

CERTIFICATE

Issued to:

Applicant:

Afore New Energy Technology (Shanghai) Co., Ltd.
Building 7, No.333 Wanfang Rd, Minhang District
201112 Shanghai, China

Licensee:

Afore New Energy Technology (Shanghai) Co., Ltd.
Building 7, No.333 Wanfang Rd, Minhang District
201112 Shanghai, China

Product : Hybrid Inverter (NS protection)
Trade name(s) : Afore
Type(s)/model(s) : AF1.5K-ASL-0, AF1.5K-ASL-1, AF1.5K-SL-0, AF1.5K-SL-1, AF1K-ASL-0, AF1K-ASL-1, AF1K-SL-0, AF1K-SL-1, AF2.5K-ASL-0, AF2.5K-ASL-1, AF2.5K-SL-0, AF2.5K-SL-1, AF2K-ASL-0, AF2K-ASL-1, AF2K-SL-0, AF2K-SL-1, AF3.6K-ASL, AF3.6K-ASL-0, AF3.6K-ASL-1, AF3.6K-SL, AF3.6K-SL-0, AF3.6K-SL-1, AF3K-ASL, AF3K-ASL-0, AF3K-ASL-1, AF3K-SL, AF3K-SL-0, AF3K-SL-1, AF4.6K-ASL, AF4.6K-ASL-0, AF4.6K-SL, AF4.6K-SL-0, AF4.6K-SLP, AF4K-ASL, AF4K-ASL-0, AF4K-SL, AF4K-SL-0, AF4K-SLP, AF5.5K-ASL, AF5.5K-ASL-0, AF5.5K-SL, AF5.5K-SL-0, AF5.5K-SLP, AF5K-ASL, AF5K-ASL-0, AF5K-SL, AF5K-SL-0, AF5K-SLP, AF6K-ASL, AF6K-ASL-0, AF6K-SL, AF6K-SL-0 and AF6K-SLP

The product and any acceptable variation thereof as specified in the Annex to this certificate and the documents referred to therein.

DEKRA hereby declares that the above-mentioned product has been certified based on:

- a type test according to VDE-AR-N 4105:2018 and DIN VDE V 0124-100:2020
- an inspection of the factory location according to CENELEC Operational Document CIG 021
- a DEKRA certification agreement with the number 6069725

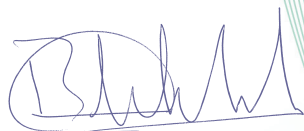
DEKRA hereby grants the right to use the DEKRA Mark.

The DEKRA Mark may be applied to the product as specified in this certificate for the duration and under the conditions of the DEKRA Mark certification agreement.

This certificate is issued on 25 March 2025 and expires upon withdrawal of one of the above mentioned standards.

Certificate number: 31-154876

DEKRA Certification B.V.



B.T.M. Holtus
Managing Director



Miranda Zhou
Certification Manager

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DUTCH ACCREDITATION
COUNCIL



31-154876

DEKRA Mark is the new KEMA-KEUR

The DEKRA Mark certificate for this product is to all intents and purposes equivalent to a KEMA-KEUR certificate, the other certification mark used by DEKRA and should be valued and used as such. DEKRA Mark is gradually replacing KEMA-KEUR.

For more information please check: [Introducing DEKRA Mark](#)

SPECIFICATION OF THE CERTIFIED PRODUCT**Product data**

Product	: Hybrid Inverter (NS protection)
Trade name(s)	: Afore
Type(s)/model(s)	: AF1.5K-ASL-0, AF1.5K-ASL-1, AF1.5K-SL-0, AF1.5K-SL-1, AF1K-ASL-0, AF1K-ASL-1, AF1K-SL-0, AF1K-SL-1, AF2.5K-ASL-0, AF2.5K-ASL-1, AF2.5K-SL-0, AF2.5K-SL-1, AF2K-ASL-0, AF2K-ASL-1, AF2K-SL-0, AF2K-SL-1, AF3.6K-ASL, AF3.6K-ASL-0, AF3.6K-ASL-1, AF3.6K-SL, AF3.6K-SL-0, AF3.6K-SL-1, AF3K-ASL, AF3K-ASL-0, AF3K-ASL-1, AF3K-SL, AF3K-SL-0, AF3K-SL-1, AF4.6K-ASL, AF4.6K-ASL-0, AF4.6K-SL, AF4.6K-SL-0, AF4.6K-SLP, AF4K-ASL, AF4K-ASL-0, AF4K-SL, AF4K-SL-0, AF4K-SLP, AF5.5K-ASL, AF5.5K-ASL-0, AF5.5K-SL, AF5.5K-SL-0, AF5.5K-SLP, AF5K-ASL, AF5K-ASL-0, AF5K-SL, AF5K-SL-0, AF5K-SLP, AF6K-ASL, AF6K-ASL-0, AF6K-SL, AF6K-SL-0 and AF6K-SLP
Type of NS protection	: Integrated NS protection
Assigned to Power generation unit type	: AF1K-SL-1, AF1.5K-SL-1, AF2K-SL-1, AF2.5K-SL-1, AF3K-SL-1, AF3.6K-SL-1, AF3K-SL, AF3.6K-SL, AF4K-SL, AF4.6K-SL, AF5K-SL, AF5.5K-SL, AF6K-SL, AF4K-SLP, AF4.6K-SLP, AF5K-SLP, AF5.5K-SLP, AF6K-SLP, AF1K-SL-0, AF1.5K-SL-0, AF2K-SL-0, AF2.5K-SL-0, AF3K-SL-0, AF3.6K-SL-0, AF4K-SL-0, AF4.6K-SL-0, AF5K-SL-0, AF5.5K-SL-0, AF6K-SL-0, AF1K-ASL-1, AF1.5K-ASL-1, AF2K-ASL-1, AF2.5K-ASL-1, AF3K-ASL-1, AF3.6K-ASL-1, AF3K-ASL, AF3.6K-ASL, AF4K-ASL, AF4.6K-ASL, AF5K-ASL, AF5.5K-ASL, AF6K-ASL, AF1K-ASL-0, AF1.5K-ASL-0, AF2K-ASL-0, AF2.5K-ASL-0, AF3K-ASL-0, AF3.6K-ASL-0, AF4K-ASL-0, AF4.6K-ASL-0, AF5K-ASL-0, AF5.5K-ASL-0, AF6K-ASL-0
Software version	: V02

TESTS**Test requirements**

VDE-AR-N 4105:2018

DIN VDE V 0124-100:2020

Test result

The test results are documented in DEKRA test file 621751200.

Additional information

This certificate is the NS protection certificate for Hybrid Inverter

The list of components is laid down in test report 6217512.51.

Conclusion

The examination has confirmed that all requirements were met.

Factory location

Afore New Energy Technology (Shanghai) Co., Ltd.
Building 7, No.333 Wanfang Rd, Minhang District
201112 Shanghai, China

Trade name(s): Afore stands for:



E.7 Requirement for the NS protection test report (VDE-AR-N 4105:2018-11) E.7 Anforderungen an den Prüfbericht zum NA-Schutz			
Extract of the test report for NS protection Determination of electrical properties" Auszug aus dem Prüfbericht für den NA-Schutz Bestimmung der elektrischen Eigenschaften“		Report No.: 6217512.51 Bericht Nr.:	
Test report NS protection Prüfbericht NA-Schutz			
Type of NS protection: Typ NA-Schutz:	Integrated NS protection Integrierter NA-Schutz		
Software version: Software version:	V02		
Manufacturer: Hersteller:	Afore New Energy Technology (Shanghai) Co., Ltd.		
Measuring period: Messzeitraum:	From 2023-01-04 to 2023-05-05 Vom 2023-01-04 bis 2023-05-05		
	Inverter Umrichter		
Protection function Schutzfunktion	Setting tripping value Einstellwert	Measured tripping value Auslösewert	Measured tripping time Auslösezeit NA-Schutz
Rise-in-voltage protection $U >>$ Spannungssteigerungsschutz $U >>$	$1.25 * U_n$	287.5 V	110.8 ms
Rise-in-voltage protection $U >$ Spannungssteigerungsschutz $U >$	$1.1 * U_n$	$1.1 * U_n$	$\leq 100 \text{ ms} *$
Voltage drop protection $U <$ Spannungsrückgangsschutz $U <$	$0.8 * U_n$	183.8 V	3040 ms
Voltage drop protection $U <<$ Spannungsrückgangsschutz $U <<$	$0.45 * U_n$	103.4 V	345.6 ms
Frequency decrease protection $f <$ Frequenzrückgangsschutz $f <$	47.5 Hz	47.49 Hz	166 ms
Frequency decrease protection $f >$ Frequenzsteigerungsschutz $f >$	51.5 Hz	51.50 Hz	168 ms
* The rise-in voltage protection as a running 10-minute mean value, Max. disconnecting time is 504 s. * Der anstiege Spannungsschutz als laufender 10-Minuten-Mittelwert, Max. TrennZeit beträgt 504 s. The tripping time covers the period from the limit value violation U/f to the tripping signal to the interface switch. Die Auslösezeit umfasst den Zeitraum von der Grenzwertverletzung U/f bis zum Auslösesignal an den Kuppelschalter. When planning the power generation system, the inherent time of the interface switch must be added to the highest time value determined above. Bei der Planung der Erzeugungsanlage ist die Eigenzeit des Kuppelschalters zum höchsten oben ermittelten Zeitwert zu addieren. The switch-off time (total of the tripping time NS protection plus the inherent time of the interface switch) must not exceed 200 ms. Die Abschaltzeit (Summe der Auslösezeit NA-Schutz zzgl. Eigenzeit des Kuppelschalters) darf 200 ms nicht überschreiten.			
☒ By integrated NS Protection Bei integriertem NA-Schutz			
Assigned to PGU type: Typ Erzeugungseinheit:	AF1K-SL-0, AF1.5K-SL-0, AF2K-SL-0, AF2.5K-SL-0, AF3K-SL-0, AF3.6K-SL-0, AF4K-SL-0, AF4.6K-SL-0, AF5K-SL-0, AF5.5K-SL-0, AF6K-SL-0, AF1K-ASL-0, AF1.5K-ASL-0, AF2K-ASL-0, AF2.5K-ASL-0, AF3K-ASL-0, AF3.6K-ASL-0, AF4K-ASL-0, AF4.6K-ASL-0, AF5K-ASL-0, AF5.5K-ASL-0, AF6K-ASL-0, AF1K-SL-1, AF1.5K-SL-1, AF2K-SL-1, AF2.5K-SL-1, AF3K-SL-1, AF3.6K-SL-1, AF1K-ASL-1, AF1.5K-ASL-1, AF2K-ASL-1, AF2.5K-ASL-1, AF3K-ASL-1, AF3.6K-ASL-1, AF3K-SL, AF3.6K-SL, AF4K-SL, AF4.6K-SL, AF5K-SL, AF5.5K-SL, AF6K-SL, AF4K-SLP, AF4.6K-SLP, AF5K-SLP, AF5.5K-SLP, AF6K-SLP, AF3K-ASL, AF3.6K-ASL, AF4K-ASL, AF4.6K-ASL, AF5K-ASL, AF5.5K-ASL, AF6K-ASL,		
Integrated interface switch type: Typ integrierter Kuppelschalter	Xiamen Hongfa Electroacoustic Co., Ltd. Relay: HF161F-W/12HT (477)		
Interface switch own time with integrated NS protection	Operation time: 20 ms max; Release time: 10 ms max		

<i>Eigenzeit des Kuppelschalters bei integriertem NA-Schutz</i>	
The verification of the full function chain “NS protection- Interface switch” has yield to intended disconnection. <i>Die Überprüfung der Gesamtwirkungskette „integrierter NA-Schutz – Kuppelschalter“ führte zu einer erfolgreichen Abschaltung.</i>	