

Unit Certificate / Einheitenzertifikat

SGS

Certificate holder / Inhaber des Zertifikats

EcoFlow Inc.

RM 401, Plant #1, Runheng Industrial Zone, Fuyuan Road,
Zhancheng Community, Fuhai Street, Bao'an District, Shenzhen,
Guangdong, China

Date of Original Issue / Datum der ursprünglichen Ausgabe :

2024-11-15

Date of Last Revision / Datum der letzten Überarbeitung :

2024-12-05

Date of Expiry / Verfallsdatum :

2027-11-14

Certificate number / Zertifikatsnummer :

PCS-24-1166/M1

Brand / Trademark / Warenzeichen :



ECOFLOW



It is certified that the product / Es ist zertifiziert, dass das Produkt

Models / Modelle :

EF HD-P3-29K9-S1, EF HD-P3-25K0-S1,
EF HD-P3-20K0-S1, EF HD-P3-15K0-S1

Type of generator / Generatortyp :

EcoFlow PowerOcean Plus Hybrid Inverter

Technical Data / Technische Daten :

See appendix on page 5

Test Laboratory / Testlabor :

SGS-CSTC Standards Technical Services Co., Ltd. Suzhou
Branch

Test Report (s) / Testbericht(e) :

SUEE241000011051-AM1

Test Standard(s) / Prüfnorm(en) :

VDE-AR-N 4105:2018-11 + Correction 1:2020

In compliance with the Network connection rule / In Übereinstimmung mit der Anwendungsregel:

VDE-AR-N-4105:2018-11 + Correction 1:2020-10 "Generators connected to the low-voltage distribution network /

Erzeugungsanlagen am Niederspannungsnetz" Technical minimum requirements for connection and parallel operation of power

generation systems connected to the low-voltage network / *Technische Mindestanforderungen für Anschluss und Parallelbetrieb von*

Erzeugungsanlagen am Niederspannungsnetz

Based on tests requirements defined in / Basierend auf Tests Anforderungen definiert in:

VDE V 0124-100: 2020-06 "Network integration of power generation systems – Low voltage / Netzintegration von

Erzeugungsanlagen" Test requirements for power generation units intended for connection to and parallel operation on the low-

voltage network / *Niederspannung – Prüfanforderungen an Erzeugungseinheiten, vorgesehen zum Anschluss und*

Parallelbetrieb am Niederspannungsnetz

This is to certify that the product has been tested and was found to comply with the requirements of the standard(s). / *Hiermit wird bescheinigt, dass das Produkt getestet wurde und den Anforderungen der Norm(en) entspricht.*

The above-mentioned product is certified according to the requirements of ISO/IEC 17065:2012. / *Das oben genannte Produkt ist gemäß den Anforderungen der ISO/IEC 17065:2012 zertifiziert.*

This certificate superseded the certificate number PCS-24-1166 dated 2024-11-15 due to add the tests of clause 4.1.3 / *Dieses Zertifikat ersetzt das Zertifikat mit der Nummer PCS-24-1166 vom 15.11.2024, da die Prüfungen gemäß Klausel 4.1.3 hinzugefügt wurden.*

Christopher Hee
Certification Officer

SGS Testing & Control Services Singapore Pte Ltd
30 Boon Lay Way #03-01 Singapore 609957



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APPENDIX(ANHANG)

Certificate number / Zertifikatsnummer: PCS-24-1166/M1

E.5 Requirements for the test report for power generation units E.5 Prüfbericht „Netzurückwirkungen“ für Erzeugungseinheiten mit einem Eingangsstrom > 75 A (*)																															
Extract from test report for unit certificate "Determination of electrical properties" Auszug aus dem Prüfbericht für Erzeugungseinheiten Bestimmung der elektrischen Eigenschaften"										No. SUEE241000011051-AM1																					
System Manufacturer Anlagenhersteller:						EcoFlow Inc.																									
Manufacturer indications: Herstellerangaben:						Type of system: Anlagenart:			EcoFlow PowerOcean Plus Hybrid Inverter																						
						Max. active power P _E max max. Wirkleistung P _E max			EF HD-P3-29K9-S1 / EF HD-P3-25K0-S1 / EF HD-P3-20K0-S1 / EF HD-P3-15K0-S1																						
						Rated voltage: Bemessungsspannung			3L/N/PE, 230 Vac																						
Measuring period: 2024-08-21 to 2024-10-23																															
Flicker		Network impedance angle ψ_k Netzimpedanzwinkel ψ_k						32°																							
		Initial flicker factor C _p Anlagenflickerbeiwert C _p						33%P _n			66%P _n			100%P _n																	
								A	B	C	A	B	C	A	B	C															
		0.76						0.62			0.50			0.68			0.56			0.48			0.78			0.62			0.52		
Model: EF HD-P3-29K9-S1																															
Active power P/P _n [%] Wirkleistung P/P _n [%]		0	10	20	30	40	50	60	70	80	90	100																			
Ordinal number Ordnungszahl		I(%)	I(%)	I(%)	I(%)	I(%)	I(%)	I(%)	I(%)	I(%)	I(%)	I(%)																			
Harmonics Phase A Oberschwingungen																															
2	0.133	0.096	0.042	0.040	0.047	0.057	0.067	0.087	0.102	0.128	0.209																				
3	0.589	0.597	0.648	0.608	0.604	0.592	0.617	0.633	0.638	0.623	1.264																				
4	0.205	0.128	0.100	0.125	0.159	0.188	0.203	0.210	0.228	0.240	0.276																				
...																															
40	0.048	0.042	0.008	0.017	0.008	0.007	0.019	0.027	0.029	0.022	0.023																				
Harmonics Phase B Oberschwingungen																															
2	0.115	0.037	0.037	0.052	0.042	0.032	0.048	0.040	0.041	0.060	0.084																				
3	0.612	0.514	0.420	0.395	0.370	0.373	0.357	0.343	0.330	0.316	1.018																				
4	0.249	0.106	0.114	0.157	0.172	0.233	0.246	0.254	0.269	0.260	0.264																				
...																															
40	0.047	0.043	0.030	0.033	0.031	0.038	0.052	0.061	0.059	0.046	0.056																				
Harmonics Phase C Oberschwingungen																															
2	0.102	0.072	0.059	0.052	0.068	0.067	0.082	0.090	0.100	0.122	0.213																				
3	1.176	1.097	1.083	1.017	0.977	0.948	0.946	0.940	0.931	0.903	2.085																				
4	0.053	0.047	0.065	0.118	0.125	0.155	0.151	0.141	0.138	0.130	0.213																				
...																															
40	0.029	0.039	0.027	0.019	0.027	0.037	0.034	0.036	0.038	0.030	0.035																				

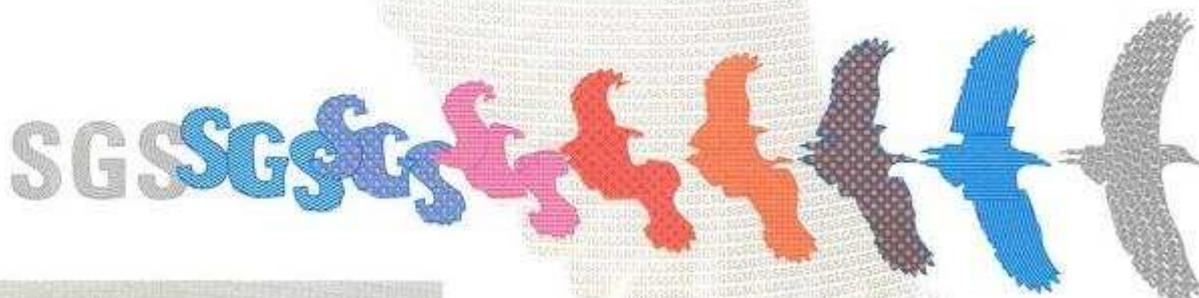


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APPENDIX(ANHANG)

Certificate number / Zertifikatsnummer: PCS-24-1166/M1

Model: EF HD-P3-25K0-S1											
Active power P/Pn [%] Wirkleistung P/Pn [%]	0	10	20	30	40	50	60	70	80	90	100
Ordinal number Ordnungszahl	I(%)										
Harmonics Phase A Oberschwingungen											
2	0.076	0.048	0.053	0.085	0.078	0.102	0.120	0.119	0.127	0.154	0.140
3	0.377	0.288	0.512	0.656	0.714	0.770	0.815	0.869	0.913	0.969	1.035
4	0.066	0.079	0.082	0.081	0.090	0.099	0.122	0.122	0.117	0.126	0.078
...											
40	0.009	0.008	0.010	0.010	0.011	0.012	0.013	0.013	0.013	0.012	0.012
Harmonics Phase B Oberschwingungen											
2	0.075	0.043	0.059	0.101	0.100	0.137	0.162	0.159	0.160	0.182	0.133
3	0.342	0.281	0.498	0.647	0.698	0.741	0.776	0.822	0.872	0.935	0.999
4	0.064	0.085	0.077	0.074	0.079	0.080	0.095	0.090	0.080	0.087	0.065
...											
40	0.010	0.009	0.010	0.011	0.012	0.013	0.012	0.013	0.011	0.013	0.011
Harmonics Phase C Oberschwingungen											
2	0.073	0.046	0.039	0.059	0.049	0.053	0.057	0.053	0.058	0.065	0.093
3	0.335	0.255	0.439	0.575	0.648	0.681	0.712	0.755	0.792	0.841	0.894
4	0.066	0.080	0.076	0.071	0.077	0.079	0.092	0.091	0.084	0.088	0.059
...											
40	0.010	0.009	0.010	0.011	0.012	0.013	0.013	0.012	0.011	0.012	0.011
Model: EF HD-P3-20K0-S1											
Active power P/Pn [%] Wirkleistung P/Pn [%]	0	10	20	30	40	50	60	70	80	90	100
Ordinal number Ordnungszahl	I(%)										
Harmonics Phase A Oberschwingungen											
2	0.033	0.020	0.043	0.053	0.056	0.074	0.104	0.099	0.151	0.152	0.161
3	0.462	0.451	0.551	0.715	0.836	0.885	0.938	0.990	1.036	1.090	1.140
4	0.031	0.043	0.050	0.021	0.033	0.062	0.102	0.104	0.172	0.172	0.165
...											
40	0.007	0.008	0.008	0.007	0.008	0.011	0.014	0.015	0.016	0.017	0.016
Harmonics Phase B Oberschwingungen											
2	0.020	0.022	0.034	0.055	0.062	0.087	0.146	0.164	0.231	0.230	0.225
3	0.424	0.407	0.542	0.702	0.824	0.871	0.915	0.959	0.991	1.037	1.090
4	0.032	0.041	0.048	0.029	0.043	0.055	0.082	0.080	0.128	0.120	0.106
...											
40	0.009	0.009	0.010	0.008	0.011	0.012	0.015	0.014	0.016	0.017	0.015
Harmonics Phase C Oberschwingungen											
2	0.044	0.041	0.042	0.033	0.038	0.047	0.065	0.066	0.071	0.067	0.071
3	0.416	0.434	0.452	0.630	0.743	0.809	0.845	0.876	0.909	0.953	0.990
4	0.030	0.047	0.056	0.017	0.028	0.052	0.078	0.071	0.124	0.129	0.119
...											
40	0.009	0.009	0.009	0.007	0.010	0.012	0.015	0.014	0.016	0.016	0.015



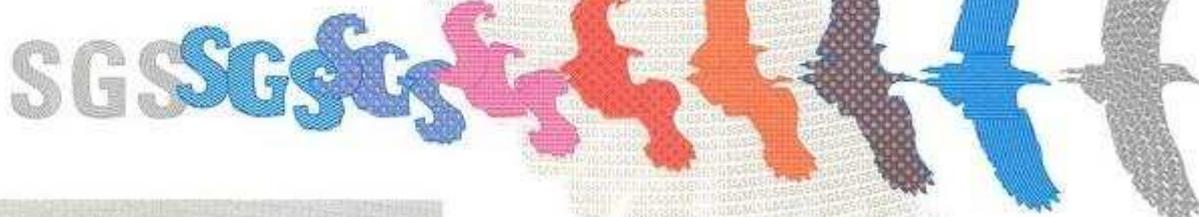
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APPENDIX(ANHANG)

Certificate number / Zertifikatsnummer: PCS-24-1166/M1

Model: EF HD-P3-15K0-S1											
Active power P/Pn [%] Wirkleistung P/Pn [%]	0	10	20	30	40	50	60	70	80	90	100
Ordinal number Ordnungszahl	I(%)										
Harmonics Phase A Oberschwingungen											
2	0.070	0.046	0.081	0.091	0.121	0.122	0.056	0.064	0.071	0.073	0.080
3	0.612	0.628	0.537	0.804	0.950	1.088	1.121	1.154	1.215	1.267	1.342
4	0.098	0.163	0.114	0.113	0.119	0.135	0.041	0.043	0.044	0.043	0.045
...											
40	0.014	0.015	0.015	0.016	0.017	0.017	0.008	0.009	0.008	0.011	0.013
Harmonics Phase B Oberschwingungen											
2	0.070	0.040	0.067	0.101	0.135	0.150	0.099	0.098	0.100	0.105	0.106
3	0.561	0.579	0.544	0.779	0.937	1.075	1.106	1.131	1.179	1.219	1.290
4	0.092	0.156	0.114	0.120	0.106	0.118	0.066	0.071	0.075	0.068	0.061
...											
40	0.016	0.016	0.016	0.018	0.018	0.019	0.011	0.011	0.012	0.012	0.009
Harmonics Phase C Oberschwingungen											
2	0.071	0.051	0.075	0.077	0.086	0.079	0.060	0.064	0.077	0.089	0.099
3	0.548	0.574	0.403	0.678	0.835	0.959	1.038	1.071	1.106	1.133	1.177
4	0.094	0.161	0.106	0.114	0.107	0.116	0.046	0.047	0.044	0.039	0.033
...											
40	0.017	0.017	0.015	0.017	0.018	0.018	0.008	0.008	0.011	0.012	0.012

(*) the inverter outputs a current <75 A, thus Inter-harmonics and High Frequencies are not evaluated in accordance with the standard.

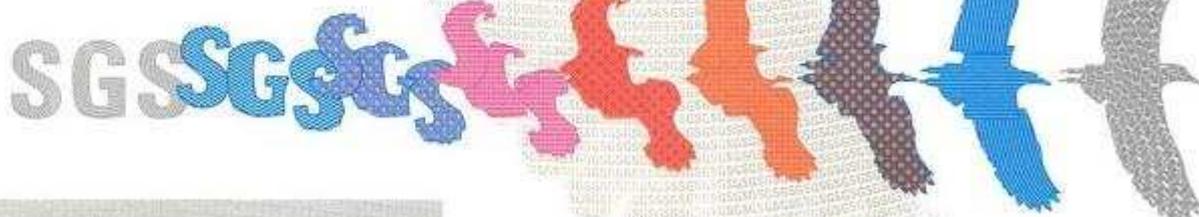


APPENDIX(ANHANG)

Certificate number / Zertifikatsnummer: PCS-24-1166/M1

Full list of product references and nominal characteristics / Vollständige Liste der Produktreferenzen und nominalen Merkmale:

Rating specifications of EcoFlow PowerOcean Plus Hybrid Inverter				
Model	EF HD-P3-29K9-S1	EF HD-P3-25K0-S1	EF HD-P3-20K0-S1	EF HD-P3-15K0-S1
Input:				
Vmax PV (Vdc)	1000			
Start-up Voltage (Vdc)	160			
MPPT Voltage Range (Vdc)	200-850			
Isc PV (absolute Max.) (A)	PV1 19/19, PV2/3 24/24			
Number of MPP trackers	3			
Max. PV input current (A)	PV1 16/16, PV2/3 16/16			
Battery (charge / discharge):				
Battery Nominal Voltage (V)	800			
Max Battery Voltage (V)	960			
Max. Current (A)	40.0	33.3	26.6	20.0
AC Input (Grid Side):				
Normal AC Voltage (Vac)	400/230, 3L/N/PE			
Frequency (Hz)	50			
Max. input current (A)	63.0			
Power factor(adjustable)	-0.8 ~ +0.8			
AC Output (Grid Side)				
Normal AC Voltage (Vac)	400/230, 3L/N/PE			
Frequency (Hz)	50			
Rated output Current (A)	43.3	36.2	29.0	21.7
Rated apparent output Power (VA)	29900	25000	20000	15000
Max. apparent output Power (VA)	29900	25000	20000	15000
Power factor(adjustable)	-0.8 ~ +0.8			
AC Output (Back-up):				
Normal Voltage (Vac)	3L/N/PE 400/230			
Frequency (Hz)	50			
Rated output Current (A)	43.3	36.2	29.0	21.7
Max. output Current (Off-Grid) (A)	52.0@1s	43.4@1s	34.8@1s	26.0@1s
Normal apparent output Power (VA)	29900	25000	20000	15000
Max. apparent output Power (VA)	35880@1s	30000@1s	24000@1s	18000@1s
Others:				
Ingress protection (IP)	IP65			
Protective class	Class I			
Temperature (°C)	-20°C to +50°C			
Cooling Method	Intelligent air cooling			
Inverter Isolation	Non-isolated			
Overvoltage category	II (PV), III (Mains)			
Dimensions (W*D*H)	636*235*498mm (without trim cover)			
Weight	41.0 kg			
Altitude	3000m			
Topology	Transformerless			



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