

# 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: AF3K-TH, AF4K-TH, AF5K-TH, AF6K-TH, AF8K-TH, AF10K-TH, AF12K-TH  
*Riferimento modello:* AF15K-TH, AF17K-TH, AF20K-TH, AF25K-TH, AF30K-TH  
AF3K-THP, AF4K-THP, AF5K-THP, AF6K-THP, AF8K-THP, AF10K-THP,  
AF12K-THP

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. 6162437.50  
*Il presente certificato è rilasciato a causa di un esame da parte di DEKRA, i cui risultati sono riportati in un file riservato n. 6162437.50*

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, 31 July 2023  
It expires at the latest on: 31 July 2028

Certificate Number: 6162437.01COC

DEKRA Testing and Certification (Shanghai) Ltd.

  
Cliff Lin  
Certification Manager

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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. : 6162437.01COC

## Ratings of the testing Hybrid Inverter:

Valutazioni dell'invertitore ibrido di prova:

Model list / Ratings of the test product				
Model	AF3K-TH	AF4K-TH	AF5K-TH	AF6K-TH
<b>PV input</b>				
P pv Max(kW)	5	6	7.5	9
Vmax PV (Vdc) (absolute Max.)	1000	1000	1000	1000
Isc PV (absolute Max.) (A)	30*2	30*2	30*2	30*2
Number MPP trackers	2	2	2	2
Number input strings	1/1	1/1	1/1	1/1
Max. PV input current (A)	20*2	20*2	20*2	20*2
MPPT voltage range (Vdc)	150-850	150-850	150-850	150-850
Vdc range @ full power (Vdc)	200-850	200-850	200-850	250-850
<b>Battery (charge/discharge)</b>				
Battery type	Li-ion/Lead-acid			
Battery Normal Voltage Range (Vdc)	150-800(Field adapt battery voltage range)			
Max charge/discharge Current(A)	30	30	30	30
Max charge/discharge Power(kW)	3	4	5	6
<b>AC Grid (input and output)</b>				
Normal AC Voltage (VAC)	3P+N+PE/3P+PE 230/400			
Frequency (Hz)	50 / 60			
Normal AC Current (A)	4.4	5.8	7.3	8.7
Max. cont. input/output current (A)	8 / 5.3	10.5 / 7	13 / 8.5	16 / 10.5
Rated Power (kW)	3	4	5	6
Rated Apparent Power (kVA)	3	4	5	6
Max. cont. input/output Power (kW)	4.5 / 3.3	6 / 4.4	7.5 / 5.5	9 / 6.6
Max. cont. Apparent input/output	4.5 / 3.3	6 / 4.4	7.5 / 5.5	9 / 6.6
Power factor(adjustable)	1.0( -0.8~ +0.8)			
<b>AC Load output (stand alone)</b>				
Normal Voltage (VAC)	3P+N+PE/3P+PE 230/400			
Frequency (Hz)	50 / 60			
Nominal Current (A)	4.4	5.8	7.3	8.7
Max. cont. current (A)	5.3	7	8.5	10.5
Max. cont. Power (kW)	3	4	5	6
Rated Apparent Power (kVA)	3	4	5	6
Max. cont. Apparent Power (kVA)	3	4	5	6
Power factor	1.0			
<b>Others</b>				
Ingress protection (IP)	IP65			
Protective class	Class I			
Temperature (°C)	-25°C to +60°C (Derating 45°C)			
Inverter Isolation	Non-isolated (PV - AC - BAT)			
Overvoltage category	OVC III (AC Main), OVC II (PV)			

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Model	AF8K-TH	AF10K-TH	AF12K-TH	AF15K-TH
<b>PV input</b>				
P <sub>pv</sub> Max(kW)	12	15	18	22.5
V <sub>max</sub> PV (Vdc) (absolute Max.)	1000	1000	1000	1000
I <sub>sc</sub> PV (absolute Max.) (A)	30*2	30*2	30*2	30+48
Number MPP trackers	2	2	2	2
Number input strings	1/1	1/1	1/1	1/2
Max. PV input current (A)	20*2	20*2	20*2	20+32
MPPT voltage range (Vdc)	150-850	150-850	150-850	150-850
Vdc range @ full power (Vdc)	300-850	500-850	500-850	500-850
<b>Battery (charge/discharge)</b>				
Battery type	Li-ion/Lead-acid			
Battery Normal Voltage Range (Vdc)	150-800(Field adapt battery voltage range)			
Max charge/discharge Current(A)	30	30	30	50
Max charge/discharge Power(kW)	8	10	12	15
<b>AC Grid (input and output)</b>				
Normal AC Voltage (VAC)	3P+N+PE/3P+PE 230/400			
Frequency (Hz)	50 / 60			
Normal AC Current (A)	11.6	14.5	17.4	21.8
Max. cont. input/output current (A)	20 / 13.5	26 / 17	32 / 21.5	40.5 / 27
Rated Power (kW)	8	10	12	15
Rated Apparent Power (kVA)	8	10	12	15
Max. cont. input/output Power (kW)	12 / 8.8	15 / 11	18 / 13.2	22.5 / 16.5
Max. cont. Apparent input/output Power	12 / 8.8	15 / 11	18 / 13.2	22.5 / 16.5
Power factor(adjustable)	1.0( -0.8~ +0.8)			
<b>AC Load output (stand alone)</b>				
Normal Voltage (VAC)	3P+N+PE/3P+PE 230/400			
Frequency (Hz)	50 / 60			
Nominal Current (A)	11.6	14.5	17.4	21.8
Max. cont. current (A)	13.5	17	21.5	27
Max. cont. Power (kW)	8	10	12	15
Rated Apparent Power (kVA)	8	10	12	15
Max. cont. Apparent Power (kVA)	8	10	12	15
Power factor	1.0			
<b>Others</b>				
Ingress protection (IP)	IP65			
Protective class	Class I			
Temperature (°C)	-25°C to +60°C (Derating 45°C)			
Inverter Isolation	Non-isolated (PV - AC - BAT)			
Overvoltage category	OVC III (AC Main), OVC II (PV)			

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Model	AF17K-TH	AF20K-TH	AF25K-TH	AF30K-TH
<b>PV input</b>				
P <sub>pv</sub> Max(kW)	25.5	30	37.5	45
V <sub>max</sub> PV (Vdc) (absolute Max.)	1000	1000	1000	1000
I <sub>sc</sub> PV (absolute Max.) (A)	48*2	48*2	60*2	60*2
Number MPP trackers	2	2	2	2
Number input strings	2/2	2/2	2/2	2/2
Max. PV input current (A)	32*2	32*2	40*2	40*2
MPPT voltage range (Vdc)	150-850	150-850	150-850	150-850
Vdc range @ full power (Vdc)	500-850	500-850	500-850	500-850
<b>Battery (charge/discharge)</b>				
Battery type	Li-ion/Lead-acid			
Battery Normal Voltage Range (Vdc)	150-800(Field adapt battery voltage range)			
Max charge/discharge Current(A)	50	50	60	60
Max charge/discharge Power(kW)	17	20	25	30
<b>AC Grid (input and output)</b>				
Normal AC Voltage (VAC)	3P+N+PE/3P+PE 230/400			
Frequency (Hz)	50 / 60			
Normal AC Current (A)	24.7	29	36.3	43.5
Max. cont. input/output current (A)	45 / 30	48 / 32	60 / 40	72 / 48
Rated Power (kW)	17	20	25	30
Rated Apparent Power (kVA)	17	20	25	30
Max. cont. input/output Power (kW)	25.5 / 18.7	30 / 22	37.5 / 27.5	45 / 33
Max. cont. Apparent input/output Power	25.5 / 18.7	30 / 22	37.5 / 27.5	45 / 33
Power factor(adjustable)	1.0( -0.8~ +0.8)			
<b>AC Load output (stand alone)</b>				
Normal Voltage (VAC)	3P+N+PE/3P+PE 230/400			
Frequency (Hz)	50 / 60			
Nominal Current (A)	24.7	29	36.3	43.5
Max. cont. current (A)	30	32	40	48
Max. cont. Power (kW)	17	20	25	30
Rated Apparent Power (kVA)	17	20	25	30
Max. cont. Apparent Power (kVA)	17	20	25	30
Power factor	1.0			
<b>Others</b>				
Ingress protection (IP)	IP65			
Protective class	Class I			
Temperature (°C)	-25°C to +60°C (Derating 45°C)			
Inverter Isolation	Non-isolated (PV - AC - BAT)			
Overvoltage category	OVC III (AC Main), OVC II (PV)			

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Model	AF3K-THP	AF4K-THP	AF5K-THP	AF6K-THP
<b>PV input</b>				
P <sub>pv</sub> Max(kW)	5	6	7.5	9
V <sub>max</sub> PV (Vdc) (absolute Max.)	1000	1000	1000	1000
I <sub>sc</sub> PV (absolute Max.) (A)	30*2	30*2	30*2	30*2
Number MPP trackers	2	2	2	2
Number input strings	1/1	1/1	1/1	1/1
Max. PV input current (A)	20*2	20*2	20*2	20*2
MPPT voltage range (Vdc)	150-850	150-850	150-850	150-850
Vdc range @ full power (Vdc)	200-850	200-850	200-850	250-850
<b>Battery (charge/discharge)</b>				
Battery type	Li-ion/Lead-acid			
Battery Normal Voltage Range (Vdc)	80-600(Field adapt battery voltage range)			
Max charge/discharge Current(A)	50	50	50	50
Max charge/discharge Power(kW)	3	4	5	6
<b>AC Grid (input and output)</b>				
Normal AC Voltage (VAC)	3P+N+PE/3P+PE 230/400			
Frequency (Hz)	50 / 60			
Normal AC Current (A)	4.4	5.8	7.3	8.7
Max. cont. input/output current (A)	8 / 5.3	10.5 / 7	13 / 8.5	16 / 10.5
Rated Power (kW)	3	4	5	6
Rated Apparent Power (kVA)	3	4	5	6
Max. cont. input/output Power (kW)	4.5 / 3.3	6 / 4.4	7.5 / 5.5	9 / 6.6
Max. cont. Apparent input/output Power	4.5 / 3.3	6 / 4.4	7.5 / 5.5	9 / 6.6
Power factor(adjustable)	1.0( -0.8~ +0.8)			
<b>AC Load output (stand alone)</b>				
Normal Voltage (VAC)	3P+N+PE/3P+PE 230/400			
Frequency (Hz)	50 / 60			
Nominal Current (A)	4.4	5.8	7.3	8.7
Max. cont. current (A)	5.3	7	8.5	10.5
Max. cont. Power (kW)	3	4	5	6
Rated Apparent Power (kVA)	3	4	5	6
Max. cont. Apparent Power (kVA)	3	4	5	6
Power factor	1.0			
<b>Others</b>				
Ingress protection (IP)	IP65			
Protective class	Class I			
Temperature (°C)	-25°C to +60°C (Derating 45°C)			
Inverter Isolation	Non-isolated (PV - AC - BAT)			
Overvoltage category	OVC III (AC Main), OVC II (PV)			

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Model	AF8K-THP	AF10K-THP	AF12K-THP
<b>PV input</b>			
P <sub>pv</sub> Max(kW)	12	15	18
V <sub>max</sub> PV (Vdc) (absolute Max.)	1000	1000	1000
I <sub>sc</sub> PV (absolute Max.) (A)	30*2	30*2	30*2
Number MPP trackers	2	2	2
Number input strings	1/1	1/1	1/1
Max. PV input current (A)	20*2	20*2	20*2
MPPT voltage range (Vdc)	150-850	150-850	150-850
Vdc range @ full power (Vdc)	300-850	500-850	500-850
<b>Battery (charge/discharge)</b>			
Battery type	Li-ion/Lead-acid		
Battery Normal Voltage Range (Vdc)	80-600	120-650	
Max charge/discharge Current(A)	50	50	50
Max charge/discharge Power(kW)	8	10	12
<b>AC Grid (input and output)</b>			
Normal AC Voltage (VAC)	3P+N+PE/3P+PE 230/400		
Frequency (Hz)	50 / 60		
Normal AC Current (A)	11.6	14.5	17.4
Max. cont. input/output current (A)	20 / 13.5	26 / 17	32 / 21.5
Rated Power (kW)	8	10	12
Rated Apparent Power (kVA)	8	10	12
Max. cont. input/output Power (kW)	12 / 8.8	15 / 11	18 / 13.2
Max. cont. Apparent input/output	12 / 8.8	15 / 11	18 / 13.2
Power factor(adjustable)	1.0( -0.8~ +0.8)		
<b>AC Load output (stand alone)</b>			
Normal Voltage (VAC)	3P+N+PE/3P+PE 230/400		
Frequency (Hz)	50 / 60		
Nominal Current (A)	11.6	14.5	17.4
Max. cont. current (A)	13.5	17	21.5
Max. cont. Power (kW)	8	10	12
Rated Apparent Power (kVA)	8	10	12
Max. cont. Apparent Power (kVA)	8	10	12
Power factor	1.0		
<b>Others</b>			
Ingress protection (IP)	IP65		
Protective class	Class I		
Temperature (°C)	-25°C to +60°C (Derating 45°C)		
Inverter Isolation	Non-isolated (PV - AC - BAT)		
Overvoltage category	OVC III (AC Main), OVC II (PV)		

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Type of generating unit:

*Tipologia di apparato:*

Static Conversion Device <i>Dipositivo 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/Si	Yes/Si	Yes/Si	No

REMARK: the device is capable to limit the I<sub>dc</sub> to 0,5% of the nominal current

NOTA: Il dispositivo è in grado di limitare la I<sub>dc</sub> allo 0,5% della corrente nominale

Hardware version: 1.01

*Versione hardware: 1.01*

Software version: V01

*Versione software: V01*

**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:*

Manufacturer	Enerlution Power Technology Co., Ltd		
Battery Models	GroundHV-20K	GroundHV-17.5K	GroundHV-15K
Nominal Voltage	384V	336V	288V
Nominal capacity	52Ah	52Ah	52Ah
CUS (Storage system useful capacity)	20.0kWh	17.5kWh	15.0kWh
Battery Models	GroundHV-12.5K	GroundHV-10K	GroundHV-7.5K
Nominal Voltage	240V	192V	144V
Nominal capacity	52Ah	52Ah	52Ah
CUS (Storage system useful capacity)	12.5kWh	10.0kWh	7.5kWh
Remark:	The CB test certificate No. of the battery: DE 7-0685 A1M1 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.		

**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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