

Certificaatnummer / Certificate No.: **LS260194GCC-1**

Datum van afgifte / Date of issue: 2026-07-14

Geldig tot / Valid until: Onbeperkt / Indefinitely

Aanvrager / Applicant:	Anker Solix Innovations Limited Flat/RM 829, 8/F, Tower 2, Admiralty Centre, 18 Harcourt Road, Hong Kong
Producttype / Product type:	Hybridesysteem (PV + DC-gekoppeld elektrisch energieopslagsysteem) / <i>Hybrid system (PV + DC coupled electrical energy storage)</i>
Productserie / Product series:	Anker SOLIX XE, Anker SOLIX Solarbank Max
Model(len) / Model(s):	Zie Bijlage A.2 voor details / <i>Refer to Annex A.2 for details</i>
Technische gegevens/ Technical data:	Nominaal uitgangsvermogen / <i>Rated output power</i> [W]: 800 ~ 5000 Nominale uitgangsspanning (AC) / <i>Nominal output AC voltage</i> [V]: 230 (L + N + PE, 50 Hz) (Voor meer details zie A.2 op p.2 / <i>For further details see A.2 on p.2.</i>)
Handelsmerk / Trademark:	
Softwareversie / Software Version:	V89.3.0.1
Toegepaste regelgeving en normen / Regulations and standards applied:	EN 50549-1:2019 + A1:2023, NEN-EN 50549-1:2019 + A1:2023 Requirements for generating plants to be connected in parallel with distribution networks - Part 1: Connection to a LV distribution network - Generating plants up to and including Type B EN 50549-10, NEN-EN 50549-10, October 2022 Requirements for generating plants to be connected in parallel with distribution networks - Part 10: Tests for conformity assessment of generating units
Certificeringsschema / Certification scheme:	CMPD-01 (Type 1a-certificering overeenkomstig ISO/IEC 17067 / <i>Type 1a Certification in accordance with ISO/IEC 17067</i>)
Testrapportnummer / Test report no.:	LS2A26060521EGEU01 (2026-07-06)

Hiermee wordt gecertificeerd dat de gespecificeerde opwekkingseenheid (opwekkingseenheden), inclusief de bijbehorende software, per de datum van afgifte voldoet aan de eisen voor **Type A-opwekkingseenheden** overeenkomstig de volgende verordeningen en normen:

- **Verordening (EU) 2016/631 van de Commissie (NC RfG):** De opwekkingseenheden worden geacht te voldoen aan de relevante artikelen van de netcode met eisen voor de aansluiting van elektriciteitsproducenten op het net, met specifieke verwijzing naar de criteria zoals beschreven in Bijlage H van de norm EN 50549-1:2019.
- **Netcode elektriciteit:** De eenheden voldoen aan de eisen zoals vastgelegd in het Besluit van de Autoriteit Consument en Markt (ACM) van 21 april 2016 (kenmerk: ACM/DE/2016/202151), waarin de voorwaarden krachtens artikel 31 van de Elektriciteitswet 1998 zijn vastgesteld.

Voorwaarde voor conformiteit: De geldigheid van deze certificering is afhankelijk van de strikte naleving van alle operationele instellingen zoals gespecificeerd door de distributienetbeheerder (DSO) en de aangewezen verantwoordelijke partij. /

This document certifies that the specified generating unit(s), inclusive of their corresponding software, comply with the requirements for Type A generating modules according to the following regulations and standards as of the date of issuance:

- **Commission Regulation (EU) 2016/631 (NC RfG):** The generating units are considered compliant with the relevant articles of the network code on requirements for grid connection of generators, with specific reference to the criteria outlined in Annex H of standard EN 50549-1:2019.
- **Dutch Electricity Grid Code (Netcode elektriciteit):** The units meet the requirements stipulated in the Decision of the Dutch Authority for Consumers and Markets (ACM) dated 21 April 2016 (reference: ACM/DE/2016/202151), which establishes the conditions under Article 31 of the Electricity Act 1998.

Condition for Compliance: The validity of this certification is contingent upon the strict adherence to all operational settings as specified by the Distribution System Operator (DSO) and the designated responsible party.

This certificate is issued as a **Type 1a Certification in accordance with ISO/IEC 17067**. It is based solely on type testing of the identified sample product(s) and the specific tests undertaken. It does not extend to production or ongoing manufacturing.

No certification mark is authorized for this certification scheme. No factory surveillance or follow-up is performed. This certificate becomes **void** if any modification is made to the certified product, its installation, erection, or commissioning that may affect compliance with the evaluated requirements.

This certificate does not imply LYNS's endorsement, approval, certification, or ongoing control of the product(s), either in terms of performance, design, manufacture, or materials used. The certificate and the results stated herein relate solely to the sample product(s) tested and to the specific tests undertaken.

The certificate will remain valid for the stated period provided that no changes are made to the product, production method, or relevant certification scheme. This certificate is only valid when it is also found at <http://www.lyns-tci.com/en/certificate-search> or by contacting Lyns-tci Technology Guangdong Co., Ltd..

This certificate is for the exclusive use of LYNS's Client and is provided pursuant to the agreement between LYNS and its Client. LYNS's responsibility and liability are limited to the terms and conditions of the agreement. LYNS assumes no liability to any party other than the Client, in accordance with the agreement, for any loss, expense, or damage occasioned by the use of this certification.

The certificate is comprised of 18 pages (including Annex of 17 pages).

Dongguan, 2026-07-14

Digitally signed by
Weizhao Zheng
Date: 2026.07.14
19:18:27 +08'00'

Dipl.-Ing. Weizhao Zheng
Head of certification body

Certification body Lyns-tci Technology Guangdong Co., Ltd. accredited according to ISO/IEC 17065 for product certification.

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A.1 Revisiegeschiedenis van het certificaat / Revision history of the certificate

Rev. Nr. / Rev. No.	Datum / Date	Wijzigingen / Changes
0	2026-07-13	Eerste uitgifte / Initial issue
1	2026-07-14	Producttopologie gecorrigeerd. / Product topology corrected.

A.2 Technische gegevens van de opwekeenheid(en) / Technical data of the generating unit(s)

Productserie / <i>Product series</i>		Anker SOLIX XE		
Model / <i>Model</i>	AE111GZ1 ¹	AE111GZ1-1 ²	AE111GZ1-2 ²	
			AE111GZ1-3 ²	
			AE111GZ1-4 ²	
			AE111GZ1-5 ²	
PV-ingang / <i>PV input (DC)</i>				
Max. DC-ingangsspanning / <i>Max. DC input voltage</i> [V]	600			
MPPT-bedrijfsspanningsbereik / <i>Operating MPPT voltage range</i> [V]	30 - 550			
Max. DC-ingangsstroom / <i>Max. input DC current</i> [A]	18 / 18 / 18			
Max. ingangskortsluitstroom / <i>Max. short-circuit current</i> [A]	25 / 25 /25			
Batterijaansluiting / <i>Battery connection</i>				
Nominale klemspanning (systeemniveau) / <i>Terminal nominal voltage (System level)</i> [V]	400			
Spanningsbereik / <i>Voltage range</i> [V]	360 - 600			
Laadstroom van de batterij / <i>Battery charging current</i> [A]	max. 9.7	max. 19.4	max. 27.8	
Ontlaadstroom van de batterij / <i>Battery discharging current</i> [A]	max. 9.7	max. 13.9	max. 13.9	
Batterijtype / <i>Battery type</i>	LFP (Oplaadbare Li-ionbatterij / <i>Rechargeable Li-ion Battery</i>)			
Batterijmodule / <i>Battery module</i>	A17E23Z1-81			
Nominale energie (per module) / <i>Rated Energy (per module)</i> [kWh]	7			
Nominale capaciteit (per module) / <i>Rated Capacity (per module)</i> [Ah]	314			
Aantal batterijmodules / <i>Number of battery modules</i>	1	2	3 – 6	
Aantal uitbreidingsbatterijpakketten / <i>Number of expansion battery packs</i>	0	1	2 - 5	
BMS-firmwareversie / <i>BMS firmware version</i>	V5.0.0.7			
AC-aansluiting / <i>AC connection</i>				
Aansluitfasen / <i>Connection phases</i>	☒ Eenfasig / <i>Single-phase</i> ☐ Driefasig / <i>Three-phase</i>			
Nominale AC-uitgangsspanning / <i>Nominal output AC voltage</i> [V]	230 (L + N + PE, 50 Hz)			
Max. AC-uitgangsstroom / <i>Max. output AC current</i> [A]	22.7			
Nominaal actief uitgangsvermogen / <i>Nominal active output power</i> [W]	5000			
Max. schijnbaar uitgangsvermogen / <i>Max. apparent output power</i> [VA]	5000			

¹ Basismodel: omvat één batterijmodule. / Basic Model: includes one battery module.

² Uitbreidingsmodel: is gebaseerd op het basismodel en omvat aanvullende uitbreidingsbatterijmodules. / Expansion Model: builds upon the basic model with additional expansion battery modules.

Bijlage bij certificaat nr. / Annex to the Certificate No.: **LS260194GCC-1**

Productserie / Product series		Anker SOLIX Solarbank Max		
Model / Model	AE1113Z1-8 ³	AE1113Z1-8-1 ⁴	AE1113Z1-8-2 ⁴	
			AE1113Z1-8-3 ⁴	
			AE1113Z1-8-4 ⁴	
			AE1113Z1-8-5 ⁴	
PV-ingang / PV input (DC)				
Max. DC-ingangsspanning / Max. DC input voltage [V]	600			
MPPT-bedrijfsspanningsbereik / Operating MPPT voltage range [V]	30 - 550			
Max. DC-ingangsstroom / Max. input DC current [A]	18 / 18 / 18			
Max. ingangskortsluitstroom / Max. short-circuit current [A]	25 / 25 /25			
Batterijaansluiting / Battery connection				
Nominale klemspanning (systeemniveau) / Terminal nominal voltage (System level) [V]	400			
Spanningsbereik / Voltage range [V]	360 - 600			
Laadstroom van de batterij / Battery charging current [A]	max. 9.7	max. 19.4	max. 27.8	
Ontlaadstroom van de batterij / Battery discharging current [A]	max. 9.7	max. 12.4	max. 12.4	
Batterijtype / Battery type	LFP (Oplaadbare Li-ionbatterij / Rechargeable Li-ion Battery)			
Batterijmodule / Battery module	A17E23Z1-80			
Nominale energie (per module) / Rated Energy (per module) [kWh]	7			
Nominale capaciteit (per module) / Rated Capacity (per module) [Ah]	314			
Aantal batterijmodules / Number of battery modules	1	2	3 – 6	
Aantal uitbreidingsbatterijpakketten / Number of expansion battery packs	0	1	2 - 5	
BMS-firmwareversie / BMS firmware version	V5.0.0.7			
AC-aansluiting / AC connection				
Aansluitfasen / Connection phases	☒ Eenfasig / Single-phase ☐ Driefasig / Three-phase			
Nominale AC-uitgangsspanning / Nominal output AC voltage [V]	230 (L + N + PE, 50 Hz)			
Max. AC-uitgangsstroom / Max. output AC current [A]	3.6			
Nominaal actief uitgangsvermogen / Nominal active output power [W]	800			
Max. schijnbaar uitgangsvermogen / Max. apparent output power [VA]	800			

³ Basismodel: omvat één batterijmodule. / Basic Model: includes one battery module.

⁴ Uitbreidingsmodel: is gebaseerd op het basismodel en omvat aanvullende uitbreidingsbatterijmodules. / Expansion Model: builds upon the basic model with additional expansion battery modules.

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Model / Model	AE1113Z1-25 ⁵	AE1113Z1-25-1 ⁶	AE1113Z1-25-2 ⁶	
			AE1113Z1-25-3 ⁶	
			AE1113Z1-25-4 ⁶	
			AE1113Z1-25-5 ⁶	
PV-ingang / PV input (DC)				
Max. DC-ingangsspanning / Max. DC input voltage [V]	600			
MPPT-bedrijfsspanningsbereik / Operating MPPT voltage range [V]	30 - 550			
Max. DC-ingangsstroom / Max. input DC current [A]	18 / 18 / 18			
Max. ingangskortsluitstroom / Max. short-circuit current [A]	25 / 25 /25			
Batterijaansluiting / Battery connection				
Nominale klemspanning (systeemniveau) / Terminal nominal voltage (System level) [V]	400			
Spanningsbereik / Voltage range [V]	360 - 600			
Laadstroom van de batterij / Battery charging current [A]	max. 9.7	max. 19.4	max. 27.8	
Ontlaadstroom van de batterij / Battery discharging current [A]	max. 9.7	max. 13.9	max. 13.9	
Batterijtype / Battery type	LFP (Oplaadbare Li-ionbatterij / Rechargeable Li-ion Battery)			
Batterijmodule / Battery module	A17E23Z1-80			
Nominale energie (per module) / Rated Energy (per module) [kWh]	7			
Nominale capaciteit (per module) / Rated Capacity (per module) [Ah]	314			
Aantal batterijmodules / Number of battery modules	1	2	3 – 6	
Aantal uitbreidingsbatterijpakketten / Number of expansion battery packs	0	1	2 - 5	
BMS-firmwareversie / BMS firmware version	V5.0.0.7			
AC-aansluiting / AC connection				
Aansluitfasen / Connection phases	☒ Eenfasig / Single-phase ☐ Driefasig / Three-phase			
Nominale AC-uitgangsspanning / Nominal output AC voltage [V]	230 (L + N + PE, 50 Hz)			
Max. AC-uitgangsstroom / Max. output AC current [A]	11.4			
Nominaal actief uitgangsvermogen / Nominal active output power [W]	2500			
Max. schijnbaar uitgangsvermogen / Max. apparent output power [VA]	2500			

⁵ Basismodel: omvat één batterijmodule. / Basic Model: includes one battery module.

⁶ Uitbreidingsmodel: is gebaseerd op het basismodel en omvat aanvullende uitbreidingsbatterijmodules. / Expansion Model: builds upon the basic model with additional expansion battery modules.

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Model / Model	AE1113Z1-35 ⁷	AE1113Z1-35-1 ⁸	AE1113Z1-35-2 ⁸	
			AE1113Z1-35-3 ⁸	
			AE1113Z1-35-4 ⁸	
			AE1113Z1-35-5 ⁸	
PV-ingang / PV input (DC)				
Max. DC-ingangsspanning / Max. DC input voltage [V]	600			
MPPT-bedrijfsspanningsbereik / Operating MPPT voltage range [V]	30 - 550			
Max. DC-ingangsstroom / Max. input DC current [A]	18 / 18 / 18			
Max. ingangskortsluitstroom / Max. short-circuit current [A]	25 / 25 /25			
Batterijaansluiting / Battery connection				
Nominale klemspanning (systeemniveau) / Terminal nominal voltage (System level) [V]	400			
Spanningsbereik / Voltage range [V]	360 - 600			
Laadstroom van de batterij / Battery charging current [A]	max. 9.7	max. 19.4	max. 27.8	
Ontlaadstroom van de batterij / Battery discharging current [A]	max. 9.7	max. 13.9	max. 13.9	
Batterijtype / Battery type	LFP (Oplaadbare Li-ionbatterij / Rechargeable Li-ion Battery)			
Batterijmodule / Battery module	A17E23Z1-80			
Nominale energie (per module) / Rated Energy (per module) [kWh]	7			
Nominale capaciteit (per module) / Rated Capacity (per module) [Ah]	314			
Aantal batterijmodules / Number of battery modules	1	2	3 – 6	
Aantal uitbreidingsbatterijpakketten / Number of expansion battery packs	0	1	2 - 5	
BMS-firmwareversie / BMS firmware version	V5.0.0.7			
AC-aansluiting / AC connection				
Aansluitfasen / Connection phases	☒ Eenfasig / Single-phase ☐ Driefasig / Three-phase			
Nominale AC-uitgangsspanning / Nominal output AC voltage [V]	230 (L + N + PE, 50 Hz)			
Max. AC-uitgangsstroom / Max. output AC current [A]	16.0			
Nominaal actief uitgangsvermogen / Nominal active output power [W]	3500			
Max. schijnbaar uitgangsvermogen / Max. apparent output power [VA]	3680			

⁷ Basismodel: omvat één batterijmodule. / Basic Model: includes one battery module.

⁸ Uitbreidingsmodel: is gebaseerd op het basismodel en omvat aanvullende uitbreidingsbatterijmodules. / Expansion Model: builds upon the basic model with additional expansion battery modules.

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Model / Model	AE1113Z1-46 ⁹	AE1113Z1-46-1 ¹⁰	AE1113Z1-46-2 ¹⁰	
			AE1113Z1-46-3 ¹⁰	
			AE1113Z1-46-4 ¹⁰	
			AE1113Z1-46-5 ¹⁰	
PV-ingang / PV input (DC)				
Max. DC-ingangsspanning / Max. DC input voltage [V]	600			
MPPT-bedrijfsspanningsbereik / Operating MPPT voltage range [V]	30 - 550			
Max. DC-ingangsstroom / Max. input DC current [A]	18 / 18 / 18			
Max. ingangskortsluitstroom / Max. short-circuit current [A]	25 / 25 /25			
Batterijaansluiting / Battery connection				
Nominale klemspanning (systeemniveau) / Terminal nominal voltage (System level) [V]	400			
Spanningsbereik / Voltage range [V]	360 - 600			
Laadstroom van de batterij / Battery charging current [A]	max. 9.7	max. 19.4	max. 27.8	
Ontlaadstroom van de batterij / Battery discharging current [A]	max. 9.7	max. 13.9	max. 13.9	
Batterijtype / Battery type	LFP (Oplaadbare Li-ionbatterij / Rechargeable Li-ion Battery)			
Batterijmodule / Battery module	A17E23Z1-80			
Nominale energie (per module) / Rated Energy (per module) [kWh]	7			
Nominale capaciteit (per module) / Rated Capacity (per module) [Ah]	314			
Aantal batterijmodules / Number of battery modules	1	2	3 – 6	
Aantal uitbreidingsbatterijpakketten / Number of expansion battery packs	0	1	2 - 5	
BMS-firmwareversie / BMS firmware version	V5.0.0.7			
AC-aansluiting / AC connection				
Aansluitfasen / Connection phases	☒ Eenfasig / Single-phase ☐ Driefasig / Three-phase			
Nominale AC-uitgangsspanning / Nominal output AC voltage [V]	230 (L + N + PE, 50 Hz)			
Max. AC-uitgangsstroom / Max. output AC current [A]	22.7			
Nominaal actief uitgangsvermogen / Nominal active output power [W]	4600			
Max. schijnbaar uitgangsvermogen / Max. apparent output power [VA]	5000			

⁹ Basismodel: omvat één batterijmodule. / Basic Model: includes one battery module.

¹⁰ Uitbreidingsmodel: is gebaseerd op het basismodel en omvat aanvullende uitbreidingsbatterijmodules. / Expansion Model: builds upon the basic model with additional expansion battery modules.

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Model / Model	AE1113Z1-50 ¹¹	AE1113Z1-50-1 ¹²	AE1113Z1-50-2 ¹²	
			AE1113Z1-50-3 ¹²	
			AE1113Z1-50-4 ¹²	
			AE1113Z1-50-5 ¹²	
PV-ingang / PV input (DC)				
Max. DC-ingangsspanning / Max. DC input voltage [V]	600			
MPPT-bedrijfsspanningsbereik / Operating MPPT voltage range [V]	30 - 550			
Max. DC-ingangsstroom / Max. input DC current [A]	18 / 18 / 18			
Max. ingangskortsluitstroom / Max. short-circuit current [A]	25 / 25 /25			
Batterijaansluiting / Battery connection				
Nominale klemspanning (systeemniveau) / Terminal nominal voltage (System level) [V]	400			
Spanningsbereik / Voltage range [V]	360 - 600			
Laadstroom van de batterij / Battery charging current [A]	max. 9.7	max. 19.4	max. 27.8	
Ontlaadstroom van de batterij / Battery discharging current [A]	max. 9.7	max. 13.9	max. 13.9	
Batterijtype / Battery type	LFP (Oplaadbare Li-ionbatterij / Rechargeable Li-ion Battery)			
Batterijmodule / Battery module	A17E23Z1-80			
Nominale energie (per module) / Rated Energy (per module) [kWh]	7			
Nominale capaciteit (per module) / Rated Capacity (per module) [Ah]	314			
Aantal batterijmodules / Number of battery modules	1	2	3 – 6	
Aantal uitbreidingsbatterijpakketten / Number of expansion battery packs	0	1	2 - 5	
BMS-firmwareversie / BMS firmware version	V5.0.0.7			
AC-aansluiting / AC connection				
Aansluitfasen / Connection phases	☒ Eenfasig / Single-phase ☐ Driefasig / Three-phase			
Nominale AC-uitgangsspanning / Nominal output AC voltage [V]	230 (L + N + PE, 50 Hz)			
Max. AC-uitgangsstroom / Max. output AC current [A]	22.7			
Nominaal actief uitgangsvermogen / Nominal active output power [W]	5000			
Max. schijnbaar uitgangsvermogen / Max. apparent output power [VA]	5000			

¹¹ Basismodel: omvat één batterijmodule. / Basic Model: includes one battery module.

¹² Uitbreidingsmodel: is gebaseerd op het basismodel en omvat aanvullende uitbreidingsbatterijmodules. / Expansion Model: builds upon the basic model with additional expansion battery modules.

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Bedrijfstemperatuurbereik / Operating temperature range	-20°C ~ +55°C	
Beschermingsgraad / Degree of protection	IP66	
Beschermingsklasse / Protection class	I	
Overspanningscategorie / Overvoltage category	AC: III; DC: II	
Topologie / Topology	PV-zijde / PV side:	Niet galvanisch gescheiden (transformatorloos) / Non-isolated (transformerless)
	Batterijzijde / Battery side:	Galvanisch gescheiden door de DC/DC-omvormertrap / Galvanically isolated by the DC/DC conversion stage
Softwareversie / Software Version	V89.3.0.1	
Fabrikant / Manufacturer	Anker Solix Innovations Limited Flat/RM 829, 8/F, Tower 2, Admiralty Centre, 18 Harcourt Road, Hong Kong	

A.3 Opmerkingen betreffende de typebeproeving / Remarks for type testing

Testlaboratorium / Testing laboratory	Lyns-tci Technology Guangdong Co., Ltd. Room 1201, Unit 2, Building 18, No. 7, Science and Technology Boulevard, Houjie Town, Dongguan City, Guangdong, 523960 P.R.C (Geaccrediteerd volgens / Accredited acc. ISO/IEC 17025: A2LA Accreditatienr. / Accreditation no. 5200.02)
Testlocatie / Testing location	Zoals hierboven / Same as above
Meetperiode / Measurement period	2025-11-04 - 2026-02-26, 2026-06-10 - 2026-06-29

A.4 Conformiteitsbeoordeling / Conformity assessment

Op basis van de overgelegde testresultaten verschaft dit certificaat de volgende conformiteitsbeoordeling overeenkomstig EN 50549-1. / Based on the test results submitted, this certificate provides the following conformity assessment according to EN 50549-1:

Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Applicable Clause(s) / subclause(s) of EN 50549-10:2022	Remark	Verdict
4.4.2 Operating frequency range	5.2.1 Frequency operating range	---	PASS
4.4.3 Minimal requirement for active power delivery at underfrequency	5.2.1 Frequency operating range	---	PASS
4.4.4 Continuous operating voltage range	5.2.2 Voltage operating range	---	PASS
4.5.2 Rate of change of frequency (ROCOF) immunity	5.3.1 Immunity to disturbances - Rate of change of frequency (ROCOF)	---	PASS
4.5.3.2 Generating plant with non-synchronous generating technology	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)	Generating units of non-synchronous generating technology.	PASS
4.5.3.3 Generating plant with synchronous generating technology	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)	---	N/A
4.5.4 Over-voltage ride through (OVRT)	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)	---	PASS
4.5.5 Phase jump immunity	5.3.2 Phase jump	---	PASS
4.6.1 Power response to overfrequency	5.4 Active response to frequency deviation	---	PASS
4.6.2 Power response to underfrequency	5.4 Active response to frequency deviation	---	PASS
4.7.2.2 Voltage support by reactive power, Capabilities	5.5.1 Power capabilities assessment	---	PASS
4.7.2.3 Voltage support by reactive power, Control modes	5.5.2 Voltage support by reactive power - test to determine the reactive power control modes	Available modes: • Q setpoint • Q(U) • Q(P)	PASS

Bijlage bij certificaat nr. / Annex to the Certificate No.: **LS260194GCC-1**

Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Applicable Clause(s) / subclause(s) of EN 50549-10:2022	Remark	Verdict
		• $\cos\phi$ setpoint • $\cos\phi(P)$	
4.7.2.3.2 Set point control modes	5.5.2.3 Verification procedure for Set point control	---	PASS
4.7.2.3.3 Voltage related control modes	5.5.2.5 Verification procedure for power related control modes for reactive power	---	PASS
4.7.2.3.4 Power related control mode	5.5.2.5 Verification procedure for power related control modes for reactive power	---	PASS
4.7.3 Voltage related active power reduction	5.6 Voltage related active power reduction - P(U)	---	PASS
only EN 50549-2:2019 4.7.4.2.1.1 Voltage support during faults and voltage steps – General	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)	EN 50549-2 is not within the scope of this certification.	N/A
only EN 50549-2:2019 4.7.4.2.1.2 Voltage support during faults and voltage steps - Optional Modes	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)	EN 50549-2 is not within the scope of this certification.	N/A
4.7.4.2.2 Zero current mode for converter connected generating technology	5.3.3 Immunity to disturbances - Fault ride through, over-voltage (OVRT) and under-voltage (UVRT)	---	PASS
4.8 EMC and power quality	5.7 EMC and power quality	---	PASS
only EN 50549-1:2019 4.9.3 Requirements on voltage and frequency protection	5.8.3 Verification procedure for generating plants to be connected to a LV distribution network with Interface protection as internal device or 5.8.4 Verification procedure for generating plants to be connected to a LV distribution network with Interface protection as dedicated device	The AC output is redundantly switched off by: • a high-power switching bridge • two relays for both the line conductor and the neutral conductor (Relay Model: Hongfa HF161F-W/12-HT (A27)). This ensures that the output circuit will be opened even in the event of a single failure. Available protection functions: • Voltage protection • Overvoltage 10 min mean protection • Frequency protection The settings of the function, as well as the enabling and disabling of the function, are field adjustable and are protected from unauthorized interference through password.	PASS
only EN 50549-2:2019, 4.9.3. Requirements on voltage and frequency protection	5.8.5 Verification procedure for generating plants to be connected to a MV distribution network	EN 50549-2 is not within the scope of this certification.	N/A
4.9.4 Means to detect island situation	5.8.6 Islanding detection	Islanding Detection Technique: Active Frequency Drift	PASS
4.10.2 Automatic reconnection after tripping	5.9.3 Automatic reconnection after tripping	---	PASS
4.10.3 Starting to generate electrical power	5.9.4 Starting to generate electrical power	---	PASS
4.11.1 Ceasing active power	5.10 Active power reduction on set point	The units provide logic interface for terminating active power output.	PASS
4.11.2 Reduction of active power on set point	5.10 Active power reduction on set point	---	PASS

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Clause(s) / subclause(s) of EN 50549-1:2019 or EN 50549-2:2019	Applicable Clause(s) / subclause(s) of EN 50549-10:2022	Remark	Verdict
4.12 Remote information exchange	5.11 Remote information exchange	Need to be evaluated at the project level.	N/A
only EN 50549-1:2019, 4.13 single fault tolerance of interface protection system and interface switch	5.12 Requirements regarding single fault tolerance of interface protection system and interface switch	---	PASS
	5.13 Model definition and model validation for generating units of synchronous generating technology	Generating units of non-synchronous generating technology.	N/A

A.5 Parameterlijst / Parameter list

Name of parameter set		“cS_EN50549”					
Clause(s) / subclause(s) of EN 50549- 1:2019+A1:2023	Parameter	Remarks / additional information	configurab le value range	Step size	unit	default value	
4.4.2 Operating frequency range	Internal parameter not configurable	Requirement acc. EN 50549-1, table 1 can be met	-	-	-	-	
4.4.3 Minimal requirement for active power delivery at under frequency	Reduction threshold	---	not configurable	---	Hz	49.5	
	Maximum reduction rate	---	not configurable	---	%PM /Hz	10	
4.4.4 Continuous operating voltage range	Upper limit	---	not configurable	---	%Un	110	
	Lower limit	---	not configurable	---	%Un	85	
4.5.2 Rate of change of frequency (ROCOF) immunity	Internal parameter not configurable	ROCOF withstand capability $\geq 2\text{Hz/s}$	not configurable	---	Hz/s	2	
4.5.3.2 Under-voltage ride through (UVRT)	Maximum power resumption time	---	Not configurable	---	s	---	
	Low Voltage Ride Through Enable	---	[0,1]	---	---	0	
	Voltage-Time-Diagram	Voltage-Time-Diagram definition	Requirement acc. EN 50549-1, figure 6 (default requirement) can be met			Time	U
	Low Voltage Ride Through Starting Point 1		0.0 – 230.0	0.1	V		195.5
	LVRT time 1		0 – 65000	1	ms	6010	
	Low Voltage Ride Through Starting Point 2		0.0 – 230.0	0.1	V		11.5
	LVRT time2		0 – 65000	1	ms	2010	

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Name of parameter set		“cS_EN50549”				
Clause(s) / subclause(s) of EN 50549- 1:2019+A1:2023	Parameter	Remarks / additional information	configurable value range	Step size	unit	default value
	Low Voltage Ride Through Starting Point 3 Section		0.0 – 230.0	0.1	V	11.5
	LVRT time3		0 – 65000	1	ms	260
4.5.4 Over-voltage ride through (OVRT)	High Voltage Ride Through Enable	---	[0,1]	---	---	0
	Voltage-Time- Diagram	Voltage-Time- Diagram definition	Requirement acc. EN 50549-1, figure 8 can be met			Time U
	High Voltage Ride Through Starting Point 1		230.0 – 299.0	0.1	V	264.5
	HVRT time 1		0 – 65000	1	ms	60020
	High Voltage Ride Through Starting Point 2		230.0 – 299.0	0.1	V	276.0
	HVRT time2		0 – 65000	1	ms	5200
	High Voltage Ride Through Starting Point 3		230.0 – 299.0	0.1	V	287.5
	HVRT time3		0 – 65000	1	ms	120
4.6.1 Power response to overfrequency (LFSM-O)	Grid frequency is greater than the frequency starting point (power drop)	Threshold frequency f1	50.20- 52.00	0.01	Hz	50.20
	Slope of power drop	Droop	2.0 – 12.0	0.1	%	5.0
	Overfrequency reference power section	Power reference	PM Pmax	---	---	Pmax
	Overfrequency derating delay time	Intentional delay	0.00 – 600.00	0.01	s	0.00
	Deactivation threshold fstop	---	50.00 – 52.00	0.01	Hz	50.20

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Clause(s) / subclause(s) of EN 50549- 1:2019+A1:2023	Parameter	Remarks / additional information	configurable value range	Step size	unit	default value
	Deactivation time tstop	---	0.00 - 600.00	0.01	s	0.20
4.6.2 Power response to under frequency (LFSM-U)	Power grid frequency is less than the frequency starting point (power increase)	Threshold frequency f1	45.00 – 50.00	0.01	Hz	49.80
	Power Rising Slope	Droop	2.0 – 12.0	0.1	%	5.0
	Underfrequency reference power section	Power reference	PM Pmax	---	---	Pmax
	Delay time	Intentional delay	0.00 – 600.00	0.01	s	0.00
4.7.2.2 voltage support by reactive power - Capabilities	Reactive power range overexcited	---	-100.0 – 100.0	0.1	%Sn	43.6
	Reactive power range underexcited	---	-100.0 – 100.0	0.1	%Sn	43.6
	Active factor range underexcited	---	0.0 – 100.0	0.1	---	0.9
	Active factor range overexcited	---	0.0 – 100.0	0.1	---	0.9
4.7.2.3 Control modes	Enabled control mode	---	Q setpoint Q(U) Q(P) cosφ setpoint cosφ(P)	---	---	Q setpoint
4.7.2.3.2 Set point control modes (Q setpoint and excitation)	Reactive Power Percentage Setting	---	-100.00- 100.00	0.01	%Sn	0.00
	Delay time	---	---	---	s	---
	Tau value	PT1-filtering time constant	0.00 – 100.00	0.01	s	3.33

Name of parameter set		“cS_EN50549”				
Clause(s) / subclause(s) of EN 50549- 1:2019+A1:2023	Parameter	Remarks / additional information	configurable value range	Step size	unit	default value
4.7.2.3.2 Set point control modes (cosφ setpoint and excitation)	power factor	---	-1.000 - 1.000	0.00 1	---	1.000
	Delay time	---	0.0 – 60.0	0.1	s	0.0
	Tau value	PT1-filtering time constant	0.00 – 100.00	0.01	s	3.33
4.7.2.3.3 Voltage related control modes - Q(U)	V1_ Low Voltage Stage 2	---	195.5 – 230.0	0.1	V	213.9
	V2_ Low Voltage Stage 1	---	195.5 – 230.0	0.1	V	216.2
	V3_ High Voltage 1	---	230.0 – 253.0	0.1	V	243.8
	V4_ High Voltage Stage 2	---	230.0 – 253.0	0.1	V	248.4
	Q1_ low voltage 2 reactive power	---	0.0 – 100.0	0.1	%Sn	43.6
	Q2_ low voltage 1 reactive power	---	0.0 – 100.0	0.1	%Sn	0.0
	Q3_ high voltage 1 reactive power	---	0.0 – 100.0	0.1	%Sn	0.0
	Q4_ high voltage 2 reactive power	---	-100.0 – 100.0	0.1	%Sn	-43.6
	Tau value	PT1-filtering time constant	0.00 – 100.00	0.01	s	3.33
	Min cos φ	---	0.0-1.0	0.1	---	0.4
	Lock-in power	---	0.0 – 20.0	0.1	%Pn	20.0
	Lock-out power	---	0.0 – 20.0	0.1	%Pn	5.0
	PF curve PF1 setting	---	-1.000 – 1.000	0.00 1	---	1.000
4.7.2.3.4 Power related control mode - cosφ(P)	PF curve PF2 setting	---	-1.000 – 1.000	0.00 1	---	1.000
	PF curve PF3 settings	---	-1.000 – 1.000	0.00 1	---	0.900
	PF curve PF1PPer settings	---	0.0 – 100.0	0.1	%Sn	10.0

Name of parameter set		“cS_EN50549”				
Clause(s) / subclause(s) of EN 50549- 1:2019+A1:2023	Parameter	Remarks / additional information	configurable value range	Step size	unit	default value
	PF curve PF2PPer settings	---	0.0 - 100.0	0.1	%Sn	50.0
	PF curve PF3PPer settings	---	0.0 – 100.0	0.1	%Sn	100.0
	Tau Value	PT1-filtering time constant	0.00 – 100.00	0.01	s	3.33
4.7.2.3.4 Power related control mode - Q(P)	Reactive Power responding node 1	---	-100.0 – 100.0	0.1	%Sn	43.6
	Reactive Power responding node 2	---	-100.0 – 100.0	0.1	%Sn	0.0
	Reactive Power responding node 3	---	-100.0 – 100.0	0.1	%Sn	0.0
	Reactive Power responding node 4	---	-100.0 – 100.0	0.1	%Sn	-43.6
	Power node 1	---	0.0 – 100.0	0.1	%Sn	15.0
	Power node 2	---	0.0 - 100.0	0.1	%Sn	20.0
	Power node 3	---	0.0 – 100.0	0.1	%Sn	80.0
	Power node 4	---	0.0 – 100.0	0.1	%Sn	90.0
	Tau Value	PT1-filtering time constant	0.00 – 100.00	0.01	s	3.33
4.7.4.2.2 Zero current mode for converter connected generating technology	zero current mode enters low voltage	---	20.0 – 100.0	0.1	%Un	50.0
	zero current mode enters high voltage	---	100.0 – 120.0	0.1	%Un	120.0
4.9.3 Requirements on voltage and frequency protection	Grid UVP1 Value	Undervoltage threshold stage 1	[46.0,230.0]	0.1	V	184.0
	Grid UVP1 Time	Undervoltage operate time stage 1	[0.10,100.0 0]	0.01	s	2.00
	Grid UVP2 Value	Undervoltage threshold stage 2	[46.0,230.0]	0.1	V	161.0
	Grid UVP2 Time	Undervoltage operate time stage 2	[0.10,5.00]	0.01	s	0.20

Name of parameter set		“cS_EN50549”				
Clause(s) / subclause(s) of EN 50549- 1:2019+A1:2023	Parameter	Remarks / additional information	configurable value range	Step size	unit	default value
	Grid OVP1 Value	Overvoltage threshold stage 1	[230.0,290.0]	0.1	V	264.5
	Grid OVP1 Time	Overvoltage operate time stage 1	[0.10,100.00]	0.01	s	1.00
	Grid OVP2 Value	Overvoltage threshold stage 2	[230.0,290.0]	0.1	V	287.5
	Grid OVP2 Time	Overvoltage operate time stage 2	[0.10,5.00]	0.01	s	0.10
	10min OVP1 Value	Overvoltage threshold 10min mean protection	[230.0,264.5]	0.1	V	253.0
	10-min mean Disconnection Time	Overvoltage operate time 10 min mean protection	---	---	---	10 min (update every 3s)
	Grid UFP1 Value	Underfrequency threshold stage 1	[47.00,50.00]	0.01	Hz	47.50
	Grid UFP1 Time Low	Underfrequency operate time stage 1	[0.10,100.00]	0.01	s	2.00
	Grid UFP2 Value	Underfrequency threshold stage 2	[47.00,50.00]	0.01	Hz	47.00
	Grid UFP2 Time Low	Underfrequency operate time stage 2	[0.10,100.00]	0.01	s	0.10
	Grid OFP1 Value	Overfrequency threshold stage 1	[50.00,52.00]	0.01	Hz	51.50
	Grid OFP1 Time Low	Overfrequency operate time stage 1	[0.10,100.00]	0.01	s	2.00
	Grid OFP2 Value	Overfrequency threshold stage 2	[50.00,52.00]	0.01	Hz	52.00
	Grid OFP2 Time Low	Overfrequency operate time stage 2	[0.10,100.00]	0.01	s	0.10
4.9.4.1 ROCOF tripping	Frequency rate of change protection value	---	1.0-10.0	0.1	Hz/s	2.0
	Frequency rate of change protection time	---	0-65535	1	ms	200

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Clause(s) / subclause(s) of EN 50549- 1:2019+A1:2023	Parameter	Remarks / additional information	configurable value range	Step size	unit	default value
4.10.2 Automatic reconnection after tripping	The Waiting Time For Reconnection After Power Grid Fault Recovery	---	[10.0,600.0]	0.1	s	60.0
	Fault Recovery Connected Grid Power Rise Slope	---	[6.0,3000.0]	0.1	%/min	10.0
	Grid Connection Upper Voltage Limit	---	[230.0,276.0]	0.1	V	253.0
	Grid Connection Lower Voltage Limit	---	[115.0,230.0]	0.1	V	195.5
	Grid Reconnection Upper Frequency Limit	---	[50.00,52.00]	0.01	Hz	50.20
	Grid Reconnection Lower Frequency Limit	---	[47.00,50.00]	0.01	Hz	49.50
4.10.3 Starting to generate electrical power	Initial Grid Connection Waiting Time	---	[10.0,600.0]	0.1	s	60.0
	Power gradient	---	[6.0,3000.0]	0.1	%/min	10.0
	Grid Connection Upper Voltage Limit	---	[230.0,276.0]	0.1	V	253.0
	Grid Connection Lower Voltage Limit	---	[115.0,230.0]	0.1	V	195.5
	Grid Connection Upper Frequency Limit	---	[50.00,52.00]	0.01	Hz	50.10

Name of parameter set		“cS_EN50549”				
Clause(s) / subclause(s) of EN 50549- 1:2019+A1:2023	Parameter	Remarks / additional information	configurable value range	Step size	unit	default value
	Grid Connection Lower Frequency Limit	---	[47.00,50.0 0]	0.01	Hz	49.50
4.11.1 Ceasing active power	---	---	---	---	---	RS485
4.11.2 Reduction of active power on set point	Temporary Active Power Setting	---	0.0 – 100.0	0.1	%	100.0
	Active Power Slope Setting	---	0.0 – 100.0	0.1	%/min	30.0
4.12 Remote information exchange	---	---	---	---	---	---