

## Technical Report No.: 64.290.22.31598.01

Date: 2023-02-27

Client: Name: INVT Solar Technology (ShenZhen) Co., Ltd.

Address: 6th Floor, Block A, INVT Guangming Technology Building, Kejie Fourth Road, Shutianpu Community, Matian Guangming District, 518000 Shenzhen, PEOPLE'S REPUBLIC OF CHINA

Factory: Name: Shenzhen INVT Electric Co., Ltd. (Baoan Factory)

Address: 4th to 1st floors of Emerson Industrial Park, No. 3, Fengtang Avenue, Tangwei Community, Fuhai Street, Baoan District, 518000 Shenzhen, PEOPLE'S REPUBLIC OF CHINA

Test object: Product: Grid-tied Solar Inverter

Model: iMars XG3KTL-1M, iMars XG3KTL-2M, iMars XG3.68KTL, iMars XG4KTL, iMars XG4.2KTL, iMars XG4.6KTL, iMars XG5KTL, iMars XG6KTL, iMars XG7KTL, iMars XG7KTL1, iMars XG8KTL, iMars XG8KTL1, iMars XG10KTL, iMars XG10KTL-AU, iMars XG10KTL1, iMars XG10KTL1-AU

Test specification: IEC 62109 1:2010, IEC 62109-2:2011, EN 62109 1:2010, EN 62109-2:2011

Purpose of examination:

- Testing for compliance with specified requirements to assess conformity with the essential safety and health requirements of the following European Directives:  
LVD 2014/35/EU
- Testing and evaluation according to the test specification

Test result: The test results show that the presented product is in compliance with the above listed test specifications.

*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. It does not imply a general statement regarding the quality of products from regular production. For further details please see testing and certification regulation, chapter A-3.4.*

## 1. Description of the test object

### 1.1. Picture(s)

Refer to Photo Documentation

### 1.2. Function

- 1) The unit is non-isolated (transformerless) PV grid-interactive DC-AC inverter for connection with public low voltage grid, for outdoor use.
- 2) The unit shall be used at specified ambient range:
  - Temperature: -30 °C ~ +60 °C, auto-derating above 45 °C;
  - Altitude: ≤ 4000 m;
  - Overvoltage category: II(DC side), III(AC side);
  - Relative humidity range: 0% ~ 100 %.
- 3) The unit provides two relays in series on line wires between inverter output and grid terminal on primary circuit. The neutral of grid terminal does not connect to inverter output on primary circuit and is for voltage sampling on secondary circuit.
- 4) The inverter can only use the ungrounded PV arrays as the DC input.
- 5) LED panel or LCD panel can be optionally chosen by client.
- 6) Software version:V1.0

### 1.3. Consideration of the foreseeable use

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

### 1.4. Technical Data



| Model                                   | iMars<br>XG3KTL-1M        | iMars<br>XG3KTL-2M | iMars<br>XG3.68KTL | iMars<br>XG4KTL | iMars<br>XG4.2KTL |
|-----------------------------------------|---------------------------|--------------------|--------------------|-----------------|-------------------|
| PV input rating                         |                           |                    |                    |                 |                   |
| Rated input voltage                     | 360 Vd.c.                 |                    |                    |                 |                   |
| Max. input voltage                      | 600 Vd.c.                 |                    |                    |                 |                   |
| MPPT voltage range                      | 80~580 Vd.c.              |                    |                    |                 |                   |
| MPPT voltage range (full load)          | 190~480 Vd.c.             | 120~480 Vd.c.      | 135~480 Vd.c.      | 145~480 Vd.c.   | 150~480 Vd.c.     |
| Number of MPP trackers                  | 1                         | 2                  |                    |                 |                   |
| Strings per MPP Tracker                 | 1                         | 1/1                |                    |                 |                   |
| Maximum continue input current per MPPT | 20 Ad.c.                  | 20/20 Ad.c.        |                    |                 |                   |
| Isc PV                                  | 26 Ad.c.                  | 26/26 Ad.c.        |                    |                 |                   |
| Gird output rating                      |                           |                    |                    |                 |                   |
| Rated output voltage                    | 1/N/PE, 230 Va.c.         |                    |                    |                 |                   |
| Rated output frequency                  | 50 Hz                     |                    |                    |                 |                   |
| Rate output active power                | 3000 W                    |                    | 3680 W             | 4000 W          | 4200 W            |
| Rate output current                     | 13 Aa.c.                  |                    | 16 Aa.c.           | 17.4 Aa.c.      | 18.3 Aa.c.        |
| Maximum output apparent power           | 3300 VA                   |                    | 3680 VA            | 4400 VA         | 4620 VA           |
| Maximum continuous output current       | 15 Aa.c.                  |                    | 16 Aa.c.           | 20 Aa.c.        | 21 Aa.c.          |
| Power factor                            | 0.8 leading ~ 0.8 lagging |                    |                    |                 |                   |
| General parameter                       |                           |                    |                    |                 |                   |
| Ingress protection rating               | IP66                      |                    |                    |                 |                   |
| Ambient temperature range               | -30°C ~+60°C              |                    |                    |                 |                   |
| Protect class                           | I                         |                    |                    |                 |                   |
| Operating Altitude                      | ≤4000 m                   |                    |                    |                 |                   |

| Model               | iMars<br>XG4.6KTL | iMars<br>XG5KTL | iMars<br>XG6KTL | iMars<br>XG7KTL | iMars<br>XG7KTL1 |
|---------------------|-------------------|-----------------|-----------------|-----------------|------------------|
| PV input rating     |                   |                 |                 |                 |                  |
| Rated input voltage | 360 Vd.c.         |                 |                 |                 |                  |

|                                                  |                           |                  |                  |               |                    |
|--------------------------------------------------|---------------------------|------------------|------------------|---------------|--------------------|
| Max. input volt-<br>age                          | 600 Vd.c.                 |                  |                  |               |                    |
| MPPT voltage<br>range                            | 80~580 Vd.c.              |                  |                  |               |                    |
| MPPT voltage<br>range (full load)                | 160~480<br>Vd.c.          | 170~480<br>Vd.c. | 190~480<br>Vd.c. | 230~480 Vd.c. |                    |
| Number of<br>MPP trackers                        | 2                         |                  |                  |               |                    |
| Strings per<br>MPP Tracker                       | 1/1                       |                  |                  |               | 1/2                |
| Maximum<br>continue input<br>current per<br>MPPT | 20/20 Ad.c.               |                  |                  |               | 28/14 Ad.c.        |
| Isc PV                                           | 26/26 Ad.c.               |                  |                  |               | 36.4/18.2<br>Ad.c. |
| Gird output rating                               |                           |                  |                  |               |                    |
| Rated output<br>voltage                          | 1/N/PE, 230 Va.c.         |                  |                  |               |                    |
| Rated output<br>frequency                        | 50 Hz                     |                  |                  |               |                    |
| Rate output<br>active power                      | 4600 W                    | 5000 W           | 6000 W           | 7000 W        |                    |
| Rate output<br>current                           | 20 Aa.c.                  | 21.7 Aa.c.       | 26.1 Aa.c.       | 30.4 Aa.c.    |                    |
| Maximum<br>output apparent<br>power              | 5000 VA                   | 5500 VA          | 6600 VA          | 7700 VA       | 7700 VA            |
| Maximum<br>continuous<br>output current          | 23 Aa.c.                  | 25 Aa.c          | 30 Aa.c.         | 35 Aa.c.      | 35 Aa.c.           |
| Power factor                                     | 0.8 leading ~ 0.8 lagging |                  |                  |               |                    |
| General parameter                                |                           |                  |                  |               |                    |
| Ingress protec-<br>tion rating                   | IP66                      |                  |                  |               |                    |
| Ambient<br>temperature<br>range                  | -30°C ~+60°C              |                  |                  |               |                    |
| Protect class                                    | I                         |                  |                  |               |                    |
| Operating Alti-<br>tude                          | ≤4000 m                   |                  |                  |               |                    |

| Model               | iMars XG8KTL | iMars XG8KTL1 | iMars XG10KTL | iMars XG10KTL-AU | iMars XG10KTL1 | iMars XG10KTL1-AU |
|---------------------|--------------|---------------|---------------|------------------|----------------|-------------------|
| PV input rating     |              |               |               |                  |                |                   |
| Rated input voltage | 360 Vd.c.    |               |               |                  |                |                   |
| Max. input voltage  | 600 Vd.c.    |               |               |                  |                |                   |
| MPPT voltage range  | 80~580 Vd.c. |               |               |                  |                |                   |



|                                         |                           |                 |               |         |                 |         |
|-----------------------------------------|---------------------------|-----------------|---------------|---------|-----------------|---------|
| MPPT voltage range (full load)          | 250~480 Vd.c.             |                 | 290~480 Vd.c. |         |                 |         |
| Number of MPP trackers                  | 2                         |                 |               |         |                 |         |
| Strings per MPP Tracker                 | 1/1                       | 1/2             | 1/1           |         | 1/2             |         |
| Maximum continue input current per MPPT | 20/20 Ad.c.               | 28/14 Ad.c.     | 20/20 Ad.c.   |         | 28/14 Ad.c.     |         |
| Isc PV                                  | 26/26 Ad.c.               | 36.4/18.2 Ad.c. | 26/26 Ad.c.   |         | 36.4/18.2 Ad.c. |         |
| Grid output rating                      |                           |                 |               |         |                 |         |
| Rated output voltage                    | 1/N/PE, 230 Va.c.         |                 |               |         |                 |         |
| Rated output frequency                  | 50 Hz                     |                 |               |         |                 |         |
| Rate output active power                | 8000 W                    |                 | 10000 W       | 9999 W  | 10000 W         | 9999 W  |
| Rate output current                     | 34.8 Aa.c.                |                 | 43.5 Aa.c.    |         |                 |         |
| Maximum output apparent power           | 8800 VA                   |                 | 10000 VA      | 9999 VA | 10000 VA        | 9999 VA |
| Maximum continuous output current       | 40 Aa.c.                  |                 | 43.5 Aa.c.    |         |                 |         |
| Power factor                            | 0.8 leading ~ 0.8 lagging |                 |               |         |                 |         |
| General parameter                       |                           |                 |               |         |                 |         |
| Ingress protection rating               | IP66                      |                 |               |         |                 |         |
| Ambient temperature range               | -30℃ ~+60℃                |                 |               |         |                 |         |
| Protect class                           | I                         |                 |               |         |                 |         |
| Operating Altitude                      | ≤4000 m                   |                 |               |         |                 |         |

## 2. Order

### 2.1. Date of Purchase Order, Customer's Reference

2022-11-16

### 2.2. Test Sample(s)

- Reception date(s): 2022-11-28
- 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

2022-12-05 to 2023-02-20

### 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  | 64.290.22.31598.01    | 2023-02-27 | -      |

## 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.

## 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:

Oscar Wu

*printed name, function & signature*

*Oscar Wu*

Approved by:

Symbol Zhao

*printed name, function & signature*



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