

# CERTIFICATE OF CONFORMITY

## CERTIFICATO DI CONFORMITÀ

Issued to: Afore New Energy Technology (Shanghai) Co., Ltd.  
Rilasciato a: Building 7, No.333 Wanfang Rd, Minhang District, Shanghai, China

For the product: Hybrid Inverter  
*Tipo prodotto:*

Trade name:  
*Marchio:*

  
**Afore**

Type/Model: AF1K-SL-1, AF1.5K-SL-1, AF2K-SL-1, AF2.5K-SL-1, AF3K-SL-1, AF3.6K-SL-1,  
*Riferimento modello:* AF3K-SL, AF3.6K-SL, AF4K-SL, AF4.6K-SL, AF5K-SL, AF5.5K-SL, AF6K-SL,  
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

Ratings: See Annex  
*Dati di targa:*

Manufactured by: Afore New Energy Technology (Shanghai) Co., Ltd.  
*Costruttore:* Building 7, No.333 Wanfang Rd, Minhang District, Shanghai, China

Requirements: CEI 0-21:2022-03  
*Requisiti:* *Regola tecnica di riferimento per la connessione di Utenti attivi e passivi alle reti BT delle imprese distributrici di energia elettrica*

This Test Certificate is granted on account of an examination by DEKRA, the results of which are laid down in a confidential file no. 6166745.50

*Il presente certificato è rilasciato a causa di un esame da parte di DEKRA, i cui risultati sono riportati in un file riservato n. 6166745.50*

The examination has been carried out on one single specimen or several specimens of the product, submitted by the manufacturer. The certificate does not include an assessment of the manufacturer's production.

Conformity of his production with the specimen tested by DEKRA is not the responsibility of DEKRA.

*Il sottoscritto dichiara che il prodotto di cui sopra è conforme ai requisiti tecnici menzionati. Questo attestato di conformità è rilasciato sulla base dei risultati di prova riferiti nel rapporto sopra menzionato.*

*La valutazione non include una verifica della produzione di serie né del luogo di produzione.*

Shanghai, 7 September 2023 Certificate Number: 6166745.01COC  
It expires at the latest on: 7 September 2028

DEKRA Testing and Certification (Shanghai) Ltd.



Cliff Lin  
Certification Manager

© Integral publication of this certificate and adjoining reports is allowed

Accreditation of the certification body by IAS according to ISO/IEC 17065 for products.  
Accreditation is valid in the areas of certification mentioned in the certificate.



PCA-141

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Document no. : 6166745.01COC

## Ratings of the testing Hybrid Inverter:

Valutazioni dell'invertitore ibrido di prova:

Models	AF1K-SL-1	AF1.5K-SL-1	AF2K-SL-1	AF2.5K-SL-1	AF3K-SL-1	AF3.6K-SL-1
<b>PV input:</b>						
Max PV voltage (V)	550					
MPPT voltage range (V)	80-500					
Max PV current (A)	18.5					
Isc PV (A)	26					
Max PV power (W)	1500	2300	3000	3800	4500	5400
<b>Battery port:</b>						
Battery type	Li-ion / Lead-acid					
Battery normal voltage (range) (Vdc)	51.2 (40-60)					
Max charge/discharge current (A)	25	40	50	63	80	80
Max charge/discharge power (W)	1000	1500	2000	2500	3000	3600
<b>AC grid (input and output):</b>						
Rated voltage (V)	L/N/PE, 230Vac					
Rated frequency (Hz)	50					
Max AC current (A)	5	7	10	12	14	17
Rated AC power (W)	1000	1500	2000	2500	3000	3600
Max AC apparent power (VA)	1000	1500	2000	2500	3000	3600
Power factor range	1.0 (-0.8 ~ +0.8 adjustable)					
<b>AC load output (stand alone):</b>						
Rated voltage (V)	L/N/PE, 230Vac					
Rated frequency (Hz)	50					
Max AC current (A)	5	7	10	12	14	17
Rated continuous AC power (W)	1000	1500	2000	2500	3000	3600
Max continuous AC apparent power (VA)	1000	1500	2000	2500	3000	3600
<b>General:</b>						
Protection class	I					
Degree of protection	IP65					
Overvoltage category	II(DC), III(AC)					
Ambient temperature	-25...+60°C (Derating > 45°C)					

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Models	AF3K-SL	AF3.6K-SL	AF4K-SL	AF4.6K-SL	AF5K-SL	AF5.5K-SL	AF6K-SL
<b>PV input:</b>							
Max PV voltage (V)	550						
MPPT voltage range (V)	80-500						
Max PV current (A)	18.5 x 2						
Isc PV (A)	26 x 2						
Max PV power (W)	4500	5400	6000	6900	7500	8300	9000
<b>Battery port:</b>							
Battery type	Li-ion / Lead-acid						
Battery normal voltage (range) (Vdc)	51.2 (40-60)						
Max charge/ discharge current (A)	80						
Max charge/ discharge power (W)	3000	3600	4000	4600	4800	4800	4800
<b>AC grid (input and output):</b>							
Rated voltage (V)	L/N/PE, 230Vac						
Rated frequency (Hz)	50						
Max AC current (A)	14	17	19	22	23	26	28
Rated AC power (W)	3000	3600	4000	4600	5000	5500	6000
Max AC apparent power (VA)	3000	3600	4000	4600	5000	5500	6000
Power factor range	1.0 (-0.8 ~ +0.8 adjustable)						
<b>AC load output (stand alone):</b>							
Rated voltage (V)	L/N/PE, 230Vac						
Rated frequency (Hz)	50						
Max AC current (A)	14	17	19	22	23	26	28
Rated continuous AC power (W)	3000	3600	4000	4600	5000	5500	6000
Max continuous AC apparent power (VA)	3000	3600	4000	4600	5000	5500	6000
<b>General:</b>							
Protection class	I						
Degree of protection	IP65						
Overvoltage category	II(DC), III(AC)						
Ambient temperature	-25...+60°C (Derating > 45°C)						

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Models	AF1K-SL-0	AF1.5K-SL-0	AF2K-SL-0	AF2.5K-SL-0	AF3K-SL-0	AF3.6K-SL-0
<b>Battery port:</b>						
Battery type	Li-ion / Lead-acid					
Battery normal voltage (range) (Vdc)	51.2 (40-60)					
Max charge/discharge current (A)	25	40	50	63	80	80
Max charge/discharge power (W)	1000	1500	2000	2500	3000	3600
<b>AC grid (input and output):</b>						
Rated voltage (V)	L/N/PE, 230Vac					
Rated frequency (Hz)	50					
Max AC current (A)	5	7	10	12	14	17
Rated AC power (W)	1000	1500	2000	2500	3000	3600
Max AC apparent power (VA)	1000	1500	2000	2500	3000	3600
Power factor range	1.0 (-0.8 ~ +0.8 adjustable)					
<b>AC load output (stand alone):</b>						
Rated voltage (V)	L/N/PE, 230Vac					
Rated frequency (Hz)	50					
Max AC current (A)	5	7	10	12	14	17
Rated continuous AC power (W)	1000	1500	2000	2500	3000	3600
Max continuous AC apparent power (VA)	1000	1500	2000	2500	3000	3600
<b>General:</b>						
Protection class	I					
Degree of protection	IP65					
Overvoltage category	II(DC), III(AC)					
Ambient temperature	-25...+60°C (Derating > 45°C)					

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Models	AF4K-SL-0	AF4.6K-SL-0	AF5K-SL-0	AF5.5K-SL-0	AF6K-SL-0
<b>Battery port:</b>					
Battery type	Li-ion / Lead-acid				
Battery normal voltage (range) (Vdc)	51.2 (40-60)				
Max charge/discharge current (A)	80	80	100	120	120
Max charge/discharge power (W)	4000	4600	5000	5500	6000
<b>AC grid (input and output):</b>					
Rated voltage (V)	L/N/PE, 230Vac				
Rated frequency (Hz)	50				
Max AC current (A)	19	22	23	26	28
Rated AC power (W)	4000	4600	5000	5500	6000
Max AC apparent power (VA)	4000	4600	5000	5500	6000
Power factor range	1.0 (-0.8 ~ +0.8 adjustable)				
<b>AC load output (stand alone):</b>					
Rated voltage (V)	L/N/PE, 230Vac				
Rated frequency (Hz)	50				
Max AC current (A)	19	22	23	26	28
Rated continuous AC power (W)	4000	4600	5000	5500	6000
Max continuous AC apparent power (VA)	4000	4600	5000	5500	6000
<b>General:</b>					
Protection class	I				
Degree of protection	IP65				
Overvoltage category	II(DC), III(AC)				
Ambient temperature	-25...+60°C (Derating > 45°C)				

Type of generating unit:

*Tipologia di apparato:*

Static Conversion Device <i>Dispositivo di conversione statica</i>	Interface Protection <i>Protezione di interfaccia</i>	Interface Protection Device <i>Dispositivo di interfaccia</i>	Rotating Generator Device <i>Dispositivo di generazione rotante</i>
Yes/Sì	Yes/Sì	Yes/Sì	No

REMARK: the device is capable to limit the  $I_{dc}$  to 0,5% of the nominal current

NOTA: Il dispositivo è in grado di limitare la  $I_{dc}$  allo 0,5% della corrente nominale

Firmware release (SW): V06

Revisione firmware (SW): V06

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**The battery used for testing with the Hybrid Inverter covered by this certificate:**

*La batteria utilizzata per i test con l'invertitore ibrido coperto dal presente certificato:*

Battery Models	ES-BOX12, ES-BOX12WF, ESS-5120-KS2-A01			
Manufacturer	Dongguan ZWAYN New Energy Co., Ltd			
Number of battery module in parallel	1	2	3	4
Nominal Voltage	51.2 V			
Nominal capacity	100 Ah	200 Ah	300 Ah	400 Ah
CUS (Storage system useful capacity)	5.12 kWh	10.24 kWh	15.36 kWh	20.48 kWh
Number of battery module in parallel	5	6	7	8
Nominal Voltage	51.2 V			
Nominal capacity	500 Ah	600 Ah	700 Ah	800 Ah
CUS (Storage system useful capacity)	25.6 kWh	30.72 kWh	35.84 kWh	40.96 kWh
Number of battery module in parallel	9	10	11	12
Nominal Voltage	51.2 V			
Nominal capacity	900 Ah	1000 Ah	1100 Ah	1200 Ah
CUS (Storage system useful capacity)	46.08 kWh	51.2 kWh	56.32 kWh	61.44 kWh
Number of battery module in parallel	13	14	15	16
Nominal Voltage	51.2 V			
Nominal capacity	1300 Ah	1400 Ah	1500 Ah	1600 Ah
CUS (Storage system useful capacity)	66.56 kWh	71.68 kWh	76.8 kWh	81.92 kWh

**Remark:**

The CB test certificate No. of the battery: JPTUV-151536

When the batteries are connected in parallel, the charge/ discharge current is superimposed and is limited by the maximum current of the battery port of the Hybrid Inverter.

The batteries are not integrated into the Hybrid Inverter and must be installed according to the local regulations.

The electrical performance of the two models of batteries (ES-BOX12, ES-BOX12WF) is the same. The two models of batteries only differ in wifi function. ES-BOX12WF is the version with wifi.

The electrical performance of the two models of batteries (ES-BOX12, ESS-5120-KS2-A01) is the same.

The two models of batteries only differ in appearance, size, and weight to meet different installation needs.

**Testing Laboratory:**

**Laboratorio prove:**

Testing Laboratory for CEI 0-21:2022-03

DEKRA Testing and Certification (Suzhou) Co., Ltd.

No. 99, Hongye Road, Suzhou Industrial Park Suzhou, 215006, P.R. China

Accreditation Number: L5313 (CNAS-ILAC)

Testing Laboratory for EMC:

1. Intertek Testing Services Shanghai

Building No.86, 1198 Qinzhou Road (North), Caohejing Development Zone, Shanghai 200233, China

Accreditation Number: 3309.02 (A2LA-ILAC)

2. Shanghai Inspection and Testing Institute of Instruments and Automation Systems Co., Ltd.

No.103, Caobao Road, Xuhui District, Shanghai, China

Accreditation Number: L0130 (CNAS-ILAC)

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