

Certificate of The Network and System Protection

Zertifikat für den Netz- und Anlagenschutz



Certificate holder / Inhaber des Zertifikats : **Anker Innovations Limited**
Room 1318-19, Hollywood Plaza, 610 Nathan Road,
Mongkok, Kowloon, Hong Kong, China

Date of Original Issue/ Datum der ursprünglichen Ausgabe : 2024-04-17

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Date of Expiry / Verfallsdatum : 2027-04-16

Certificate number / Zertifikatsnummer : PCS-24-1040

Brand / Trademark / Warenzeichen : ANKER



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

Models / Modelle : A17C1, A17C3

Type of generator / Generatortyp : Energy Storage System

Technical Data / Technische Daten : See page 4

Test Laboratory / Testlabor : SGS-CSTC Standards Technical Services Co., Ltd. Suzhou Branch

Test Report (s) / Testbericht(e) : SUEE240400004251

Test Standard(s) / Prüfnorm(en) : VDE-AR-N 4105:2018-11 + Correction 1:2020

Is 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.*

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)



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E.7 Requirements for the test report for the NS protection <i>E.7 Anforderungen an den Prüfbericht zum NA-Schutz</i>						
Extract from test report for unit certificate "Determination of electrical properties" <i>Auszug aus dem Prüfbericht für Erzeugungseinheiten</i> „Bestimmung der elektrischen Eigenschaften“						N° SUEE240400004251
Test report NS protection <i>Prüfbericht NA-Schutz</i>						
Type of NS protection <i>Typ NA-Schutz</i>	Integrierter NA-Schutz					
Software Version <i>Software-Version</i>	v.3.1.0					
Manufacturer <i>Hersteller</i>	Anker Innovations Limited					
Measuring Period <i>Messzeitraum</i>	2024-02-28 to 2024-04-03					
	Stirling generators, fuel cells <i>Stirlinggeneratoren, Brennstoffzellen</i>			Inverter(s) <i>Umrichter</i>		
	Synchronous and asynchronous generators with P_n ≤ 50 kW coupled directly or via inverters <i>direkt oder über Umrichter gekoppelte Synchron- und Asynchrongeneratoren mit P_n ≤ 50 kW</i>			Directly coupled synchronous and asynchronous generators with P_n > 50 kW <i>direkt gekoppelte Synchron- und Asynchrongeneratoren mit P_n > 50 kW</i>		
Protective function <i>Schutzfunktion</i>	Set value <i>Einstellwert</i>	Tripping value <i>Auslösewert</i>	Tripping time NS protection ⁽¹⁾ <i>Auslösezeit NA-Schutz</i>	Set value <i>Einstellwert</i>	Tripping value <i>Auslösewert</i>	Tripping time NS protection ⁽¹⁾ <i>Auslösezeit NA-Schutz</i>
Rise-in voltage protection U>> <i>Spannungssteigerungsschutz U >></i>	-	-	--	1.25*Un	1.248*Un	93.0 ms
Rise-in voltage protection U> <i>Spannungssteigerungsschutz U ></i>	-	-	--	1.10*Un	--	485.4s
Voltage drop protection U< <i>Spannungsrückgangsschutz U <</i>	-	-	--	0.8*Un	0.798*Un	274.4 s
Voltage drop protection U<< <i>Spannungsrückgangsschutz U <<</i>	-	-	--	0.45*Un	0.450*Un	327.0 ms
Frequency decrease protection f< <i>Frequenzrückgangsschutz f <</i>	-	-	--	47.5 Hz	47.50 Hz	92.00 ms
Frequency increase protection f> <i>Frequenzsteigerungsschutz f ></i>	-	-	--	51.5 Hz	51.20 Hz	93.5 ms
<p>⁽¹⁾ The tripping time includes the period from the limit violation U/f until the tripping signal to the interface switch. <i>Die Auslösezeit umfasst den Zeitraum von der Grenzwertverletzung U/f bis zum Auslösesignal an den Kuppelschalter.</i></p> <p>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. <i>Bei der Planung der Erzeugungsanlage ist die Eigenzeit des Kuppelschalters zum höchsten oben ermittelten Zeitwert zu addieren.</i></p> <p>The disconnection time (sum of tripping time of the NS protection plus response time of the interface switch) shall not exceed 200 ms. <i>Die Abschaltzeit (Summe der Auslösezeit NA-Schutz zzgl. Eigenzeit des Kuppelschalters) darf 200 ms nicht überschreiten.</i></p>						



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For integrated NS protection <i>Bei integriertem NA-Schutz</i>	
Assigned to power generation unit of type <i>zugeordnet zu Erzeugungseinheit Typ</i>	A17C1, A17C3
Type integrated interface switch <i>Typ integrierter Kuppelschalter</i>	Power Relay / HF140FF/012-2HSW
Response time of interface switch for integrated NS protection <i>Eigenzeit des Kuppelschalters bei integriertem NA-Schutz</i>	≤20 ms
Verification of the entire functional chain "integrated NS protection – interface switch" has resulted in successful disconnection <i>Die Überprüfung der Gesamtwirkungskette „integrierter NA-Schutz – Kuppelschalter“ führte zu einer erfolgreichen Abschaltung.</i>	<input checked="" type="checkbox"/>



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

Model	A17C1	A17C3
PV Input		
Max. input voltage	60 Vdc	
MPPT operating voltage range	16-60 Vdc	
Max. input current	16 *4 A	16 *2 A
Battery Input		
Battery rated voltage	16 V dc	
Battery Max. charge & discharge current	75 A	
Battery rated power	1000W	
AC Output		
Nominal grid voltage	L/N/PE, 230 Vac	
Nominal grid frequency	50 Hz	
Rated AC power	800 W	
Max. AC apparent power	800 VA	
Max. AC current	3.5 A	
Output power factor	1 default (adjustable+/-0.8)	
AC Output (Back-up)		
Nominal grid voltage	L/N/PE, 230 Vac	/
Nominal grid frequency	50Hz	/
Rated AC power	1000W	/
Max. AC apparent power	1000VA	/
Max. AC current	4.4 A	/
Output power factor	1 default (adjustable+/-0.8)	/
General Data		
Operating temperature range	-20 °C ~ +55 °C	
Protection degree	IP65	
Protective class	Class I	
Cooling method	Natural Cooling	
Topology	Isolated	

