

Technical Report No.: 64.290.16.00044.02D

Date: 2020-05-26

Client:



Manufacturing place:



Test subject:



Test specification:

IEC 62109-1(ed.1);
IEC 62109-2(ed.1);
IEC 61727(ed.2);
IEC 62116(ed.2);

Purpose of examination:

- Test according to the test specification

Test result:

The test results show that the presented product is in compliance with the specified requirements

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1 Description of the test subject

1.1 Function

- (1) The unit is non-isolated (transformerless) PV grid-interactive DC-AC inverter for connection with public low voltage grid, for outdoor or indoor use.
- (2) The unit shall be used at specified ambient range. Temperature: -25 °C ~ +60 °C, Auto-derating after 45 °C; Altitude: < 2000 m; Overvoltage category: II(DC side), III(AC side); Relative humidity range: 4 % ~ 100 %.
- (3) The PV grid-interactive inverter provides six disconnection relays, two for each line conductor. The internal control is redundant built. It consists of one main DSP (U27) and another slave DSP (U20). Both DSP can open relays independently and communicate with each other.
- (4) For this standard test, the inverter is designed to be operated with a fixed Cos phi=1 settings inside. The power factor can be adjustable via RS 485 communication port and it's adjustable range is not evaluated in this report.
- (5) The grid connection protection system is evaluated according to IEC 61727:2004. Clause 5.3 of IEC 61727:2004 islanding protection test is performed according to IEC 62116:2014.
- (6) In order to protect the PCE, user and installer, external DC and AC circuit breakers shall be equipped at the end-use application.
- (7) Low voltage electrical installations shall comply with national and local regulation.
- (8) The setting of rated frequency and protection are described in the user manual.

1.2 Consideration of the foreseeable use

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

1.3 Technical Data

Model	NAC50K	NAC60K	NAC60K-HV
Vmax PV	1000 Vd.c.	1000 Vd.c.	1000 Vd.c.
Isc PV	38 Ad.c. x 3	42 Ad.c. x 3	42 Ad.c. x 3
MPPT range (full load)	480 ~ 800 Vd.c.	500 ~ 800 Vd.c.	550 ~ 800 Vd.c.
MPPT tracker / strings	3 / 4	3 / 4	3 / 4
Nominal AC voltage	3/N/PE, 230/400 V.a.c.	3/N/PE, 230/400 V.a.c.	3~PE, 480 V.a.c.
Nominal Frequency	50 Hz	50 Hz	50 Hz
Max. Continuous output current	72 Aa.c.	87 Aa.c.	72 Aa.c.
Nominal output power	50 kW	60 kW	60 kW
Max. Continuous output power	55 kVA	66 kVA	66 kVA
Power factor (full load)	>0,99	>0,99	>0,99
Protective class	I	I	I
Ingress protection	IP65	IP65	IP65
Temperature	-25 °C ~ +60 °C	-25 °C ~ +60 °C	-25 °C ~ +60 °C

2 Order

2.1 Date of Purchase Order, Customer's Reference

2015-11-27, 2017-12-04, 2020-04-24

2.2 Receipt of Test Sample, Condition, Location

2015-11-27, 2017-12-04, 2020-04-24

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West, Guangzhou 510656, P. R. China

2.3 Date of Testing

2016-01-10 to 2016-5-13, 2017-12-08 to 2017-12-15, 2020-05-21 to 2020-05-26

2.4 Location of Testing

TÜV SÜD Certification and Testing (China) Co., Ltd. Guangzhou Branch
5F, Communication Building, 163 Pingyun Rd, Huangpu Ave. West, Guangzhou 510656, P. R. China

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

N/A

3 Test Results

☒ Decision rule according to IEC Guide 115:2007, clause 4.4.3, 4.5.1 (accuracy method) was applied.

3.1 Positive Test Results

Grid code compliance (IEC 61727:2004; IEC 62116:2014)

4 Remark

4.1 Routine Safety Test

Your production facility is currently on a

- ☒ Annual (12 month) inspection cycle,
☐ Bi-Annual (6 month) inspection cycle,
☐ Quarterly (3 month) inspection cycle.

Final inspection requirements for production please refer to CDF for detailed information about routine test.

4.2 The co-license certificate application is based on the following main license certificate:

Certificate No.: Z2 17 12 75386 072
Report No.: 64.290.16.00044.02
License holder: Shenzhen Kstar New Energy Company Limited



Model No.: KSG-50K, KSG-60K, KSG-60K-HV
(for model NAC50K, NAC60K, NAC60K-HV in co-license)

- 4.3** 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.
- 4.4** When the product is placed on the market, it must be accompanied with safety Instructions written in official language of the country. The instructions shall give information regarding safe operation, installation and maintenance
- 4.5** When measurement results are close to limit value of specified requirement, manufacturer shall take actions during the production process to keep the limit, especially if the result of a measurement is in a bandwidth within $\pm 10\%$ to the limit value.
- 4.6** According to the EU directives which have been aligned with EU NLF (new legislative framework), both of manufacturer and importer's name and address shall be affixed on the product or, where that is not possible, on its packaging or in a document accompanying the product before the product is placed on the EU market.
- 4.7** The manufacturer/ Importer has to ensure the appliance placing on the EU market conforms to the applicable EU directives which provide the affixing of the CE marking, such as LVD, EMC, RoHS, ErP, and so on.
- 4.8** For safety IEC/EN 62109-1 and EIC/EN 62109-2 test, refer to TUV test report No.: 64.290.16.00045.03C, part 1 and part 2.

5 Documentation

- CDF
- Photo documentation

Notes: For CDF and photo document, please refer to safety report for IEC 62109-1(ed.1) and IEC 62109-2(ed.1), report No.: 64.290.16.00045.03C.

6 Summary

The test specifications are met.

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

Tested by:

Iris Zheng

printed name, function & signature

Approved by:

Max Fang

printed name, function & signature



--- End of Report ---