Technical Report

Product Service

Technical Report No.: 64.290.23.30350.01

Date: 2023-03-14

Client:	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
Factory:	Shenzhen KSTAR Science & Technology Co., Ltd. Guangming Branch Kstar High Tech Park, Guangming High Technology Town, Gongming Street, Baoan District, Shenzhen City, Guangdong Province, PEOPLE'S REPUBLIC OF CHINA
Test object:	Product: Hybrid Inverter Model: E8KT, E10KT, E12KT
Test specification:	EN 50549-1:2019/AC:2019 RfG:2016 NC RfG:2018 PTPiREE:2021
Purpose of examination:	• Testing and evaluation visual according to the test specification
Test result:	The test results show that the presented product is in compliance with the above listed test specifications.

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TÜV SÜD Certification and Testing (China) Co., Ltd.
Guangzhou Branch, TÜV SÜD Group

5F, Communication Building, 163 Pingyun Rd,
Huangpu Ave. West,Guangzhou, 510656, P.R.China

Product Service

1. Description of the test object

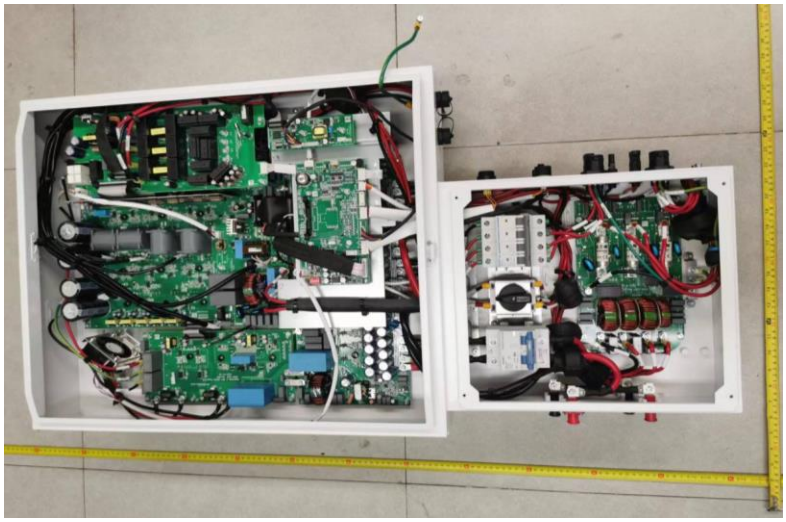
1.1 Picture(s)

Over view

Bottom view

Terminal view (left side)

Terminal view (right side)



Internal view

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1.2 Function

(1) The Energy Storage Inverter is non-isolated (transformerless) inverter which works with battery to store energy or converts PV/battery energy to the grid and load, it is intends to be connected into household generation systems and solar power, utility power and battery power to ensure continuous power supply.

(2) If certain functions are not permitted by local regulation, the function shall be disabled by hardware or software setting (if applicable) by the manufacturer before putting into the market. For example, it's not permissible to draw electricity from the grid and then feed it back in order to claim statutory reimbursement in some nations.

(3) Low voltage electrical installations shall comply with national and local regulation. Only qualified electricians are allowed to install and maintain the converter.

(4) In order to protect the inverter, user and installer, external DC and AC circuit breaker shall be equipped for all source port (battery, AC grid) at the end-use application.

(5) Software version: ARM: V1.0.0, DSP: V1.0.0.

Firmware version: V1.0.0.

(6) COM communication port is used as the logic interface of the unit to control active power. The remoted control function is realized by connecting pin 3 and pin 4 of the COM terminal.

Pin	Definition	Function
1	VCC	Power
2	GND	GND
3	RS485-A	RS485 signal A
4	RS485-B	RS485 signal B

Model difference:

All the models have same electric circuits topology design, same enclosure structure design, same main control circuits and firmware. The output power and current are limited by software.

1.3 Consideration of the foreseeable use

☐ Not applicable
☒ Covered through the applied standard
☐ Covered by the following comment
☐ Covered by attached risk analysis

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1.4 Technical Data

Model:	E8KT	E10KT	E12KT
PV input parameter			
Maximum input voltage	1100 Vd.c.		
MPPT voltage range	140~1000 Vd.c.		
MPPT voltage range (full load)	380~850 Vd.c.	420~850 Vd.c.	480~850 Vd.c.
Maximum input current	2*15 Ad.c.		
PV I_{SC}	2*20 Ad.c.		
Battery input/output parameter			
Battery type	Lithium or lead-acid		
Input voltage range	44~58 Vd.c.		
Maximum input/output voltage	58 Vd.c.		
Maximum charging current	160 Ad.c.		
Maximum charging power	8000 W		
Maximum discharging current	160 Ad.c.	200 Ad.c.	
Maximum discharging power	8000 W	10000 W	
Grid parameter			
Rated input/output voltage	3/N/PE, 230/400 Va.c.		
Rated input/output frequency	50 Hz		
Maximum input current	25 Aa.c.		
Maximum input active power	16000 W	17800 W	
Maximum input apparent power	16000 VA	17800 VA	
Maximum input active power from grid to battery	8600 W		
Rated output current	11.6 Aa.c.	14.5 Aa.c.	17.4 Aa.c.
Maximum continuous output current	12.8 Aa.c.	16.0 Aa.c.	19.2 Aa.c.
Rated output active power	8000 W	10000 W	12000 W
Maximum output active power	8000 W	10000 W	12000 W
Maximum output apparent power	8800 VA	11000 VA	13200 VA
Maximum output active power from battery to grid (without PV input)	7500 W	9300 W	
Power factor	0.9 inductive(under-excited) to 0.9 capacitive(over-excited)		

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1.5 Rating Label

KSTAR
Hybrid Inverter

Overvoltage category:	II (PV); III(MAINS)
Model:	E8KT
PV terminal	
Max. PV input voltage:	1100Vd.c.
Max. PV input current:	15Ad.c./15Ad.c.
Max. PV input power:	16000W
Full load voltage range:	380Vd.c.~850Vd.c.
MPPT voltage range:	140Vd.c.~1000Vd.c.
Isc PV:	20Ad.c./20Ad.c.
Battery terminal	
Battery type:	Lithium or lead-acid batteries
Battery rated voltage:	51.2Vd.c.
Battery voltage range:	44Vd.c.~58Vd.c.
Max. charge/discharge current:	160Ad.c./160Ad.c.
Max. charge/discharge power:	8000W/8000W
On-grid terminal	
Max. AC input power:	16000W
Rated AC input:	230/400Va.c.,50/60Hz,3P+N+PE
Max.continuous input current:	25Aa.c.
Rated AC output power:	8000W
Max. AC output apparent power:	8800VA
Rated AC output:	230/400Va.c,50/60Hz,11.6A,3P+N+PE
Max.continuous output current:	12.8Aa.c.
Power factor range:	0.8 leading to 0.8 lagging
Back-up terminal	
Rated AC output power:	7360W
Max. AC apparent power:	8000VA
Rated AC output:	230/400Vac.,50/60Hz,10.7A,3P+N+PE
Max.continuous output current:	11.6Aa.c.
General parameters	
Protective class:	I
Ambient temperature range:	-25℃~+60℃
IP degree:	IP65
Isolated method(solar):	Transformerless
Isolated method(battery):	HF

SN:

Shenzhen Kstar New Energy Company Limited

KSTAR
Hybrid Inverter

Overvoltage category:	II (PV); III(MAINS)
Model:	E10KT
PV terminal	
Max. PV input voltage:	1100Vd.c.
Max. PV input current:	15Ad.c./15Ad.c.
Max. PV input power:	20000W
Full load voltage range:	420Vd.c.~850Vd.c.
MPPT voltage range:	140Vd.c.~1000Vd.c.
Isc PV:	20Ad.c./20Ad.c.
Battery terminal	
Battery type:	Lithium or lead-acid batteries
Battery rated voltage:	51.2Vd.c.
Battery voltage range:	44Vd.c.~58Vd.c.
Max. charge/discharge current:	160Ad.c./200Ad.c.
Max. charge/discharge power:	8000W/10000W
On-grid terminal	
Max. AC input power:	17800W
Rated AC input:	230/400Va.c.,50/60Hz,3P+N+PE
Max.continuous input current:	25Aa.c.
Rated AC output power:	10000W
Max. AC output apparent power:	11000VA
Rated AC output:	230/400Va.c,50/60Hz,14.5A,3P+N+PE
Max.continuous output current:	16Aa.c.
Power factor range:	0.8 leading to 0.8 lagging
Back-up terminal	
Rated AC output power:	9200W
Max. AC apparent power:	10000VA
Rated AC output:	230/400Vac.,50/60Hz,13.3A,3P+N+PE
Max.continuous output current:	14.5Aa.c.
General parameters	
Protective class:	I
Ambient temperature range:	-25℃~+60℃
IP degree:	IP65
Isolated method(solar):	Transformerless
Isolated method(battery):	HF

SN:

Shenzhen Kstar New Energy Company Limited

KSTAR
Hybrid Inverter

Overvoltage category:	II (PV); III(MAINS)
Model:	E12KT
PV terminal	
Max. PV input voltage:	1100Vd.c.
Max. PV input current:	15Ad.c./15Ad.c.
Max. PV input power:	20000W
Full load voltage range:	480Vd.c.~850Vd.c.
MPPT voltage range:	140Vd.c.~1000Vd.c.
Isc PV:	20Ad.c./20Ad.c.
Battery terminal	
Battery type:	Lithium or lead-acid batteries
Battery rated voltage:	51.2Vd.c.
Battery voltage range:	44Vd.c.~58Vd.c.
Max. charge/discharge current:	160Ad.c./200Ad.c.
Max. charge/discharge power:	8000W/10000W
On-grid terminal	
Max. AC input power:	17800W
Rated AC input:	230/400Va.c.,50/60Hz,3P+N+PE
Max.continuous input current:	25Aa.c.
Rated AC output power:	12000W
Max. AC output apparent power:	13200VA
Rated AC output:	230/400Vac.,50/60Hz,17.4A,3P+N+PE
Max.continuous output current:	19.2Aa.c.
Power factor range:	0.8 leading to 0.8 lagging
Back-up terminal	
Rated AC output power:	9200W
Max. AC apparent power:	10000VA
Rated AC output:	230/400Vac.,50/60Hz,13.3A,3P+N+PE
Max.continuous output current:	14.5Aa.c.
General parameters	
Protective class:	I
Ambient temperature range:	-25℃~+60℃
IP degree:	IP65
Isolated method(solar):	Transformerless
Isolated method(battery):	HF

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2. Order

2.1 Date of Purchase Order, Customer's Reference

2023-02-24

2.2 Test Sample(s)

- Reception date(s): 2023-02-24
- Location(s) of reception: TÜV SÜD Testing Center, D1 building, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, P.R. China
- Condition of test sample(s): Intact

2.3 Date(s) of Testing

2023-02-24 to 2023-03-12

2.4 Location(s) of Testing

TÜV SÜD Testing Center, D1 building, No. 63 Chuangqi Road, Shilou Town, Panyu District, Guangzhou 511447, P.R. China

2.5 Points of Non-Compliance or Exceptions of the Test Procedure

- None

3. Test Results

- Decision rule according to IEC Guide 115:2021, clause 4.4.3, 4.5.1 was applied.

3.1 Positive Test Results

Test specification(s)	Report no. / Rev. No.	Date	Remark
Grid Code compliance	64.290.23.30350.01	2023-03-14	-

4. Remarks

4.1 General

The user manual has been examined according to the minimum requirements described in the product standard. The manufacturer is responsible for the accuracy of further particulars as well as of the composition and layout.

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Product Service

5. Documentation

- None

6. Summary

The test specifications are met.

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
TÜV SÜD Group

Tested by: Jenn Huang

printed name, function & signature

Approved by: Kennen Wang

printed name, function & signature

--- End of Report ---

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