

# 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*

The tested models are suitable for installation in systems with a total power greater than 11.08 kW.  
*I modelli testati sono adatti per l'installazione in sistemi con potenza di uscita maggiore di 11.08 kW.*  
This Test Certificate is granted on account of an examination by DEKRA, the results of which are laid down in a confidential file no. 6190323.53  
*Il presente certificato è rilasciato a causa di un esame da parte di DEKRA, i cui risultati sono riportati in un file riservato n. 6190323.53*

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 this 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.*  
This Test Certificate expires at the latest on 2029-06-07 or expires upon withdrawal of one of the above mentioned standards.  
*Il presente certificato di prova scade al più tardi il 2029-06-07 o scade al momento del ritiro di uno dei suddetti standard.*

Shanghai, 7 June 2024

Certificate Number: 6190323.04COC

DEKRA Testing and Certification (Shanghai) Ltd.

Cliff Lin  
Certification Manager



© Integral publication of this certificate and adjoining reports is allowed



DEKRA Testing and Certification (Shanghai) Ltd.  
No.250, Jiangchangsan Road, Jing'an District, Shanghai, 200436 People's Republic of China  
T +86 21 6056 7600 F +86 21 6056 7555 [www.dekra-product-safety.com](http://www.dekra-product-safety.com)  
ESA-CER-F021 v4.1

Document no. : 6190323.04COC

## 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                                 | Rechargeable Li-ion Battery/ LiFePO4/ 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 Power (kVA) | 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)                  |          |           |           |



Document no. : 6190323.04COC

| 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                                 | Rechargeable Li-ion Battery/ LiFePO4/ 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 (kVA) | 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)                  |          |           |             |

Document no. : 6190323.04COC

| 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                                 | Rechargeable Li-ion Battery/ LiFePO4/ 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 (kVA) | 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)                  |          |             |          |

Document no. : 6190323.04COC

| 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                                 | Rechargeable Li-ion Battery/ LiFePO4/ 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 (kVA) | 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)                  |          |           |           |

Document no. : 6190323.04COC

| 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                                 | Rechargeable Li-ion Battery/ LiFePO4/ Lead-acid |  |           |
| Battery Normal Voltage Range (Vdc)           | 80-600(Field adapt battery voltage range)       | 120-650(Field adapt battery voltage range) |           |
| 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 Power (kVA) | 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)                  |  |           |

Document no. : 6190323.04COC

Type of generating unit:

*Tipologia di apparato:*

|  |  |  |  |
|--|--|--|--|
| Static Conversion Device<br><i>Dipositivo di conversione statica</i> | Interface Protection<br><i>Protezione di interfaccia</i> | Interface Protection Device<br><i>Dispositivo di interfaccia</i> | Rotating Generator Device<br><i>Dispositivo di generazione rotante</i> |
| Yes/Sì   | Yes/Sì   | Yes/Sì   | No/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            | Afore New Energy Technology (Shanghai) Co., Ltd.   |             |             |             |             |
| Battery Models          | AF10000W-HC  | AF15000W-HC | AF20000W-HC | AF25000W-HC | AF30000W-HC |
| Nominal Voltage         | 102.4 V  | 153.6 V     | 204.8 V     | 256.0 V     | 307.2 V     |
| Nominal capacity        | 100 Ah   | 100 Ah      | 100 Ah      | 100 Ah      | 100 Ah      |
| Battery System Capacity | 10.2 kWh   | 15.4 kWh    | 20.5 kWh    | 25.6 kWh    | 30.7 kWh    |
| Remark:                 | The CB test certificate No. of the battery: FR_719086<br>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)

--- End ---