# Test Report: PV-SMI-2000

2000VA Microinverter

## ■ DESIGN VERIFY TEST

Output Function Test
Input Function Test
Protection Function Test
Control Function Test

## ■ SAFETY & E.M.C. TEST

Safety Test
E.M.C. Test

## ■ RELIABILITY TEST

ENVIRONMENT TEST

# ■ DESIGN VERIFY TEST

## OUTPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|---|---|---|---|---|
| 1 | OUTPUT VOLTAGE | 230V@50Hz | I/P: NONE<br>O/P: FULL LOAD<br>Ta: 25℃ | 1960W for A serice |
| 2 | FREQUENCE | 230V@50Hz±0.5Hz | I/P: NONE<br>O/P: FULL LOAD<br>Ta: 25℃ | 50.01Hz |
| 3 | THD | ＜3% | I/P: NONE<br>O/P: FULL LOAD<br>Ta:25℃ | 2.38% |
| 4 | EFF | 97.3% | I/P: 48V<br>O/P: 75% LOAD<br>Ta: 25℃ | 97.5% |
| 5 | PF | 0.99 | I/P: NONE<br>O/P: FULL LOAD<br>Ta:25℃ | 0.9955 |
| 6 | LOSS AT NIGHT | 110mW | I/P: 0V<br>O/P: NO LOAD<br>Ta:25℃ | 46mW |
| 7 | TOTLE POWER | 2000W | I/P: NONE<br>O/P:2000W<br>Ta:25℃ | Test: OK |

## INPUT FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|---|---|---|---|---|
| 1 | INPUT VOLTAGE RANGE | 24~60V | I/P: Testing<br>O/P:NO LOAD<br>Ta:25℃ | 22.6V~60V |
| 2 | INPUT CURRENT | 18A*4 | I/P: 35 Vdc<br>O/P:<br>Ta: 25℃ | 17A |
| 3 | PV POWER | 750W*4 | I/P: 48 Vdc<br>O/P: FULL LOAD<br>Ta: 25℃ | 740W |
| 4 | MPPT VOLTAGE RANGGE | 22~55Vdc | I/P: Testing<br>O/P:NO LOAD<br>Ta:25℃ | 21V~58Vdc |

## PROTECTION FUNCTION TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|---|---|---|---|---|
| 1 | INPUT OVER VOLTAGE | ＞60Vdc | I/P: Testing<br>O/P: Battery<br>Ta:25℃ | 67V |
| 2 | INPUT UNDERVOLTAGE | ＜24Vdc | I/P: Testing<br>O/P: Battery<br>Ta:25℃ | 22.3V |
| 3 | OUTPUT OVER VOLTAGE | Power grid voltage＞253VAC<br>Shut down after 10 minutes<br>Power grid voltage＞287.5VAC<br>Shut down immediately | I/P: Testing<br>O/P: Battery<br>Ta:25℃ | Test: OK |

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|---|---|---|---|---|
| 4 | OUTPUT UNDERVOLTAGE | Power grid voltage＜184VAC<br>Shut down after 10 minutes;<br>Power grid voltage＜108VAC<br>Shut down immediately | I/P: Testing<br>O/P: Battery<br>Ta:25℃ | Test: OK |
| 5 | OUTPUT UNDERFREQUENCY | Power grid frequency＜47.5Hz<br>Shut down o/p output | I/P: Testing<br>O/P: Battery<br>Ta:25℃ | Test: OK |
| 6 | OUTPUT<br>OVER FREQUENCY | Power grid frequency＞51.5Hz<br>Shut down o/p output | I/P: Testing<br>O/P: Battery<br>Ta:25℃ | Test: OK |
| 6 | SHORT PROTECTION<br>FOR AC OUTPUT | Output shut down, recovers automatically after fault condition is removed | I/P: Testing<br>O/P: Battery<br>Ta:25℃ | Test: OK |

## ■ SAFETY& E.M.C. TEST

### SAFETY TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|---|---|---|---|---|
| 1 | WITHSTAND VOLTAGE | I/P-O/P：4KVDC<br>O/P-FG：4KVDC | Primary circuit to Enclosure：4KVDC<br>Primary circuit to secondary circuit： 4KVDC<br>Ta:25℃ | Primary circuit to Enclosure：OK<br>Primary circuit tosecondary circuit：OK<br>NO DAMAGE |
| 2 | Test by certified Lab & Test Report Prepare<br>Any contradictions of the test results, please refer to the latest SAFETY test report | | | |

### E.M.C TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|---|---|---|---|---|
| 1 | CONDUCTION | EN301 489-17 V3.2.4,<br>EN IEC61000-6-3:2021<br>CLASS B | I/P:40VDC<br>O/P:FULL LOAD<br>Ta:25℃ | PASS<br>Test by certified Lab |
| 2 | RADIATION | EN301 489-17 V3.2.4,<br>EN IEC61000-6-3:2021<br>CLASS B | I/P:40VDC<br>O/P:FULL LOAD<br>Ta:25℃ | PASS<br>Test by certified Lab |
| 3 | E.S.D | EN 301 489-17 V3.2.4,<br>,EN 61000-6-1:2019<br>AIR：8KV / Contact：4KV | I/P:40VDC<br>O/P:FULL LOAD<br>Ta:25℃ | ■CRITERIA B |
| 4 | E.F.T | EN 301 489-1 V2.2.3:2019,<br>EN 61000-4-4: 2012<br>INPUT： 1KV | I/P:40VDC<br>O/P:FULL LOAD<br>Ta:25℃ | ■CRITERIA B |
| | Surge | EN 301 489-1 V2.2.3:2019,<br>EN 61000-4-4: 2012<br>2KV/Line-Line,2KV/Line-Earth | I/P:40VDC<br>O/P:FULL LOAD<br>Ta:25℃ | ■CRITERIA B |

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| 5 | Test by certified Lab & Test Report Prepare<br>Any contradictions of the test results, please refer to the latest EMC test report |

## ■ RELIABILITY TEST

### ENVIRONMENT TEST

| NO | TEST ITEM | SPECIFICATION | TEST CONDITION | RESULT |
|---|---|---|---|---|
| 1 | TEMPERATURE RISE TEST | MODEL：PV-SMI-2000A<br>HIGH AMBIENT BURN-IN：2 HRS<br>I/P： 55VDC O/P： FULL LOAD Ta=65℃ | | |
| 2 | LOW TEMPERATURE<br>TURN ON TEST | TURN ON AFTER 2 HOUR | I/P:55VDC<br>O/P： 100%LOAD<br>Ta= -45℃ | TEST：OK |

| NO | Position | HIGH AMBIENT Ta=50℃ |
|---|---|---|
| 1 | T1 coil | 107.1℃ |
| 2 | T1 core | 97.8℃ |
| 3 | L6 | 89.4℃ |
| 4 | L30 | 83.2℃ |
| 5 | U20 | 76.1℃ |
| 6 | Q24 | 101.3℃ |
| 7 | Q22 | 111.8℃ |
| 8 | C5 | 90.8℃ |
| 9 | C365 | 81.6℃ |
| 10 | D90 | 99℃ |
| 11 | T6 | 104.5℃ |

| TEST RESULT | TESTER | REVIEW | APPROVAL |
|---|---|---|---|
| PASS | Jinkj | | Chenhm |

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