

Certificate

No. ESY 075386 0321 Rev. 00

Holder of Certificate: Shenzhen Kstar New Energy

Company Limited

The 9th Floor, R&D Building
Kstar Industrial Park, Guangming Hi-tech Industrial Zone
518107 Shenzhen, Guangdong Province
PEOPLE'S REPUBLIC OF CHINA

Product:

Converter

(Energy Storage Inverter & Hybrid Inverter)

Model(s):

Hybrid Inverter:

KAC50DP2, KAC49.9DP2, KAC40DP2, KAC30DP2,
KAC29.9DP2, KAC25DP2, KAC20DP2,
KAC50DP2-S0, KAC49.9DP2-S0, KAC40DP2-S0,
KAC30DP2-S0, KAC29.9DP2-S0, KAC25DP2-S0,
KAC20DP2-S0,

Energy Storage Inverter:

KAC50D2, KAC49.9D2, KAC40D2, KAC30D2,
KAC29.9D2, KAC25D2, KAC20D2,
KAC50D2-S0, KAC49.9D2-S0, KAC40D2-S0,
KAC30D2-S0, KAC29.9D2-S0, KAC25D2-S0,
KAC20D2-S0

Parameters:

See pages 3 to 10

Applicable standards:

UNE 217001:2020
RD 244:2019

This Certificate confirms the compliance with the above listed standards on a voluntary basis. It refers only to the sample submitted to TÜV SÜD Product Service GmbH and does not certify the quality or safety of the serial products. It was issued according to TÜV SÜD Product Service certification program Photovoltaics and Grid Integration. For details see: www.tuvsud.com/ps-cert

Test report no.:

64290253072501

Date,

2026-01-26



(Billy Qiu)

Certificate

No. ESY 075386 0321 Rev. 00

Certification Body TÜV SÜD Product Service GmbH performed assessment of the products listed below:

Test requirement	The certification complies with the requirements of the following documents: UNE 217001:2020, Tests for systems that avoid energy discharge to the distribution network. Royal Decree 244:2019, of April 5, which regulates the administrative, technical and economic conditions of self-consumption of electrical energy.
Manufacturer	Shenzhen Kstar New Energy Company Limited The 9th Floor, R&D Building, Kstar Industrial Park, Guangming Hi-tech Industrial Zone, Shenzhen, Guangdong Province, 518107, PEOPLE'S REPUBLIC OF CHINA
Product types used in power generation system	Inverter: Three-phase inverter Network analyzer/ EMS-LCD/ Current transformer
Model and Technical Data	See page 3-10
Software version	Inverter: V010B000D000 Network analyzer: V1004 EMS-LCD: V020B010D000
Test Report	64.290.25.30725.01
Issued by	Testing lab: TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
Accreditation No.	D-PL-19065-01-00
Accreditation body ref.	DAkkS
Reference of the certification body	
Certification Body	TÜV SÜD Product Service GmbH DAkkS accreditation certificate D-ZE-11321-01-00 according to DIN EN ISO/IEC 17065:2013

Certificate

No. ESY 075386 0321 Rev. 00

Inverter Parameters:

Model	KAC50DP2	KAC49.9DP2	KAC40DP2	KAC30DP2
PV terminal parameters				
Maximum input voltage [V _{DC}]	950			
Rated input voltage [V _{DC}]	720			
PV input operating voltage range [V _{DC}]	250-950			
MPPT voltage range (full load) [V _{DC}]	620-800	620-800	500-800	400-800
MPPT tracker number	4			
Maximum operating PV input current [A _{DC}]	45/45/45/45			
Maximum PV short circuit current [A _{DC}]	60/60/60/60			
Maximum input power [W]	100000	100000	80000	60000
Battery input/output parameters				
Battery type	Lithium-ion			
Maximum voltage [V _{DC}]	900			
Battery rated voltage [V _{DC}]	720			
Battery voltage range [V _{DC}]	150–900			
Battery voltage range [V _{DC}] (Full Load)	330-900	330-900	280-900	250-900
Maximum charge power [W]	50000	49900	40000	30000
Maximum discharge power [W]	50000	49900	40000	30000
Maximum charge/discharge current [A _{DC}]	80/80	80/80	72/72	65/65
Grid terminal input parameters				
Rated input voltage [V _{AC}]	3P+N+PE, 230/400			
Rated input frequency [Hz]	50			
Maximum continuous input current [A _{AC}]	160	144	128	96
Maximum continuous input active power [W]	100000	99800	80000	60000
Maximum continuous input apparent power [VA]	110000	99800	88000	66000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)			
Grid terminal output parameters				
Rated output voltage [V _{AC}]	3P+N+PE, 230/400			
Rated output frequency [Hz]	50			
Rated output current [A _{AC}]	72	72	58	43
Maximum continuous output current [A _{AC}]	80	72	64	48
Rated output active power [W]	50000	49900	40000	30000
Maximum output active power [W]	50000	49900	40000	30000
Maximum continuous output apparent power [VA]	55000	49900	44000	33000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)			

Certificate

No. ESY 075386 0321 Rev. 00

Model	KAC29.9DP2	KAC25DP2	KAC20DP2
PV terminal parameters			
Maximum input voltage [V _{DC}]	950		
Rated input voltage [V _{DC}]	720		
PV input operating voltage range [V _{DC}]	250-950		
MPPT voltage range (full load) [V _{DC}]	400-800	350-800	300-800
MPPT tracker number	4		
Maximum operating PV input current [A _{DC}]	45/45/45/45		
Maximum PV short circuit current [A _{DC}]	60/60/60/60		
Maximum input power [W]	60000	50000	40000
Battery input/output parameters			
Battery type	Lithium-ion		
Maximum voltage [V _{DC}]	900		
Battery rated voltage [V _{DC}]	720		
Battery voltage range [V _{DC}]	150-900		
Battery voltage range [V _{DC}] (Full Load)	200-900		
Maximum charge power [W]	29900	25000	20000
Maximum discharge power [W]	29900	25000	20000
Maximum charge/ discharge current [A _{DC}]	65/65	60/60	55/55
Grid terminal input parameters			
Rated input voltage [V _{AC}]	3P+N+PE, 230/400		
Rated input frequency [Hz]	50		
Maximum continuous input current [A _{AC}]	87	80	64
Maximum continuous input active power [W]	59800	50000	40000
Maximum continuous input apparent power [VA]	59800	55000	44000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)		
Grid terminal output parameters			
Rated output voltage [V _{AC}]	3P+N+PE, 230/400		
Rated output frequency [Hz]	50		
Rated output current [A _{AC}]	43	36	29
Maximum continuous output current [A _{AC}]	43	40	32
Rated output active power [W]	29900	25000	20000
Maximum output active power [W]	29900	25000	20000
Maximum continuous output apparent power [VA]	29900	27500	22000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)		

Certificate

No. ESY 075386 0321 Rev. 00

Model	KAC50DP2-S0	KAC49.9DP2-S0	KAC40DP2-S0	KAC30DP2-S0
PV terminal parameters				
Maximum input voltage [V _{DC}]	950			
Rated input voltage [V _{DC}]	720			
PV input operating voltage range [V _{DC}]	250-950			
MPPT voltage range (full load) [V _{DC}]	620-800	620-800	500-800	400-800
MPPT tracker number	4			
Maximum operating PV input current [A _{DC}]	45/45/45/45			
Maximum PV short circuit current [A _{DC}]	60/60/60/60			
Maximum input power [W]	100000	100000	80000	60000
Battery input/output parameters				
Battery type	Lithium-ion			
Maximum voltage [V _{DC}]	900			
Battery rated voltage [V _{DC}]	720			
Battery voltage range [V _{DC}]	150-900			
Battery voltage range [V _{DC}] (Full Load)	330-900	330-900	280-900	250-900
Maximum charge power [W]	50000	49900	40000	30000
Maximum discharge power [W]	50000	49900	40000	30000
Maximum charge/ discharge current [A _{DC}]	80/80	80/80	72/72	65/65
Grid terminal input/output parameters				
Rated input/output voltage [V _{AC}]	3P+N+PE, 230/400			
Rated input/output frequency [Hz]	50			
Rated output current [A _{AC}]	72	72	58	43
Maximum continuous input/output current [A _{AC}]	80	72	64	48
Rated output active power [W]	50000	49900	40000	30000
Maximum continuous input/output active power [W]	50000	49900	40000	30000
Maximum continuous input/output apparent power [VA]	55000	49900	44000	33000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)			

Certificate

No. ESY 075386 0321 Rev. 00

Model	KAC29.9DP2-S0	KAC25DP2-S0	KAC20DP2-S0
PV terminal parameters			
Maximum input voltage [V _{DC}]	950		
Rated input voltage [V _{DC}]	720		
PV input operating voltage range [V _{DC}]	250-950		
MPPT voltage range (full load) [V _{DC}]	400-800	350-800	300-800
MPPT tracker number	4		
Maximum operating PV input current [A _{DC}]	45/45/45/45		
Maximum PV short circuit current [A _{DC}]	60/60/60/60		
Maximum input power [W]	60000	50000	40000
Battery input/output parameters			
Battery type	Lithium-ion		
Maximum voltage [V _{DC}]	900		
Battery rated voltage [V _{DC}]	720		
Battery voltage range [V _{DC}]	150-900		
Battery voltage range [V _{DC}] (Full Load)	250-900	210-900	200-900
Maximum charge power [W]	29900	25000	20000
Maximum discharge power [W]	29900	25000	20000
Maximum charge/ discharge current [A _{DC}]	65/65	60/60	55/55
Grid terminal input/output parameters			
Rated input/output voltage [V _{AC}]	3P+N+PE, 230/400		
Rated input/output frequency [Hz]	50		
Rated output current [AAC]	43	36	29
Maximum continuous input/output current [A _{AC}]	43	40	32
Rated output active power [W]	29900	25000	20000
Maximum continuous input/output active power [W]	29900	25000	20000
Maximum continuous input/output apparent power [VA]	29900	27500	22000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)		

Certificate

No. ESY 075386 0321 Rev. 00

Model	KAC50D2	KAC49.9D2	KAC40D2	KAC30D2
Battery input/output parameters				
Battery type	Lithium-ion			
Maximum voltage [V _{DC}]	900			
Battery rated voltage [V _{DC}]	720			
Battery voltage range [V _{DC}]	150–900			
Battery voltage range [V _{DC}] (Full Load)	330-900	330-900	280-900	250-900
Maximum charge power [W]	50000	49900	40000	30000
Maximum discharge power [W]	50000	49900	40000	30000
Maximum charge/discharge current [A _{DC}]	80/80	80/80	72/72	65/65
Grid terminal input parameters				
Rated input voltage [V _{AC}]	3P+N+PE, 230/400			
Rated input frequency [Hz]	50			
Maximum continuous input current [A _{AC}]	160	144	128	96
Maximum continuous input active power [W]	100000	99800	80000	60000
Maximum continuous input apparent power [VA]	110000	99800	88000	66000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)			
Grid terminal output parameters				
Rated output voltage [V _{AC}]	3P+N+PE, 230/400			
Rated output frequency [Hz]	50			
Rated output current [A _{AC}]	72	72	58	43
Maximum continuous output current [A _{AC}]	80	72	64	48
Rated output active power [W]	50000	49900	40000	30000
Maximum output active power [W]	50000	49900	40000	30000
Maximum continuous output apparent power [VA]	55000	49900	44000	33000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)			

Certificate

No. ESY 075386 0321 Rev. 00

Model	KAC29.9D2	KAC25D2	KAC20D2
Battery input/output parameters			
Battery type	Lithium-ion		
Maximum voltage [V _{DC}]	900		
Battery rated voltage [V _{DC}]	720		
Battery voltage range [V _{DC}]	150-900		
Battery voltage range [V _{DC}] (Full Load)	200-900		
Maximum charge power [W]	29900	25000	20000
Maximum discharge power [W]	29900	25000	20000
Maximum charge/ discharge current [A _{DC}]	65/65	60/60	55/55
Grid terminal input parameters			
Rated input voltage [V _{AC}]	3P+N+PE, 230/400		
Rated input frequency [Hz]	50		
Maximum continuous input current [A _{AC}]	87	80	64
Maximum continuous input active power [W]	59800	50000	40000
Maximum continuous input apparent power [VA]	59800	55000	44000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)		
Grid terminal output parameters			
Rated output voltage [V _{AC}]	3P+N+PE, 230/400		
Rated output frequency [Hz]	50		
Rated output current [A _{AC}]	43	36	29
Maximum continuous output current [A _{AC}]	43	40	32
Rated output active power [W]	29900	25000	20000
Maximum output active power [W]	29900	25000	20000
Maximum continuous output apparent power [VA]	29900	27500	22000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)		

Certificate

No. ESY 075386 0321 Rev. 00

Model	KAC50D2-S0	KAC49.9D2-S0	KAC40D2-S0	KAC30D2-S0
Battery input/output parameters				
Battery type	Lithium-ion			
Maximum voltage [V _{DC}]	900			
Battery rated voltage [V _{DC}]	720			
Battery voltage range [V _{DC}]	150–900			
Battery voltage range [V _{DC}] (Full Load)	330-900	330-900	280-900	250-900
Maximum charge power [W]	50000	49900	40000	30000
Maximum discharge power [W]	50000	49900	40000	30000
Maximum charge/ discharge current [A _{DC}]	80/80	80/80	72/72	65/65
Grid terminal input/output parameters				
Rated input/output voltage [V _{AC}]	3P+N+PE, 230/400			
Rated input/output frequency [Hz]	50			
Rated output current [A _{AC}]	72	72	58	43
Maximum continuous input/output current [A _{AC}]	80	72	64	48
Rated output active power [W]	50000	49900	40000	30000
Maximum continuous input/output active power [W]	50000	49900	40000	30000
Maximum continuous input/output apparent power [VA]	55000	49900	44000	33000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)			

Model	KAC29.9D2-S0	KAC25D2-S0	KAC20D2-S0
Battery input/output parameters			
Battery type	Lithium-ion		
Maximum voltage [V _{DC}]	900		
Battery rated voltage [V _{DC}]	720		
Battery voltage range [V _{DC}]	150-900		
Battery voltage range [V _{DC}] (Full Load)	250-900	210-900	200-900
Maximum charge power [W]	29900	25000	20000
Maximum discharge power [W]	29900	25000	20000
Maximum charge/ discharge current [A _{DC}]	65/65	60/60	55/55
Grid terminal input/output parameters			
Rated input/output voltage [V _{AC}]	3P+N+PE, 230/400		
Rated input/output frequency [Hz]	50		
Rated output current [A _{AC}]	43	36	29
Maximum continuous input/output current [A _{AC}]	43	40	32
Rated output active power [W]	29900	25000	20000
Maximum continuous input/output active power [W]	29900	25000	20000
Maximum continuous input/output apparent power [VA]	29900	27500	22000
Power factor	0.8 inductive(under-excited) to 0.8 capacitive(over-excited)		

Certificate

No. ESY 075386 0321 Rev. 00

Network analyzer Parameters(Meter):

Model	YDS60-80
Electrical parameter	
Voltage connect type [V_{AC}]	230/400, 3W+N
Rated Frequency [Hz]	50
Current specification [A_{AC}]	500/1
Energy consumption [W]	≤ 1.5
Type	Through transformer
Precision parameter	
Maximum error limit percentage of various instruments	± 1.0
Precision class	Active Power class 1
Communications	
Communication type	RS485 ModBus RTU Protocol
Refresh time [s]	≤ 1

EMS-LCD Parameters:

Model	EMP-01
Communication interface compatibility	RS485
Speed of the communication interface	19200 bps

Current transformer Parameters:

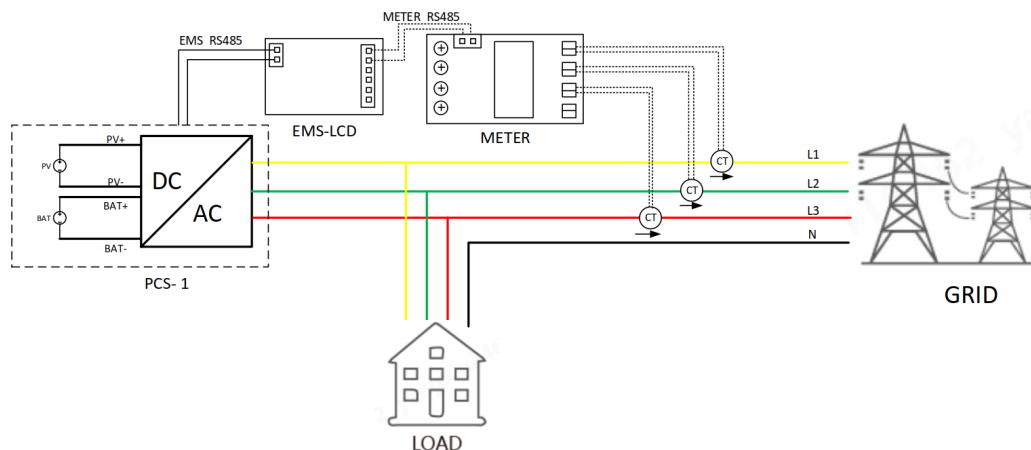
Model	YDBH0.66-40I-B
Rated primary current [A_{AC}]	500
Rated transformation ratio	500:1
Rated load [Ω]	10
Rated Frequency [Hz]	50
Accuracy	$\pm 0.5\%$, class 1.0
Phase angel	± 0.5 degrees (30 minutes) from 1% to 120% of rated current

Certificate

No. ESY 075386 0321 Rev. 00

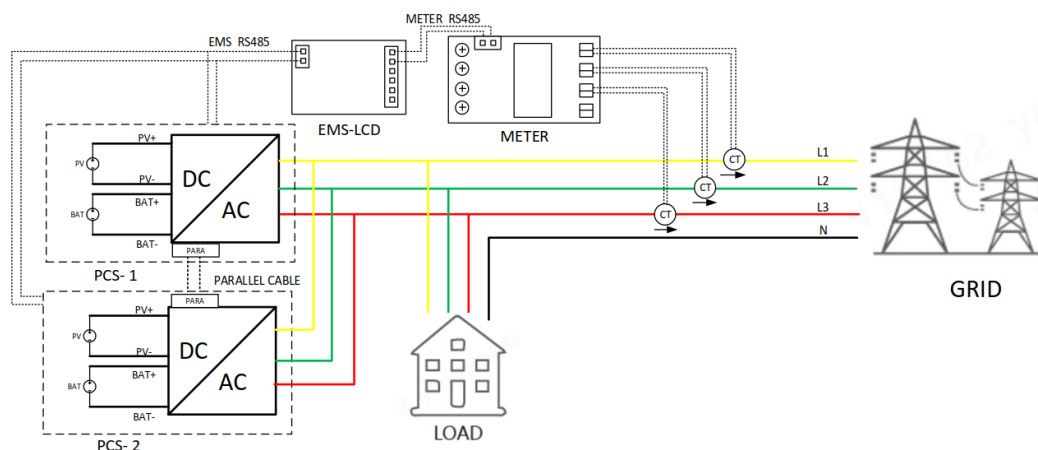
Electrical schematic diagram:

1. The following figure shows the operating diagram of single generator. YDS60-80 (Meter) communicates with EMS-LCD which is used as an output power management system through RS485, receives the grid connection point current collected by the CT current sensor. EMS-LCD remotely controls inverter output active power through RS485 to prevent energy from being injected into the grid.



Remark: As the energy storage inverter series models do not feature PV inputs, for these models, all connections remain identical to the diagram above except for the absence of PV input connections.

2. The following figure shows the operating diagram of two generators working in parallel. The way to control power output of parallel operation is the same as single generator operation, except that the two generators are connected to each other via PARA ports.



Remark: As the energy storage inverter series models do not feature PV inputs, for these models, all connections remain identical to the diagram above except for the absence of PV input connections.

3. According to the test results of test clause "Determining the maximum number of generators", the maximum number of generators that can be included in the system is 20.

Certificate

No. ESY 075386 0321 Rev. 00

Note:

Note 1: Variant models of network analyzer (without control) and current and voltage transformer can be included in the certified solution, provided that they comply with:

- Same connection scheme (three-phase)
- Same measurement tolerance
- Same or shorter refresh time
- Same type of communication
- If additional current or voltage transformers are required, the accuracy of the components shall be the same or higher.

Note 2: All the tests conducted to obtain this certificate have been passed by acting on the generation system to regulate the power generated. No cut-off or current limiting element is required to be installed redundantly to the tested solution.