



Quality Assurance Plan

| Document Number | GPT- THEA/QAP/GC/SETH00S | Revision No | 3 | Revision Date | Customer |
|-------------------|--|-------------|---------------------------|---|---|
| Applicable Models | SE-TH01 2.0TL1 – 2kW, SE-TH01 3.0TL1 – 3kW, SE-TH01 5.0TL1 – 5kW SE-TH01 6.0 TL3 – 6 kW, SE-TH01 8.0 TL3 – 8 kW, SE-TH01 10.0 TL3 – 10 kW, SE-TH01 15.0 TL3 – 15 kW SE-TH01 20.0 TL3 – 20 kW, SE-TH01 25.0 TL3 – 25 kW, SE-TH01 30.0 TL3 – 30 kW, SE-TH 50.0 TL3 – 50 kW, SE-TH 60.0 TL3 – 60 kW | | | | |
| Sl No | Process Name /Operation description | Sample Size | Setup & Equipment | Measurement | Acceptance Criterion |
| 1 | Incoming Quality Control | | | | |
| 1.1 | Cabinet Assembly | 5% | Vernier Callipers Scale | Measure and match as per Approved GA – GA/SETH00S | Within +/- 2% |
| 1.2 | Main Power PCB | 10% | Test Jig – JIG/SETH00S/01 | Insert PCB in test Jig and Check for Startup | System should startup and generate 15% power without any faults Test Certificate Verification |
| 1.3 | LCD Controller PCB | 10% | Test Ji – JIG/SETH00S/02 | Insert PCB in Test Jig and Check for Startup | System Should show the LCD parameters without any errors and it should be clearly readable |

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Bank: HSBC | A/c No.: 031778152001 | Type: Current | IFSC: HSBC0700004

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GSTIN: 19AAGCT7227D1Z9 | PAN: AAGCT7227D

APPROVED AS NOTED


J. Jayakumar / 13.09.2023

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|----------|-----------------------------|------|---|--|---|
| 1.4 | MC4 Connector | 2% | 1000V DC Power Supply and 15 A current Jig | Upto 15 A of current in Short (Destructive test) | No Visual and electrical degradation |
| 1.5 | Terminal Block | 2% | 400 V AC 10 A Current per phase Jig | Upto 10 A of current per phase | No Visual and electrical degradation |
| 2 | Startup Tests | | | | |
| 2.1 | Reverse Polarity protection | 100% | PV Positive and Negative to be interchanged and Connected to the Inverter – for both MPPTs | DC disconnect to be turned on | Inverter Should not start up |
| 2.2 | DC Startup | 100% | PV to be connected to MPPI first then to MPPT 2 disconnecting MPPI. No AC to be connected | DC Disconnect to be turned ON / OFF sequentially | Inverter should start up normally with both MPPTs |
| 2.3 | AC Startup | 100% | DC Disconnect to be switched ON and AC power to be connected | AC MCB to be switched ON | Inverter should not start up normally |
| 3 | Functional test | | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | DC disconnect and AC MCB to be switched ON | Inverter should start up and reach 20% power |

Test Certificate Verification

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|-----|------------------------------------|--|------|---|--|---|-------------------------------|
| 3.1 | AC Leakage | | 25% | 1. Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected 2. RCD Module Kit to be used JIG/SETH00S/03 | Measure the residual current | The measured AC Leakage current should be 200 mA | |
| 3.2 | DC injection imposition on AC side | | 25% | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Measure DC injection in Ac Output | The measured DC Injection on AC side should be less than 2% | Test Certificate Verification |
| 3.3 | Efficiency at Lower Power | | 100% | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Measure efficiency at 20% output power | The efficiency should be within +/- 1% of IEC 61683 readings at that rated load | |
| 3.4 | Earth Fault | | 25% | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Connect +/- ve of any MPP tracker to the ground and start the Inverter | The Inverter should not startup and earth fault should be annunciate | |
| 3.5 | Power Control – Output Power | | 25% | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Set Output Power to 10% | Inverter should not generate more than 10% of rated power | |

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|-----|-------------------------------------|-----|---|--|--|
| 3.6 | Power Control – Output Power Factor | 25% | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Set output power to 0.8 lagging and then leading | Inverter should generate kVA as well as sink / generate kVAR at output power factor 0.8 |
| 3.7 | AC Voltage Cut off | 5% | 1. Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected 2. Variac | Set Grid Voltage to +/- 15% on Inverter | Inverter should shut down when Grid Voltage exceeds or goes below +/- 15% annunciating the error |
| 3.8 | DC Voltage | 5% | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Check for Inverter Operation at 400 VDC and 780 VDC gradually changing | Inverter should operate normally without any error |
| 3.9 | Output THD | 5% | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Check Output voltage THD before and after connecting the Inverter | Inverter should not contribute more than 0.5% to the output vTHD |
| 4 | Connectivity | | | | |
| 4.1 | Bluetooth | 25% | Android Mobile and AC DC Combined Power Supply | Check communication capability to change system parameters | Normal communication to be established and parameters should be saved on Inverter |

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|-----|------------------------------|------|---|--------|--|---|-------------------------------|--|
| 4.2 | Wifi Communication | 5% | Internet through Wifi | Access | Check Communication and data transmission to remote thea portal | Normal communication to be established and inverter should upload data | | |
| 4.3 | GPRS Communication | 5% | SIM Card | | Check Communication and data transmission to remote thea portal | Normal communication to be established and inverter should upload data | | |
| 5 | Insulation Test | 100% | Megger | | Inverter totally shut down apply 1500 V between Chassis and Earth | Inverter should not show any signs of arcing and should startup normally after that | Test Certificate Verification | |
| 6 | Heat load | 2% | PV System | | Inverter to be overloaded to 80% on the DC Side and tested for 8 hrs | Inverter should not fail | | |
| 7 | Functionality Testing | | | | | | | |
| 7.1 | Reverse Polarity protection | | PV Positive and Negative to be interchanged and Connected to the Inverter – for both MPPTs | | DC disconnect to be turned on | Inverter Should not start up | Witness | |
| 7.2 | DC Startup | | PV to be connected to MPPT1 first then to MPPT 2 disconnecting MPPT1. No AC to be connected | | DC Disconnect to be turned ON / OFF sequentially | Inverter should startup normally with both MPPTs | Witness | |
| 7.3 | AC Startup | | DC Disconnect to be switched ON and AC power to be connected | | AC MCB to be switched ON | Inverter should not startup normally | Witness | |

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|-------|----------------------|--|---|--|---|---------|
| 7.4 | Earth Fault | | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Connect +/- ve of any MPP tracker to the ground and start the Inverter | The Inverter should not startup and earth fault should be annunciate | Witness |
| 7.5 | Ant-ilandng response | | Inverter to be connected with upto 20% PV Capacity through Combined power source and AC and DC Both. Power Analyser to be connected | Power Analyser to be put in recording mode AC power should be switched off | The current will be switched off within 20 milisecond of voltage | Witness |
| 7.6 | Connectivity | | | | | |
| 7.6.1 | Bluetooth | | Android Mobile and AC DC Combined Power Supply | Check for communication capability to change system parameters | Normal communication to be established and parameters should be saved on Inverter | Witness |
| 7.6.2 | Wifi Communication | | Internet Access through Wifi | Check for Communication and data transmission to remote thea portal | Normal communication to be established and inverter should upload data | Witness |
| 7.6.3 | GPRS Communication | | SIM Card | Check for Communication and data transmission to remote thea portal | Normal communication to be established and inverter should upload data | Witness |

Note:

1. LVRT Test or certificate verification.
2. Under and Over frequency protection function test certification verification.
3. Earth Fault/Insulation failure detection on both AC and Dc Side shall be demonstrated.
4. Neutral Voltage displacement detection function shall be shown.
5. Overload protection shall be shown.
6. Reverse Power Protection shall be shown.
7. Modus communication function , data register verification.

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