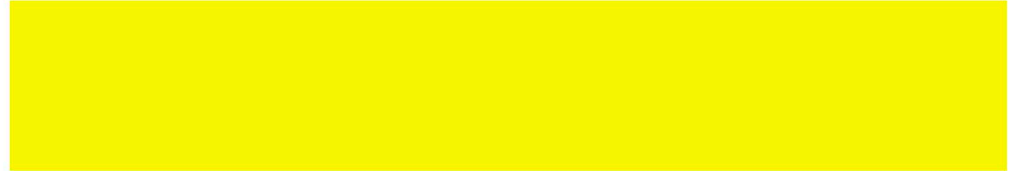


Technical Report No.: 64.290.18.01994.02A

Date: 2020-06-12

Client:



Manufacturing place:



Test subject:

Product: PV grid-interactive inverter
Type: NAC60K-LV, NAC70K, NAC80K
Trade mark (if any):

Test specification:

IEC 62109-1:2010;
EN 62109-1:2010;
IEC 62109-2:2011;
EN 62109-2:2011;

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

Any use for advertising purposes must be granted in writing. This technical report may only be quoted in full. This report is the result of a single examination of the object in question and is not generally applicable evaluation of the quality of other products in regular production. For further details please see testing and certification regulation, chapter A-3.4.

1 Description of the test subject

1.1 Function

- (1) The PV grid-connected inverters are intended to be connected in parallel to the public grid;
- (2) Field installation requirements for the PV grid-connected inverters are as follows or refer to local industrial authorization:
 - a) The PV grid-connected inverter does not contain mains isolation transformer inside. An external isolated transformer is required to provide a simple separation between PV array and the grid during installation;
 - b) Depending on the isolation transformer as per IEC 62109-2, if the leakage current is more than 30 mA, an external RCD of type B with setting of 30mA may be required for the final PV plant system between inverter and AC mains to detect array residual current and to prevent from fire and shock hazard;
 - c) Grid code is not considered in this report. The system should be installed according to local national regulation.
- (3) The PV grid-connected inverters are assessed on a component test basis;
- (4) The requirements for the equipment used at altitude above 2000m are not considered in this report except that clearances for use at altitudes up to 4000m are considered;
- (5) The inverters are for outdoor use, Max.60°C, 95%RH. The inverters are operated with full rated output power at maximum ambient temperature 45°C. The output power derating at ambient temperature above 45°C;
- (6) The inverters are designed for fixed mounted on the wall or appropriate bracket;
- (7) Low voltage electrical installations shall comply with national and local regulation.

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	NAC60K-LV	NAC70K	NAC80K
V _{max} PV	1100 Vd.c.	1100 Vd.c.	1100 Vd.c.
I _{sc} PV	45 Ad.c.x 4	45 Ad.c.x 4	60 Ad.c. x 2 45 Ad.c. x 2
PV input operating voltage range	200 ~ 1000 Vd.c.	200 ~ 1000 Vd.c.	200 ~ 1000 Vd.c.
Maximum operating PV input current	33 Ad.c. x 4	33 Ad.c. x 4	44 Ad.c. x 2 33 Ad.c. x 2
Nominal output voltage	3P /N/ PE, 400Va.c.	3P /N/ PE, 400Va.c.	3P /N/ PE, 400Va.c.
Nominal output frequency	50Hz	50Hz	50Hz
Maximum continuous output current	95.3 Aa.c.	111.1 Aa.c.	127.0 Aa.c.
Maximum continuous output power	66 KW	77 KW	88 KW
Power factor (Cos φ)	0.8 leading ~ 0.8 lagging	0.8 leading ~ 0.8 lagging	0.8 leading ~ 0.8 lagging
Protect class	I	I	I
Overvoltage category (OVC)	II (PV), III (Grid)	II (PV), III (Grid)	II (PV), III (Grid)
Pollution degree	PD 3	PD 3	PD 3
Ingress protection	IP 65	IP 65	IP 65
Ambient temperature range	-40°C to 60°C (derating above 45°C)	-40°C to 60°C (derating above 45°C)	-40°C to 60°C (derating above 45°C)



2 Order

2.1 Date of Purchase Order, Customer's Reference

2018-04-17, 2020-04-24

2.2 Receipt of Test Sample, Condition, Location

2018-04-17, 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

2018-04-17 to 2018-04-25, 2020-05-17 to 2020-06-02

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

Electrical safety and Mechanical (IEC/EN 62109-1:2010, IEC/EN 62109-2:2011);

Mechanical safety (IEC 62109-(ed. 1)/EN 62109-1:2010, IEC 62109-2(ed. 1)/EN 62109-2:2011)

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 075386 0083 rev.01 and N8A 075386 0084 rev.01

Report No.: 64.290.18.01994.02



License holder:

Model No.:

KSG-60K-TL, KSG-70K-TL, KSG-80K-TL

(for model NAC60K-LV, NAC70K, NAC80K 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.
- 5 Documentation**
- CDF
 - Photo documentation
- 6 Summary**
- The test specifications are met.

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

Tested by:

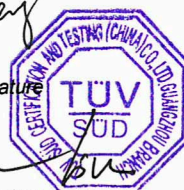
Iris Zheng

printed name, function & signature

Approved by:

Janson Liu

printed name, function & signature



--- End of Report ---