms	4,0	3,3	3,3 500ms	1,0	0,65

Test impedance	R	0,24	Ω	Xl	0,15	Ω
	Z	0,27	Ω			
Standard impedance	R	0,24	Ω	Xl	0,15	Ω
	Z	0,27	Ω			
Maximum impedance	R	0,24	Ω	Xl	0,15	Ω
	Zmax	0,27	Ω			

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

Power Quality. DC injection.				
EF HD-P3-10K-S1				
Phase 1				
Test level power [%]	20	50	75	100
Recorded value [mA]	0,013	0,025	0,008	0,013
Recorded value [%]	0,090	0,173	0,055	0,090
Limit [%]	0,25	0,25	0,25	0,25
Phase 2				
Test level power [%]	20	50	75	100
Recorded value [mA]	0,017	0,024	0,023	0,032
Recorded value [%]	0,117	0,166	0,159	0,221
Limit [%]	0,25	0,25	0,25	0,25
Phase 3				
Test level power [%]	20	50	75	100
Recorded value [mA]	0,020	0,020	0,023	0,033
Recorded value [%]	0,138	0,138	0,159	0,228
Limit [%]	0,25	0,25	0,25	0,25
EF HD-P3-6K0-S1				
Phase 1				
Test level power [%]	20	50	75	100
Recorded value [mA]	0,010	0,008	0,007	0,005
Recorded value [%]	0,115	0,092	0,081	0,058
Limit [%]	0,25	0,25	0,25	0,25
Phase 2				
Test level power [%]	20	50	75	100
Recorded value [mA]	0,016	0,021	0,020	0,021
Recorded value [%]	0,184	0,242	0,230	0,242
Limit [%]	0,25	0,25	0,25	0,25
Phase 3				
Test level power [%]	20	50	75	100
Recorded value [mA]	0,012	0,018	0,019	0,021
Recorded value [%]	0,138	0,207	0,219	0,242
Limit [%]	0,25	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 C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

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	20 ms	27,3	6,2
Initial Value of aperiodic current	A	N/A	100 ms	N/A	N/A
Initial symmetrical short-circuit current*	I_k	N/A	250 ms	N/A	N/A
Decaying (aperiodic) component of short circuit current*	i_{DC}	N/A	500 ms	N/A	N/A
Reactance/Resistance Ratio of source*	X/R	N/A	**Time to Trip [s]**	16,6	In seconds

Phase 2

Parameter	**Symbol**	**Value**	**Time after fault**	**Volts [V]**	**Amps [A]**
Peak Short Circuit current	I_p	N/A	20 ms	59,1	5,7
Initial Value of aperiodic current	A	N/A	100 ms	N/A	N/A
Initial symmetrical short-circuit current*	I_k	N/A	250 ms	N/A	N/A
Decaying (aperiodic) component of short circuit current*	i_{DC}	N/A	500 ms	N/A	N/A
Reactance/Resistance Ratio of source*	X/R	N/A	**Time to Trip [s]**	14,3	In seconds

Phase 3

Parameter	**Symbol**	**Value**	**Time after fault**	**Volts [V]**	**Amps [A]**
Peak Short Circuit current	I_p	N/A	20 ms	43,8	6,4
Initial Value of aperiodic current	A	N/A	100 ms	N/A	N/A
Initial symmetrical short-circuit current*	I_k	N/A	250 ms	N/A	N/A
Decaying (aperiodic) component of short circuit current*	i_{DC}	N/A	500 ms	N/A	N/A
Reactance/Resistance Ratio of source*	X/R	N/A	**Time to Trip [s]**	17,8	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.	**P**
It has been verified that in the event of the solid state switching device failing to disconnect the Generating Unit, the voltage on the output side of the switching device is reduced to a value below 50 volts within 0,5 seconds.	

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).

Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

Achtung! Genau prüfen ob dies im Bericht ist!

Cyber security	P
Confirm that the Manufacturer or Installer of the Micro-generator has provided a statement describing how the Micro-generator has been designed to comply with cyber security requirements, as detailed in 9.7.	Yes

Note. Different levels of access, all are password protected, only certain parameters can be changed on maintenance level. Manufacturer information provided.

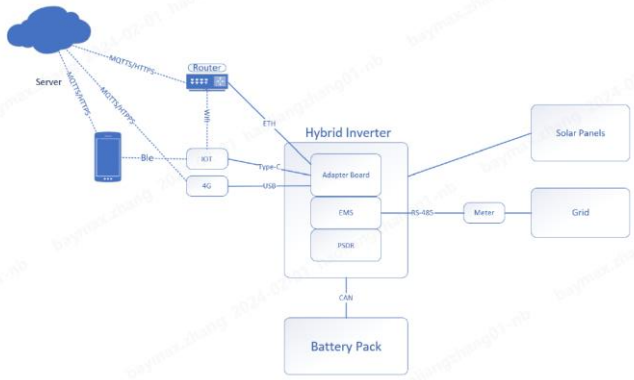
Manufacturer's declaration in accordance with the requirements of G98 Issue 1 – Amendment 7 (3 October 2022) Clause 9.7.1, 9.7.2, and G99 Amendment 9 (3 October 2022) Clause 9.1.7, 9.1.8 regarding "Cyber Security"

EcoFlow Inc.

RM 401, Plant #1, Runheng Industrial Zone, Fuyuanyi Road, Zhancheng Community, Fuhai Street, Bao'an District, Shenzhen City, Guangdong Province, P.R. China

Ana Li, resident in China, as Compliance engineer of the EcoFlow, based in Shenzhen China, on behalf of the same Company declares the following:

The product includes a system of internal and external logic communications as summarized in the following scheme:



See below components involved and their main functions in the following table.

1. Internal modules communication

There are two modules inside the inverse, namely PSDR module converts the power between DC and AC, EMS module for power management, PSDR module and EMS module connected through CAN interface.

2. Inverter and external module communication

- Inverter communicates with external battery pack through CAN interface
- Inverter communicates with IOT module in with type-C interface
- IOT module communicates with 4G module through USB interface

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Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

- IOT module communicates with mobile phone through Bluetooth
- IOT module communicates with server through WIFI / 4G / ETH
- Inverter communicates with meter through RS-485 interface

Hybrid Inverter	Model: EF HD-P3-12K-S1, EF HD-P3-10K-S1, EF HD-P3-8K0-S1, EF HD-P3-6K0-S1
IOT	The module that provides the communication ability. It can communicate with server through 4G, EHT, WIFI.
4G	The module that provides the 4G communication ability for IOT module.
PSDR	The module that provides the power conversion ability. It can convert power between DC and AC.
EMS	The module that manages the energy. It decides when the device should charge or discharge.
Battery Pack	The battery management module monitors and manages the battery cells.

EN 303 645 v2.1.1 (2020-06) Table B.1: Implementation of provisions for consumer IOT security			
Clause number and title			
Reference	Status	Support	Detail
5.1 No universal default passwords			
Provision 5.1-1	MC	N/A	No default password is used.
Provision 5.1-2	MC	N/A	
Provision 5.1-3	MC	N/A	
Provision 5.1-4	MC	N/A	
Provision 5.1-5	MC	N/A	
5.2 Implement a means to manage reports of vulnerabilities			
Provision 5.2-1	M	Y	
Provision 5.2-2	R	Y	
Provision 5.2-3	R	Y	
5.3 Keep software updated			
Provision 5.3-1	R	Y	
Provision 5.3-2	MC	Y	
Provision 5.3-3	MC	Y	
Provision 5.3-4	RC	N/A	Auto-Update is not supported.
Provision 5.3-5	RC	Y	
Provision 5.3-6	RC	Y	
Provision 5.3-7	MC	Y	
Provision 5.3-8	MC	Y	
Provision 5.3-9	RC	Y	

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Provision 5.3-10	M	Y	
Provision 5.3-11	RC	Y	
Provision 5.3-12	RC	Y	
Provision 5.3-13	M	Y	
Provision 5.3-14	RC	N/A	The device is not constrained.
Provision 5.3-15	RC	N/A	The device is not constrained.
Provision 5.3-16	M	Y	
5.4 Securely store sensitive security parameters			
Provision 5.4-1	M	Y	
Provision 5.4-2	MC	Y	
Provision 5.4-3	M	Y	
Provision 5.4-4	M	Y	
5.5 Communicate securely			
Provision 5.5-1	M	Y	
Provision 5.5-2	R	Y	
Provision 5.5-3	R	Y	
Provision 5.5-4	R	Y	
Provision 5.5-5	M	Y	
Provision 5.5-6	R	Y	
Provision 5.5-7	M	Y	
Provision 5.5-8	M	Y	
5.6 Minimize exposed attack surfaces			
Provision 5.6-1	M	Y	
Provision 5.6-2	M	Y	
Provision 5.6-3	R	Y	
Provision 5.6-4	MC	Y	
Provision 5.6-5	R	Y	
Provision 5.6-6	R	Y	
Provision 5.6-7	R	Y	
Provision 5.6-8	R	Y	
Provision 5.6-9	R	Y	
5.7 Ensure software integrity			
Provision 5.7-1	R	N/A	The structure of the chip doesn't support it.
Provision 5.7-2	R	N/A	The device doesn't support it.
5.8 Ensure that personal data is secure			
Provision 5.8-1	R	Y	
Provision 5.8-2	M	Y	
Provision 5.8-3	M	Y	
5.9 Make systems resilient to outages			
Provision 5.9-1	R	Y	

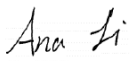
Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

Provision 5.9-2	R	Y	
Provision 5.9-3	R	Y	
5.10 Examine system telemetry data			
Provision 5.10-1	RC	Y	
5.11 Make it easy for users to delete user data			
Provision 5.11-1	M	Y	
Provision 5.11-2	R	Y	
Provision 5.11-3	R	Y	
Provision 5.11-4	R	Y	
5.12 Make installation and maintenance of devices easy			
Provision 5.12-1	R	Y	
Provision 5.12-2	R	Y	
Provision 5.12-3	R	Y	
5.13 Validate input data			
Provision 5.13-1	M	Y	
6 Data protection provisions for consumer IoT			
Provision 6.1	M	Y	
Provision 6.2	MC	Y	
Provision 6.3	M	Y	
Provision 6.4	RC	Y	
Provision 6.5	MC	Y	
Conditions			
1) passwords are used; 2) pre-installed passwords are used; 3) software components are not updateable; 4) the device is constrained; 5) the device is not constrained; 6) telemetry data being collected; 7) personal data is processed on the basis of consumers' consent; 8) the device allowing user authentication; 9) the device supports automatic updates and/or update notifications; 10) a hard-coded unique per device identity is used for security purposes; 11) updates are delivered over a network interface; 12) an update mechanism is implemented; 13) a debug interface is physically accessible.			
M	Mandatory provision		
R	Recommended provision		
MC	Mandatory and conditional provision		
RC	Recommended and conditional provision		

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Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

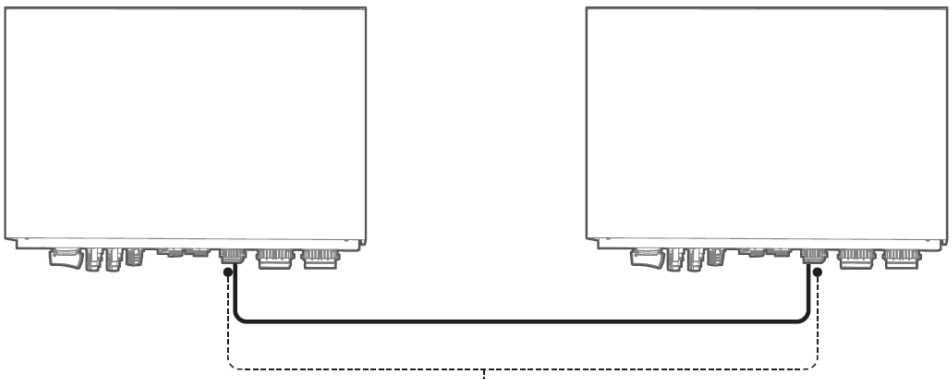
Support' Column	
Y	Implemented
N	Not implemented
N/A	Not applicable
Date:	2024/04/11
Name:	Ana Li
Title:	Compliance engineer
Signature:	

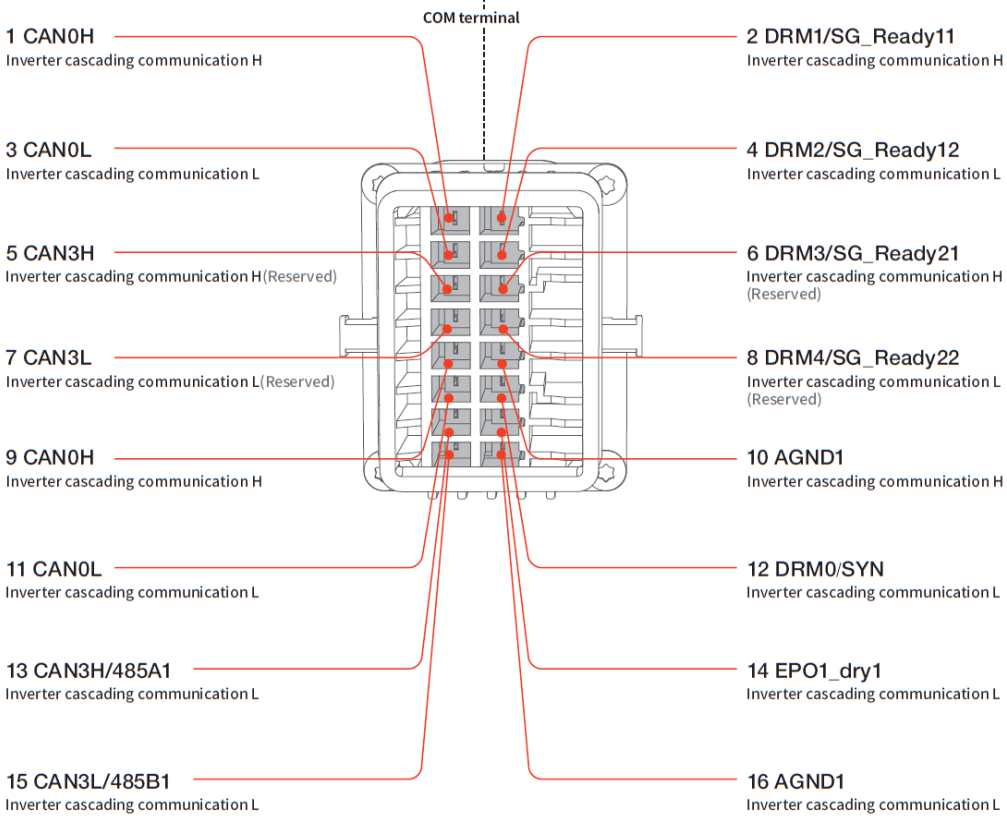
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Logic Interface (input port) Required by paragraph 9.4.4	**P**
Confirm that an input port is provided and can be used to reduce the Active Power output to zero	Yes
Note. Manufacturer information provided.	
Provide high level description of logic interface, e.g. details in 9.4.4 such as AC or DC signal	Yes

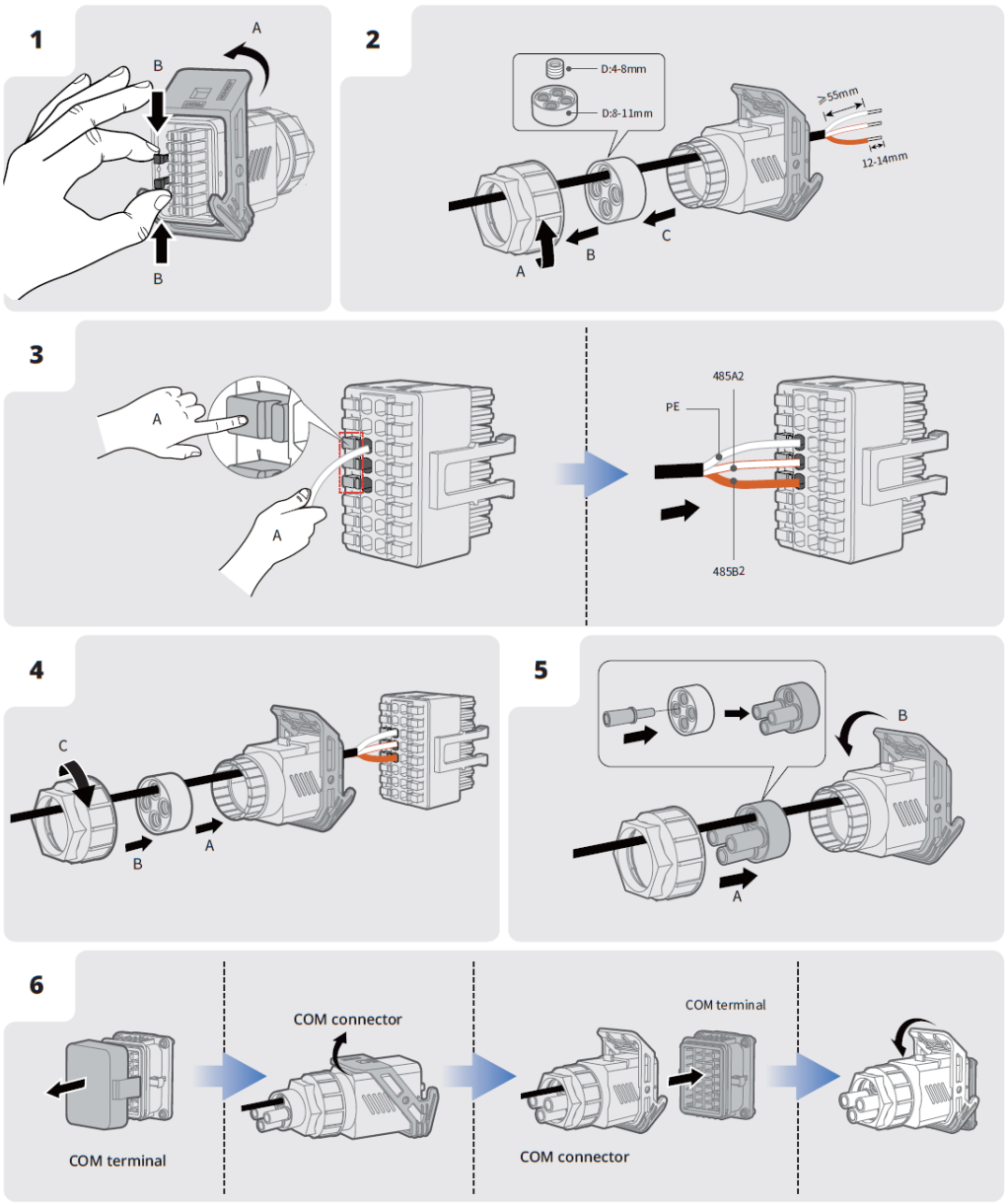
Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

Connecting
COM Cable





Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**



Procedure

1. Take out the crimping terminal in the COM connector.
2. Remove the fixing cap of the COM connector, and pass the communication line through the fixing cap and the waterproof ring in sequence.
3. Strip the communication line to expose the 12-14mm core, and reserve a length of ⩽55mm.
4. According to the pin definition, crimp the communication line into the crimping terminal.
5. Insert the crimping terminal back into the connector, use a rubber plug to block the remaining hole of the waterproof ring, and lock the fixing cap.
6. Connect the COM connector to the COM terminal of the inverter.

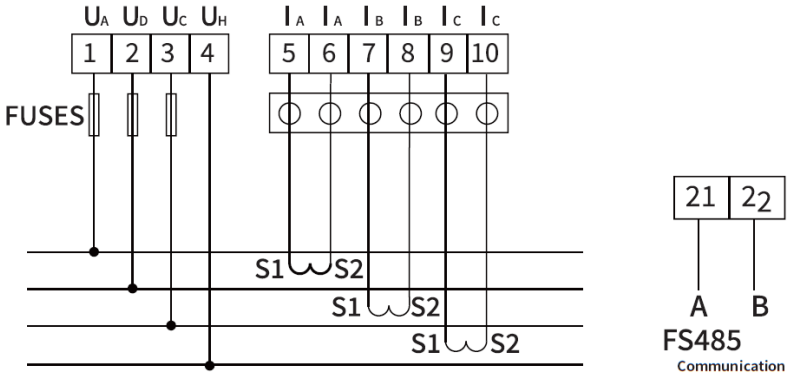
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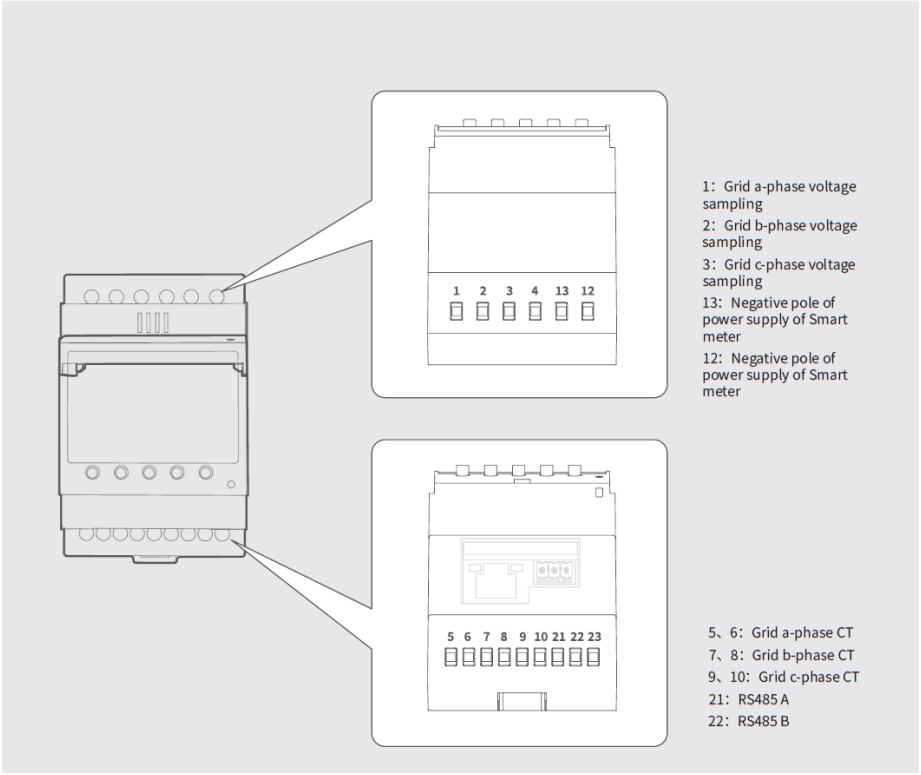
Appendix C Type Test Verification Report	
Extract from test report according to the Engineering Recommendation G98/1	**Nr. CKVN-ESH-P23100048-2**

Connecting
Smart Meter

NOTICE

- It is recommend to use of CAT5 or higher network cable.





Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

1 Connecting Smart Meter communication cable

Assembly crystal terminal in accordance with the 586B standard and connect to the METER port of the inverter.

Peel off the other end of the cable, respectively, to reveal the orange and white, orange wires.

Connect the orange and white, orange wires to the terminal 21, 22 of smart meter (install the tubular terminal at the end of wire if needed). Refer to the following figure line 1

2 Meter Voltage sampling

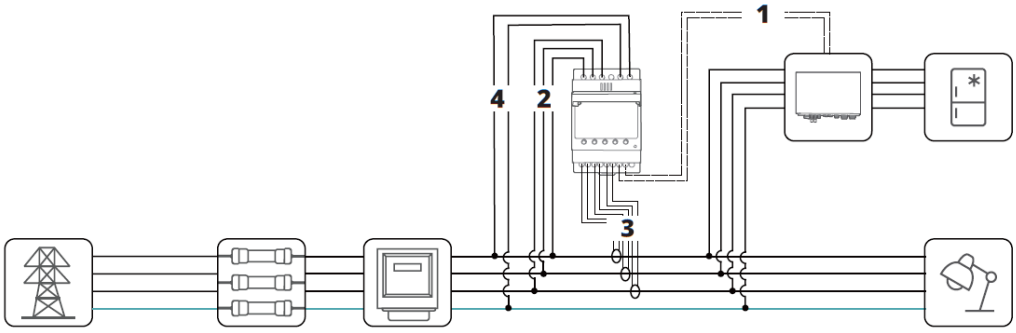
Refer to line ② below, terminal 1, 2, and 3 are wired to phase a, b, and c, respectively, to complete the voltage sampling.

3 Meter Current sampling

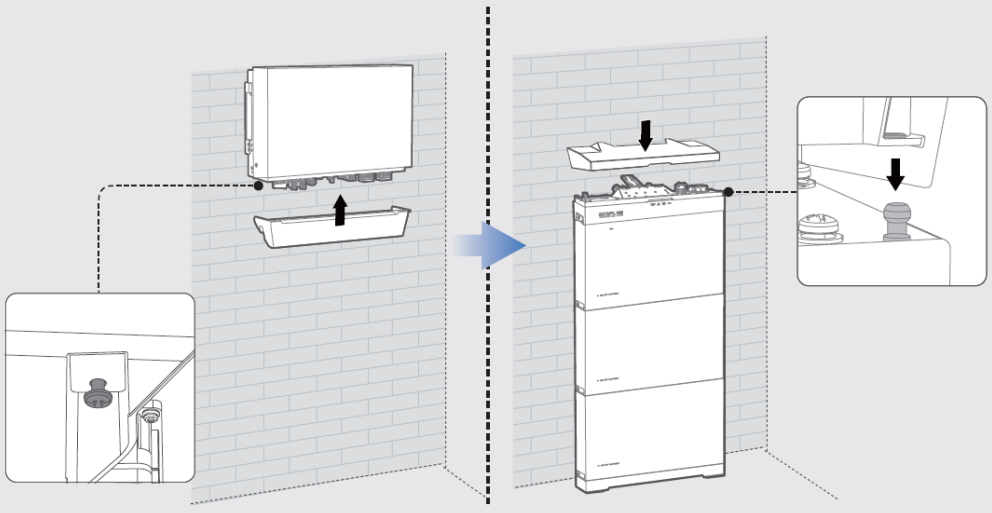
Refer to line ③ in the figure below, terminal 5, 6 are wired to a-phase CT，terminal 7, 8 are wired to b-phase CT，terminal 9, 10 are wired to c-phase CT.

4 Meter Power Supply

Wire terminal 12(positive),13(negative) to the grid.



5 Install protective cover on the battery junction box and inverter.



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Appendix C Type Test Verification Report

Extract from test report according to the Engineering Recommendation G98/1	Nr. CKVN-ESH-P23100048-2

Connecting

Commisioning

NOTICE

- For LED description ,please refer to user manuals of EcoFlow PowerOcean Hybrid Inverter and EcoFlow PowerOcean LFP Battery.

Check Item	Acceptance criteria
Equipments	Equipments are installed correctly and securely.
Cables routing	Cables are routed properly as required by the customer.
Cable tie	Cable ties are evenly distributed and no burr exists.
Grounding	The PE cable is connected correctly, securely, and reliably.
Switch	All the switches connecting to the system are OFF.
Cable connection	The AC/DC power cable, battery cable, and communication cable are connected correctly, securely, and reliably.
Unused terminal and port	Unused terminals and ports are locked by watertight covers.
Installation environment	The installation space is proper, and the installation environment is clean and tidy.

System Power-On

Procedure

1. Set the BATTERY SWITCH on top of the Junction Box to ON position.
2. Turn on the AC switch between the inverter and the power grid.
3. Turn on the DC switch between the PV strings and the inverter if there is any.
3. Set the PV SWITCH at the bottom of the inverter to ON position.
4. Press the BATTERY ON/OFF button once on the side of the battery junction box.
5. Observe the LEDs to check the system operating status.