



# User Manual

SAJ Solar Inverter

R5-3K/4K/5K/6K/8K/9K/10K/12K-T2  
R5-3K/4K/5K/6K/8K/9K/10K/12K-T2-15



## **Preface**

Thank you for choosing SAJ solar inverter. We are pleased to provide you first-class products and exceptional service.

This manual includes information for installation, operation, maintenance, trouble shooting and safety. Please follow the instructions of this manual so that we can ensure delivery of our professional guidance and wholehearted service.

Customer-orientation is our forever commitment. We hope this document proves to be of great assistance in your journey for a cleaner, greener world.

Please check for the latest version at [www.saj-electric.com](http://www.saj-electric.com)

Guangzhou Sanjing Electric Co., Ltd.

**Building e-Energy Management Solution Provider**

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# Chapter 1 Safety Precautions

## 1.1 Scope of Application

This User Manual describes instructions and detailed procedures for installing, operating, maintaining, and troubleshooting of the following SAJ on-grid inverters:

R5-3K-T2;            R5-4K-T2;            R5-5K-T2;            R5-6K-T2;  
R5-8K-T2;            R5-9K-T2;            R5-10K-T2;           R5-12K-T2;

R5-3K-T2-15;        R5-4K-T2-15;        R5-5K-T2-15;        R5-6K-T2-15;  
R5-8K-T2-15;        R5-9K-T2-15;        R5-10K-T2-15;       R5-12K-T2-15;

Please keep this manual all time available in case of emergency.

## 1.2 Safety Instructions



### DANGER

· DANGER indicates a hazardous situation, which, if not avoided, will result in death or serious injury.



### WARNING

· WARNING indicates a hazardous situation, which, if not avoided, can result in death or serious injury or moderate injury.



### CAUTION

· CAUTION indicates a hazardous condition, which, if not avoided, can result in minor or moderate injury.



### NOTICE

· NOTICE indicates a situation that can result in potential damage, if not avoided.

## 1.3 Target Group

Only qualified electricians who have read and fully understood all safety regulations contained in this manual can install, maintain and repair the inverter. Operators must be aware of the high-voltage device.

# Chapter 2 Preparation

## 2.1 Safety Instructions



### DANGER

- There is possibility of dying due to electrical shock and high voltage.
- Do not touch the operating component of the inverter, it might result in burning or death.
- To prevent risk of electric shock during installation and maintenance, please make sure that all AC and DC terminals are plugged out.
- Do not touch the surface of the inverter while the housing is wet, otherwise, it might cause electrical shock.
- Do not stay close to the inverter while there are severe weather conditions including storm, lighting, etc.
- Before opening the housing, the SAJ inverter must be disconnected from the grid and PV generator; you must wait for at least five minutes to let the energy storage capacitors completely discharged after disconnecting from power source.



### WARNING

- The installation, service, recycling and disposal of the inverters must be performed by qualified personnel only in compliance with national and local standards and regulations.
- Any unauthorized actions including modification of product functionality of any form may cause lethal hazard to the operator, third parties, the units or their property. SAJ is not responsible for the loss and these warranty claims.
- The SAJ inverter must only be operated with PV generator. Do not connect any other source of energy to the SAJ inverter.
- Be sure that the PV generator and inverter are well grounded in order to protect properties and persons.










**CAUTION**

- The solar inverter will become hot during operation. Please do not touch the heat sink or peripheral surface during or shortly after operation.
- Risk of damage due to improper modifications.

**NOTICE**

- Public utility only.
- The solar inverter is designed to feed AC power directly to the public utility power grid; do not connect AC output of the inverter to any private AC equipment.

## 2.2 Explanations of Symbols

| Symbol  | Description  |
|---|--|
|    | <b>Dangerous electrical voltage</b><br>This device is directly connected to public grid, thus all work to the inverter shall only be carried out by qualified personnel.               |
|     | <b>Danger to life due to high electrical voltage!</b><br>There might be residual currents in inverter because of large capacitors. Wait for 5 minutes before you remove the front lid. |
|    | <b>Notice, danger!</b><br>This is directly connected with electricity generators and public grid.  |
|    | <b>Danger of hot surface</b><br>The components inside the inverter will release a lot of heat during operation. Do not touch metal plate housing during operating.                     |
|    | <b>An error has occurred</b><br>Please go to Chapter 9 “Troubleshooting” to remedy the error.  |
|    | <b>This device shall not be disposed of in residential waste</b><br>Please go to Chapter 8 “Recycling and Disposal” for proper treatments.   |
|    | <b>Without Transformer</b><br>This inverter does not use transformer for the isolation function.   |
|   | <b>CE Mark</b><br>Equipment with the CE mark fulfills the basic requirements of the Guideline Governing Low-Voltage and Electro-magnetic Compatibility.                                |
|  | <b>CQC Mark</b><br>The inverter complies with the safety instructions from China's Quality Center.   |



## Chapter 3 Product Information

### 3.1 Application Scope of Products

R5 series products are grid-tied three phase inverters without transformers, and the inverters are important components of grid-tied solar power systems.

The R5 inverter converts the DC generated by solar panels into AC which is in accordance with the requirements of public grid and send the AC into the grid, Figure 3.1 shows the structural diagram of the typical application system of R5 inverter.

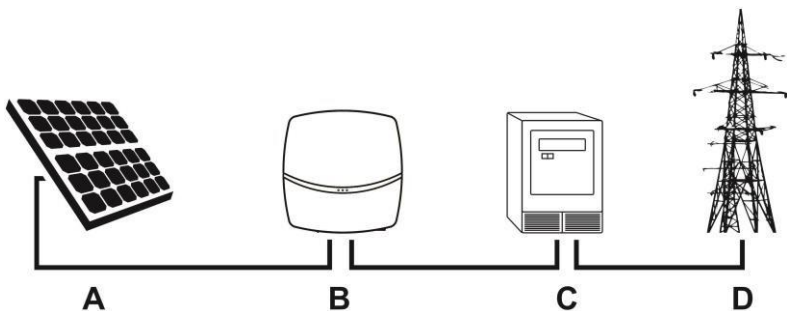


Figure 3.1 R5 series application

| Name | Description        | Remarks   |
|------|--------------------|---|
| A    | Solar panels       | Monocrystalline or polycrystalline silicon, and thin-film PV modules with II protection and need no ground connection |
| B    | Inverters          | R5-3K/4K/5K/6K/8K/9K/10K/12K-T2<br>R5-3K/4K/5K/6K/8K/9K/10K/12K-T2-15   |
| C    | Metering equipment | Standard metering tool for measuring the output electric power of inverters   |
| D    | Power grid         | TT, TN-C, TN-S, TN-C-S  |

### 3.2 Specification for Product Model

R5 – XK – T2 – 15

①      ②      ③      ④

- ① R5 represents for product name.
- ② XK represents rated power XkW of inverter, for example, 4K means 4kW.
- ③ T means three phase; 2 represents the inverter has the function of dual MPPT.
- ④ 15 means string current is 15A

### 3.3 Overview of products

The dimensions of R5 series products.

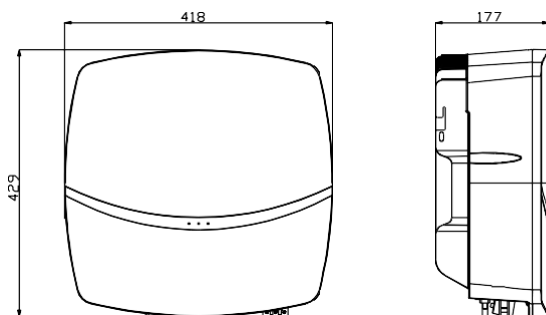


Figure 3.2 Dimensions of R5-3K/4K/5K/6K/8K/9K/10K/12K-T2,  
R5-3K/4K/5K/6K/8K/9K/10K/12K-T2-15

### 3.4 Datasheet

R5-3K/4K/5K/6K-T2

| Type                                  | R5-3K-T2                                | R5-4K-T2 | R5-5K-T2 | R5-6K-T2 |
|---------------------------------------|---|----------|----------|----------|
| <b>Input (DC)</b>                     |   |          |          |          |
| Max. PV Array Power [Wp]@STC          | 4500                                    | 6000     | 7500     | 9000     |
| Max. DC Voltage[V]                    | 1100                                    |          |          |          |
| MPPT Voltage range [V]                | 160-950                                 |          |          |          |
| Nominal DC Voltage[V]                 | 600                                     |          |          |          |
| Start Voltage[V]                      | 180                                     |          |          |          |
| Min. DC Voltage[V]                    | 150                                     |          |          |          |
| Max. DC Input Current [A]             | 12.5/12.5                               |          |          |          |
| Max. DC Short Current [A]             | 15/15                                   |          |          |          |
| Number of DC Connection Sets per MPPT | 1/1                                     |          |          |          |
| Number of MPPT                        | 2                                       |          |          |          |
| <b>Output (AC)</b>                    |   |          |          |          |
| Rated AC Power[W]                     | 3000                                    | 4000     | 5000     | 6000     |
| Rated Apparent Power[VA]              | 3000                                    | 4000     | 5000     | 6000     |
| Rated AC Current [A]                  | 4.4                                     | 5.8      | 7.3      | 8.7      |
| Max. AC Current [A]                   | 5.0                                     | 6.7      | 8.4      | 10.0     |
| Current Inrush [A]                    | 50                                      |          |          |          |
| Feedback Current [A]                  | 0.1                                     |          |          |          |
| Max. AC Fault Current [A]             | 24.5                                    | 24.5     | 24.5     | 24.5     |
| Max. AC Over Current Protection [A]   | 28.4                                    | 28.4     | 28.4     | 28.4     |
| Nominal AC Voltage/ Range[V]          | 220/380,230/400,240/415;180-280/312-485 |          |          |          |
| Grid Frequency/ Range[Hz]             | 50,60/45-55,55-65                       |          |          |          |
| Power Factor[cos φ]                   | 0.8 leading-0.8 lagging                 |          |          |          |
| Total Harmonic Distortion[THDi]       | < 2%                                    |          |          |          |
| Feed-in                               | 3L+N+PE                                 |          |          |          |
| <b>Efficiency</b>                     |   |          |          |          |
| Max. Efficiency                       | 98.0%                                   | 98.3%    |          |          |
| Euro Efficiency                       | 97.6%                                   | 98.0%    |          |          |
| MPPT Accuracy                         | >99.5%                                  |          |          |          |
| <b>Protection</b>                     |   |          |          |          |
| Internal Over-voltage Protection      | Integrated                              |          |          |          |
| DC Insulation Monitoring              | Integrated                              |          |          |          |

|                                     |  |
|-------------------------------------|--|
| DCI Monitoring                      | Integrated   |
| GFCI Monitoring                     | Integrated   |
| Grid Monitoring                     | Integrated   |
| AC Short Circuit Current Protection | Integrated   |
| AC Grounding Detection              | Integrated   |
| DC Surge Protection                 | Integrated   |
| AC Surge Protection                 | Integrated   |
| Thermal Protection                  | Integrated   |
| String Current Detection            | Integrated   |
| Anti-island Protection Monitoring   | AFD  |
| <b>Interface</b>                    |  |
| AC Connection                       | Plug-in connector  |
| DC Connection                       | D4;MC4(optional)   |
| Human Machine Interface             | LED+(Bluetooth/Wi-Fi+APP)  |
| Communication Port                  | RS232(USB)+RS485(RJ45)   |
| Communication Mode                  | Wi-Fi/GPRS/4G(Optional)  |
| <b>General Data</b>                 |  |
| Topology                            | Transformerless  |
| Consumption at Night [W]            | <0.6   |
| Consumption at Standby [W]          | <10  |
| Operating Temperature Range         | -40°C~+60°C  |
| Cooling Method                      | Natural Convection   |
| Ambient Humidity                    | 0%~100% Non-condensing   |
| Altitude                            | 4000m(>3000m power derating)   |
| Noise [dBA]                         | <29  |
| Ingress Protection                  | IP65   |
| Mounting                            | Rear Panel   |
| Dimensions[H*W*D] [mm]              | 429*418*177  |
| Weight [kg]                         | 19   |
| Standard Warranty [Year]            | Refer to the warranty policy   |
| Applicable Standard                 | CQC NB/T 32004,EN62109-1/2,EN61000-6-1/2/3/4,<br>EN50438,EN50549-1,C10/C11,IEC62116,IEC61727,RD1699,<br>G98,G99,UNE206006,UNE206007-1,CEI0-21,AS/NZS4777.2 |

## R5-8K/9K/10K-T2

| Type  | R5-8K-T2                                | R5-9K-T2 | R5-10K-T2 | R5-12K-T2 |
|---|---|----------|-----------|-----------|
| <b>Input (DC)</b>                                     |   |          |           |           |
| Max. PV Array Power [W <sub>p</sub> ] <sub>@STC</sub> | 12000                                   | 13500    | 15000     | 18000     |
| Max. DC Voltage [V]                                   | 1100                                    |          |           |           |
| MPPT Voltage Range [V]                                | 160-950                                 |          |           |           |
| Nominal DC Voltage [V]                                | 600                                     |          |           |           |
| Start Voltage [V]                                     | 180                                     |          |           |           |
| Min. DC Voltage [V]                                   | 150                                     |          |           |           |
| Max. DC Input Current [A]                             | 12.5/12.5                               |          |           |           |
| Max. DC Short Current [A]                             | 15/15                                   |          |           |           |
| Number of DC Connection Sets per MPPT                 | 1/1                                     |          |           |           |
| Number of MPPT  | 2                                       |          |           |           |
| <b>Output (AC)</b>                                    |   |          |           |           |
| Rated AC Power [W]                                    | 8000                                    | 9000     | 10000     | 12000     |
| Rated Apparent Power [VA]                             | 8000                                    | 9000     | 10000     | 12000     |
| Rated AC Current [A] <sub>@230Vac</sub>               | 11.6                                    | 13.1     | 14.5      | 17.4      |
| Max. AC Current [A]                                   | 13.4                                    | 15.0     | 16.7      | 18.2      |
| Current Inrush [A]                                    | 60                                      |          |           |           |
| Feedback Current [A]                                  | 0.1                                     |          |           |           |
| Max. AC Fault Current [A]                             | 41                                      | 41       | 41        | 41        |
| Max. AC Over Current Protection [A]                   | 45.4                                    | 45.4     | 45.4      | 45.4      |
| Nominal AC Voltage/ Range [V]                         | 220/380,230/400,240/415;180-280/312-485 |          |           |           |
| Grid Frequency/ Range [Hz]                            | 50, 60/45-55, 55-65                     |          |           |           |
| Power Factor [cos φ]                                  | 0.8 leading~0.8 lagging                 |          |           |           |
| Total Harmonic Distortion [THDi]                      | < 2%                                    |          |           |           |
| Feed-in   | 3L+N+PE                                 |          |           |           |
| <b>Efficiency</b>                                     |   |          |           |           |

|                                     |                              |       |       |       |
|-------------------------------------|------------------------------|-------|-------|-------|
| Max. Efficiency                     | 98.6%                        |       |       |       |
| Euro Efficiency                     | 98.2%                        | 98.2% | 98.3% | 98.3% |
| MPPT Accuracy                       | >99.5%                       |       |       |       |
| <b>Protection</b>                   |                              |       |       |       |
| Internal Over-voltage Protection    | Integrated                   |       |       |       |
| DC Insulation Monitoring            | Integrated                   |       |       |       |
| DCI Monitoring                      | Integrated                   |       |       |       |
| GFCI Monitoring                     | Integrated                   |       |       |       |
| Grid Monitoring                     | Integrated                   |       |       |       |
| AC Short Circuit Current Protection | Integrated                   |       |       |       |
| AC Grounding Detection              | Integrated                   |       |       |       |
| DC Surge Protection                 | Integrated                   |       |       |       |
| AC Surge Protection                 | Integrated                   |       |       |       |
| Thermal Protection                  | Integrated                   |       |       |       |
| String Current Detection            | Integrated                   |       |       |       |
| Anti-island Protection Monitoring   | AFD                          |       |       |       |
| <b>Interface</b>                    |                              |       |       |       |
| AC Connection                       | Plug-in connector            |       |       |       |
| DC Connection                       | D4;MC4(optional)             |       |       |       |
| Human Machine Interface             | LED+(Bluetooth/Wi-Fi+APP)    |       |       |       |
| Communication Port                  | RS232 (USB)+RS485 (RJ45)     |       |       |       |
| Communication Mode                  | Wi-Fi/GPRS/4G (Optional)     |       |       |       |
| <b>General Data</b>                 |                              |       |       |       |
| Topology                            | Transformerless              |       |       |       |
| Consumption at Night [W]            | <0.6                         |       |       |       |
| Consumption at Standby [W]          | <10                          |       |       |       |
| Operating Temperature Range         | -40°C~+60°C                  |       |       |       |
| Cooling Method                      | Natural Convection           |       |       |       |
| Ambient Humidity                    | 0%~100% Non-condensing       |       |       |       |
| Altitude                            | 4000m(>3000m power derating) |       |       |       |

|                           |  |
|---------------------------|--|
| Noise [dBA]               | <29  |
| Ingress Protection        | IP65   |
| Mounting                  | Rear Panel   |
| Dimensions<br>[H*W*D][mm] | 429*418*177  |
| Weight [kg]               | 19   |
| Standard Warranty [Year]  | Refer to the warranty policy   |
| Applicable Standard       | CQC NB/T 32004,EN 62109-1/2,EN 61000-6-1/2/3/4<br>EN50438,EN50549-1,C10/C11,IEC 62116,IEC 61727,RD<br>1699,UNE 206006,UNE 206007-1,CEI0-21,CEI0-16,G98,G99 |

## R5-3K/4K/5K/6K-T2-15

| Type                                  | R5-3K-T2-15                             | R5-4K-T2-15 | R5-5K-T2-15 | R5-6K-T2-15 |
|---------------------------------------|---|-------------|-------------|-------------|
| <b>Input (DC)</b>                     |   |             |             |             |
| Max. PV Array Power [Wp]@STC          | 4500                                    | 6000        | 7500        | 9000        |
| Max. DC Voltage[V]                    | 1100                                    |             |             |             |
| MPPT Voltage range [V]                | 160-950                                 |             |             |             |
| Nominal DC Voltage[V]                 | 600                                     |             |             |             |
| Start Voltage[V]                      | 180                                     |             |             |             |
| Min. DC Voltage[V]                    | 150                                     |             |             |             |
| Max. DC Input Current [A]             | 15/15                                   |             |             |             |
| Max. DC Short Current [A]             | 18/18                                   |             |             |             |
| Number of DC Connection Sets per MPPT | 1/1                                     |             |             |             |
| Number of MPPT                        | 2                                       |             |             |             |
| <b>Output (AC)</b>                    |   |             |             |             |
| Rated AC Power[W]                     | 3000                                    | 4000        | 5000        | 6000        |
| Rated Apparent Power [VA]             | 3000                                    | 4000        | 5000        | 6000        |
| Rated AC Current [A]                  | 4.4                                     | 5.8         | 7.3         | 8.7         |
| Max. AC Current [A]                   | 5.0                                     | 6.7         | 8.4         | 10.0        |
| Current Inrush [A]                    | 50                                      |             |             |             |
| Feedback Current [A]                  | 0.1                                     |             |             |             |
| Max. AC Fault Current [A]             | 24.5                                    | 24.5        | 24.5        | 24.5        |
| Max. AC Over Current Protection [A]   | 28.4                                    | 28.4        | 28.4        | 28.4        |
| Nominal AC Voltage/ Range[V]          | 220/380,230/400,240/415;180-280/312-485 |             |             |             |
| Grid Frequency/ Range[Hz]             | 50,60/45-55,55-65                       |             |             |             |
| Power Factor[cos $\phi$ ]             | 0.8 leading-0.8 lagging                 |             |             |             |
| Total Harmonic Distortion[THDi]       | < 2%                                    |             |             |             |
| Feed-in                               | 3L+N+PE                                 |             |             |             |
| <b>Efficiency</b>                     |   |             |             |             |
| Max. Efficiency                       | 98.0%                                   | 98.3%       |             |             |
| Euro Efficiency                       | 97.6%                                   | 98.0%       |             |             |
| MPPT Accuracy                         | >99.5%                                  |             |             |             |
| <b>Protection</b>                     |   |             |             |             |
| Internal Over-voltage Protection      | Integrated                              |             |             |             |
| DC Insulation Monitoring              | Integrated                              |             |             |             |
| DCI Monitoring                        | Integrated                              |             |             |             |



|                                     |  |
|-------------------------------------|--|
| GFCI Monitoring                     | Integrated   |
| Grid Monitoring                     | Integrated   |
| AC Short Circuit Current Protection | Integrated   |
| AC Grounding Detection              | Integrated   |
| DC Surge Protection                 | Integrated   |
| AC Surge Protection                 | Integrated   |
| Thermal Protection                  | Integrated   |
| String Current Detection            | Integrated   |
| Anti-island Protection Monitoring   | AFD  |
| <b>Interface</b>                    |  |
| AC Connection                       | Plug-in connector  |
| DC Connection                       | D4;MC4(optional)   |
| Human Machine Interface             | LED+(Bluetooth/Wi-Fi+APP)  |
| Communication Port                  | RS232(USB)+RS485(RJ45)   |
| Communication Mode                  | Wi-Fi/GPRS/4G(Optional)  |
| <b>General Data</b>                 |  |
| Topology                            | Transformerless  |
| Consumption at Night [W]            | <0.6   |
| Consumption at Standby [W]          | <10  |
| Operating Temperature Range         | -40°C~+60°C [45° C to 60° C with derating]   |
| Cooling Method                      | Natural Convection   |
| Ambient Humidity                    | 0%~100% Non-condensing   |
| Altitude                            | 4000m(>3000m power derating)   |
| Noise [dBA]                         | <29  |
| Ingress Protection                  | IP65   |
| Mounting                            | Rear Panel   |
| Dimensions[H*W*D] [mm]              | 429*418*177  |
| Weight [kg]                         | 19   |
| Standard Warranty [Year]            | Refer to the warranty policy   |
| Applicable Standard                 | CQC NB/T 32004,EN62109-1/2,EN61000-6-1/2/3/4,<br>EN50438,EN50549-1,C10/C11,IEC62116,IEC61727,RD1699,<br>G98,G99,UNE206006,UNE206007-1,CEI0-21,AS/NZS4777.2 |

## R5-8K/9K/10K/12K-T2-15

| Type                                  | R5-8K-T2-15                             | R5-9K-T2-15 | R5-10K-T2-15 | R5-12K-T2-15 |
|---------------------------------------|---|-------------|--------------|--------------|
| <b>Input (DC)</b>                     |   |             |              |              |
| Max. PV Array Power [Wp]@STC          | 12000                                   | 13500       | 15000        | 18000        |
| Max. DC Voltage [V]                   | 1100                                    |             |              |              |
| MPPT Voltage Range [V]                | 160-950                                 |             |              |              |
| Nominal DC Voltage [V]                | 600                                     |             |              |              |
| Start Voltage [V]                     | 180                                     |             |              |              |
| Min. DC Voltage [V]                   | 150                                     |             |              |              |
| Max. DC Input Current [A]             | 15/15                                   |             |              |              |
| Max. DC Short Current [A]             | 18/18                                   |             |              |              |
| Number of DC Connection Sets per MPPT | 1/1                                     |             |              |              |
| Number of MPPT                        | 2                                       |             |              |              |
| <b>Output (AC)</b>                    |   |             |              |              |
| Rated AC Power [W]                    | 8000                                    | 9000        | 10000        | 12000        |
| Rated Apparent Power [VA]             | 8000                                    | 9000        | 10000        | 12000        |
| Rated AC Current [A]@230Vac           | 11.6                                    | 13.1        | 14.5         | 17.4         |
| Max. AC Current [A]                   | 13.4                                    | 15.0        | 16.7         | 18.2         |
| Current Inrush [A]                    | 60                                      |             |              |              |
| Feedback Current [A]                  | 0.1                                     |             |              |              |
| Max. AC Fault Current [A]             | 41                                      | 41          | 41           | 41           |
| Max. AC Over Current Protection [A]   | 45.4                                    | 45.4        | 45.4         | 45.4         |
| Nominal AC Voltage/ Range [V]         | 220/380,230/400,240/415;180-280/312-485 |             |              |              |
| Grid Frequency/ Range [Hz]            | 50, 60/45-55, 55-65                     |             |              |              |
| Power Factor [cos $\phi$ ]            | 0.8 leading~0.8 lagging                 |             |              |              |
| Total Harmonic Distortion [THDi]      | < 2%                                    |             |              |              |
| Feed-in                               | 3L+N+PE                                 |             |              |              |
| <b>Efficiency</b>                     |   |             |              |              |
| Max. Efficiency                       | 98.6%                                   |             |              |              |
| Euro Efficiency                       | 98.2%                                   | 98.2%       | 98.3%        | 98.3%        |
| MPPT Accuracy                         | >99.5%                                  |             |              |              |
| <b>Protection</b>                     |   |             |              |              |
| Internal Over-voltage Protection      | Integrated                              |             |              |              |
| DC Insulation Monitoring              | Integrated                              |             |              |              |

|                                     |  |
|-------------------------------------|--|
| DCI Monitoring                      | Integrated   |
| GFCI Monitoring                     | Integrated   |
| Grid Monitoring                     | Integrated   |
| AC Short Circuit Current Protection | Integrated   |
| AC Grounding Detection              | Integrated   |
| DC Surge Protection                 | Integrated   |
| AC Surge Protection                 | Integrated   |
| Thermal Protection                  | Integrated   |
| String Current Detection            | Integrated   |
| Anti-island Protection Monitoring   | AFD  |
| <b>Interface</b>                    |  |
| AC Connection                       | Plug-in connector  |
| DC Connection                       | D4;MC4(optional)   |
| Human Machine Interface             | LED+(Bluetooth/Wi-Fi+APP)  |
| Communication Port                  | RS232 (USB)+RS485 (RJ45)   |
| Communication Mode                  | Wi-Fi/GPRS/4G (Optional)   |
| <b>General Data</b>                 |  |
| Topology                            | Transformerless  |
| Consumption at Night [W]            | <0.6   |
| Consumption at Standby [W]          | <10  |
| Operating Temperature Range         | -40℃ ~+60℃   |
| Cooling Method                      | Natural Convection   |
| Ambient Humidity                    | 0%~100% Non-condensing   |
| Altitude                            | 4000m(>3000m power derating)   |
| Noise [dBA]                         | <29  |
| Ingress Protection                  | IP65   |
| Mounting                            | Rear Panel   |
| Dimensions [H*W*D][mm]              | 429*418*177  |
| Weight [kg]                         | 19   |
| Standard Warranty [Year]            | Refer to the warranty policy   |
| Applicable Standard                 | CQC NB/T 32004,EN 62109-1/2,EN 61000-6-1/2/3/4<br>EN50438,EN50549-1,C10/C11,IEC 62116,IEC 61727,RD<br>1699,UNE 206006,UNE 206007-1,CEI0-21,CEI0-16,G98,G99 |

## Chapter 4 Instructions for installation

### 4.1 Safety Instructions



#### DANGER

- Dangerous to life due to potential fire or electricity shock.
- Do not install the inverter near any inflammable or explosive items.
- This inverter will be directly connected with HIGH VOLTAGE power generation device; the installation must be performed by qualified personnel only in compliance with national and local standards and regulations.



#### NOTICE

- This equipment meets the pollution degree II.
- Inappropriate installation environment may jeopardize the life span of the inverter.
- Installation directly exposed under intensive sunlight is not recommended.
- The installation site must be well ventilated.

### 4.2 Pre-installation Check

#### 4.2.1 Check the Package

Although SAJ's inverters have surpassed stringent testing and are checked before they leave the factory, it is uncertain that the inverters may suffer damages during transportation. Please check the package for any obvious signs of damage, and if such evidence is present, do not open the package and contact your dealer as soon as possible

#### 4.2.2 Check the Assembly Parts

Please refer to the packing list inside the package container.

## 4.3 The Determination of the Installation Method and Position

### 4.3.1 Mounting Method

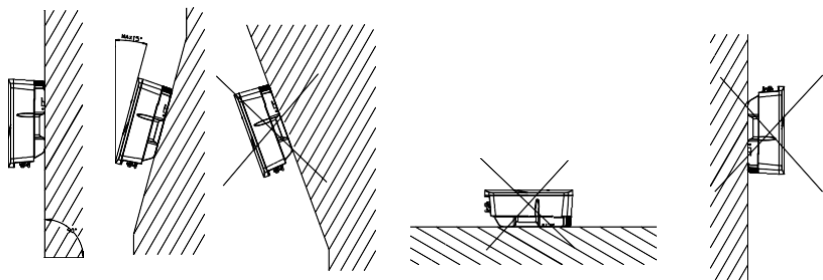


Figure 4.1 Mounting method

- ① The equipment employs natural convection cooling, and it can be installed indoor or outdoor.
- ② Please install the equipment under the guidance of Figure 4.1. Vertical installation on floor level is recommended. Mount vertically or tilted backwards by max. 15°. Never install the inverter tilted forwards, sideways, horizontally or upside down.
- ③ Considering convenience for maintenance, please install the equipment at a position in parallel with line of sight.
- ④ When mounting the inverter, please consider the solidity of wall for inverter, including accessories. Please ensure the Rear Panel mount tightly.

Before installation, make sure that the wall has enough strength to hold the screws and bear the weight of the equipment. Please make sure the equipment is installed properly.

### 4.3.2 Installation Position

Do not expose the inverter to direct solar irradiation as this could cause power derating due to overheating. The ambient temperature should be between  $-40^{\circ}\text{C} \sim +60^{\circ}\text{C}$  ( $-40^{\circ}\text{F} \sim 140^{\circ}\text{F}$ ) to ensure optimum operation. Choose locations with

sufficient air exchange. Ensure additional ventilation, when necessary.

To make sure the installation spot is suitably ventilated, if multiple SAJ on-grid solar inverters are installed at the same area, the following safety clearance in Figure 4.2 shall be followed for proper ventilation conditions.

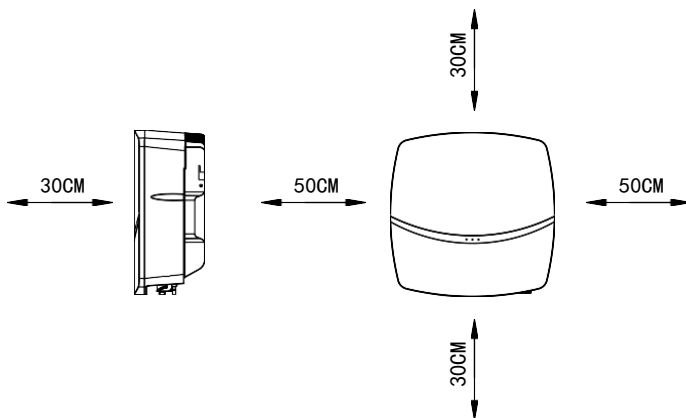


Figure 4.2 Installation position

## 4.4 Mounting Procedure

### 4.4.1 Mark the Positions of the Drill Holes of the Rear Panel

The mounting position should be marked as below.

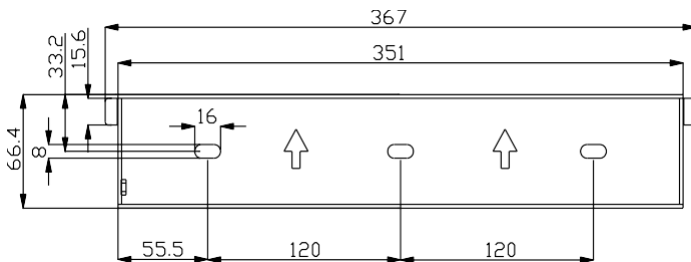


Figure 4.3 Dimensions of rear panel of R5-3K/4K/5K/6K/8K/9K/10K/12K-T2,  
R5-3K/4K/5K/6K/8K/9K/10K/12K-T2-15

#### 4.4.2 Drill Holes and Place the Expansion Tubes

Follow the given guides, drill 3 holes in the wall (in conformity with position marked in Figure 4.4), and then place expansion tubes in the holes using a rubber mallet.

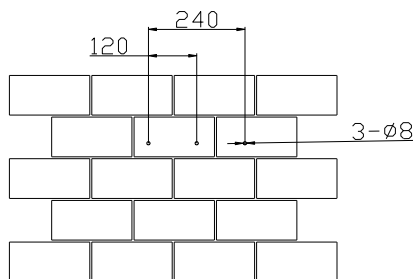


Figure 4.4 Drill holes' dimensions of R5-3K/4K/5K/6K/8K/9K/10K/12K-T2, R5-3K/4K/5K/6K/8K/9K/10K/12K-T2-15

#### 4.4.3 Mount the Screws and the Rear Panel

The panels should be mounted in the mounting position by screws as below.

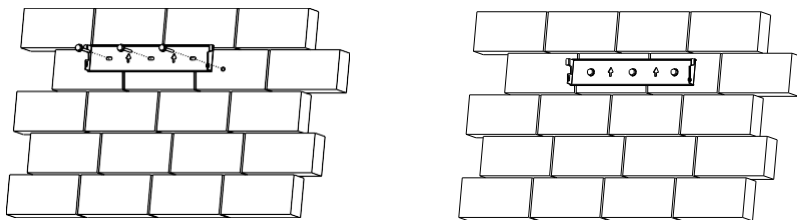


Figure 4.5 Mount the rear panel

#### 4.4.4 Mount the Inverter

Carefully mount the inverter to the rear panel as shown in Figure 4.8 and 4.9, Make sure that the rear part of the equipment is closely mounted to the rear panel.

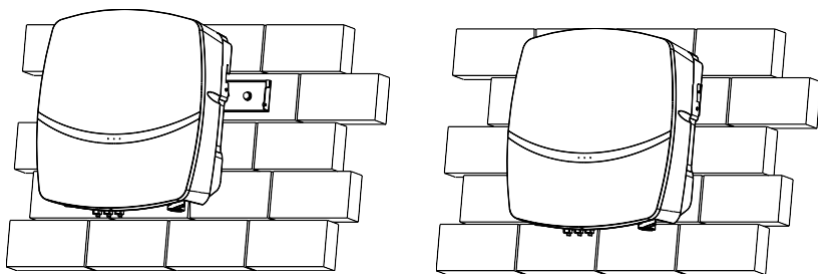


Figure 4.6 Mount inverter

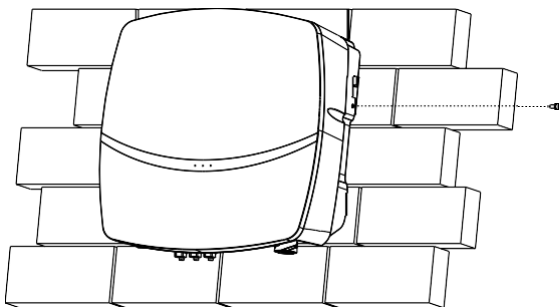


Figure 4.7 Fasten the inverter and hanging panel with screws

#### 4.4.5 Install Anti-theft Lock

Anti-theft lock could be added to the inverter and hanging panel. Diameter of the lock hole is  $\phi 6.0\text{mm}$  and anti-theft lock of which the diameter of lock hook is  $\phi 5.0\text{mm}$  is recommended.

Users should prepare anti-theft lock by themselves.



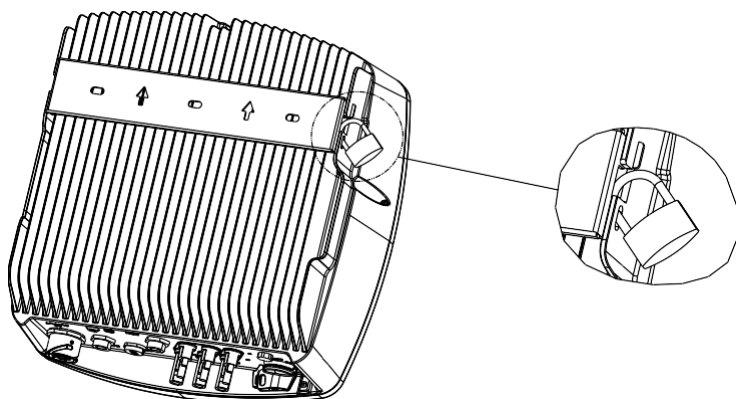


Figure 4.8 Install anti-theft lock of R5-3K/4K/5K/6K/8K/9K/10K/12K-T2

R5-3K/4K/5K/6K/8K/9K/10K/12K-T2-15

## Chapter 5 Electrical Connection

### 5.1 Safety Instruction for Hot-line Job

Electrical connection must only be operated on by professional technicians. Please keep in mind that the inverter is a bi-power supply equipment. Before connection, necessary protective equipment must be employed by technicians, including insulating gloves, insulating shoes and safety helmet.



#### **DANGER**

- Dangerous to life due to potential fire or electricity shock.
- When power-on, the equipment should be in conformity with national rules and regulations.
- The direct connection between the inverter and high voltage power systems must be operated by qualified technicians in accordance with local and national power grid standards and regulations.



#### **WARNING**

- When the PV array is exposed to light, it supplies a DC voltage to the inverter.



#### **NOTICE**

- Electrical connection should be in conformity with proper stipulations, such as stipulations for cross-sectional area of conductors, fuse and ground protection.
- The overvoltage category on DC input port is II, on AC output port is III.

## 5.2 Specifications for Electrical Interface

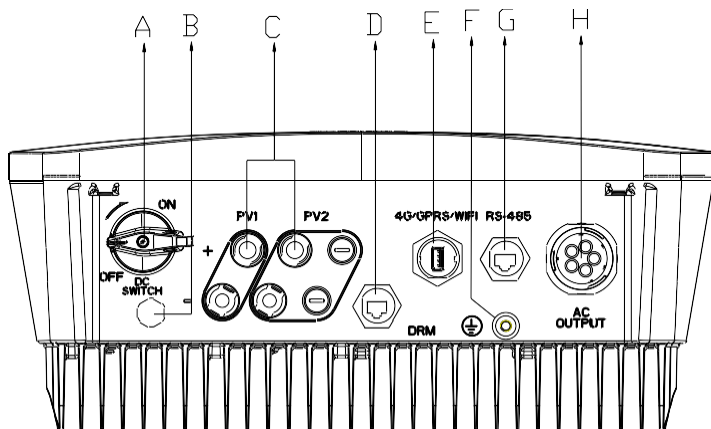


Figure 5.1 Electrical interface of R5-3K/4K/5K/6K/8K/9K/10K/12K-T2

R5-3K/4K/5K/6K/8K/9K/10K/12K-T2-15

| Code | Name                                  |
|------|---------------------------------------|
| A    | DC Switch                             |
| B    | Decompression Valves                  |
| C    | DC Input                              |
| D    | DRM                                   |
| E    | RS232 Communication (GPRS/ Wi-Fi /4G) |
| F    | Ground Connection                     |
| G    | RS485 Communication                   |
| H    | AC Output                             |

Table 5.1 Specifications for interface

## 5.3 AC Connection

| Cross-sectional area of cables (mm <sup>2</sup> ) |                   | External diameter (mm) |
|---|-------------------|------------------------|
| Scope   | Recommended value |                        |
| 6.0-10.0  | 6.0               | 5.3~6.7                |

Table 5.2 Recommended power grid connecting cable specification

If the grid-connection distance is too far, please select an AC cable with larger diameter as per the actual condition.

### 5.3.1 R5-3K~12K-T2 / R5-3K~12K-T2-15 AC Side Electrical Connection

1. Ground of the inverter. After penetrating the external hex head screw through OT terminal of the grounding line, screw in the grounding port of inverter enclosure in clockwise direction and make sure it is screwed up tightly.

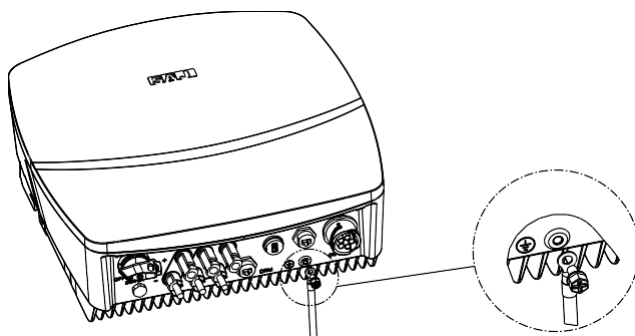


Figure 5.3 Inverter ground protection

2. Feed the AC cable through the AC waterproof hole.

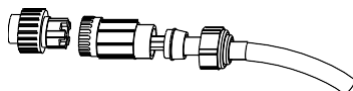


Figure 5.4 Feed cable

3. Connect the cables according to connection marks of L1, L2, L3, N and PE.

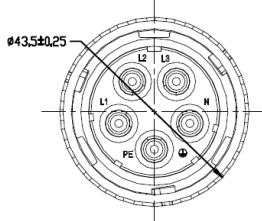


Figure 5.5 Connect cable

4. Screw all parts of the AC connector.

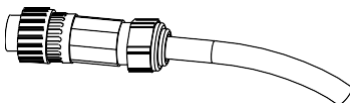


Figure 5.6 Screw the connector

5. Connect the AC connector to the equipment securely, ensuring the pins are connected directly. Then the connection of AC cable is completed.

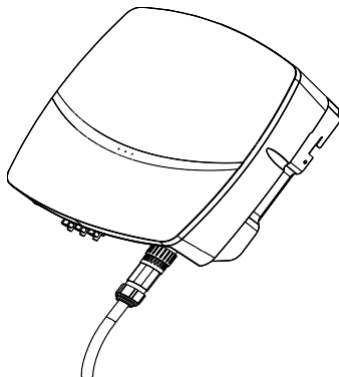


Figure 5.7 Connect the inverter

6. Install the protective covers to the cable connectors.

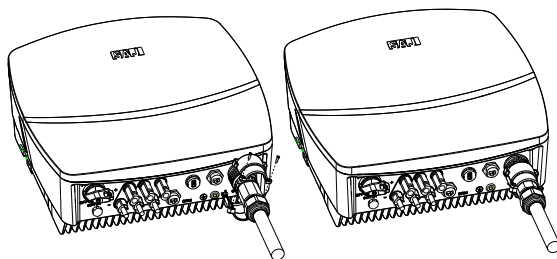


Figure 5.8 Protective covers installation

### 5.3.2 Earth Fault Alarm

This inverter complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring. If an Earth Fault Alarm occurs, the second LED indicator will be lit up in red and error code <31 Insulation Error Master> will be displayed on the screen of inverter Wi-Fi communication module until the error being solved and inverter functioning properly.

### 5.3.3 External AC Circuit Breaker and Residual Current Device

Please install a 4P circuit breaker to ensure the inverter is able to disconnect from grid safely. The inverter is integrated with a RCMU, however, an external RCD is needed to protect the system from tripping, either type A or type AB RCD is compatible with the inverter.

The integrated leakage current detector of inverter is able to detect the real time external current leakage. When a leakage current detected exceeds the limitation the inverter will be disconnected from grid quickly, if an external leakage current device is connected, the action current should be 300mA or higher.

| Inverter type   | Recommended breaker specification |
|---|-----------------------------------|
| R5-3K/4K/5K/6K-T2,<br>R5-3K/4K/5K/6K-T2-15                                  | 16A                               |
| R5-8K/9K/10K-T2,<br>R5-8K/9K/10K-T2-15                                      | 32A                               |
| <b>Notice:</b> Do not connect multiple inverters to one AC circuit breaker. |                                   |

Table 5.3 Recommended breaker specification

## 5.4 DC Side Connection

| Cross-sectional area of cables (mm <sup>2</sup> ) |                   | Outside diameter of the cables<br>(mm) |
|---|-------------------|--|
| Scope   | Recommended value |  |
| 4.0-6.0   | 4.0               | 4.2-5.3                                |

Table 5.4 Recommended specifications of DC cables

DC connector is made up of positive connector and the negative connector

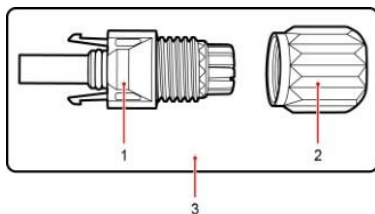


Figure 5.9 Positive connector

1. Insulated enclosure    2. Lock screw    3. Positive connector

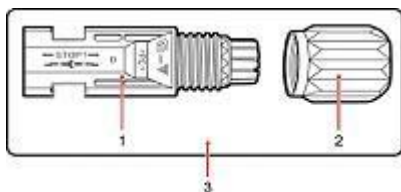


Figure 5.10 Negative connector

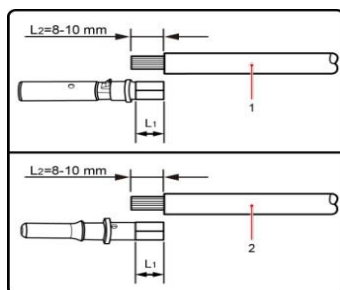
1. Insulated enclosure    2. Lock screw    3. Negative connector

**NOTICE**

- Please place the connector separately after unpacking in order to avoid confusion for connection of cables.
- Please connect the positive connector to the positive side of the solar panels, and connect the negative connector to the negative side of the solar side. Be sure to connect them in right position.

**Connecting Procedures:**

1. Tighten the lock screws on positive and negative connector.
2. Use specified strip tool to strip the insulated enclosure of the positive and negative cables with appropriate length.

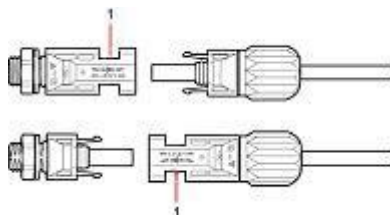


1. Positive cable

2. Negative cable

Figure 5.11 Connecting cables


3. Feed the positive and negative cables into corresponding lock screws.
4. Insert the positive and negative connectors into positive cable and negative cable whose insulated enclosure has been stripped off, and crimp them tightly with a wire crimper. Make sure that the withdrawal force of the pressed cable is bigger than 400N.
5. Plug in the pressed positive and negative cables into relevant insulated enclosure, a “click” should be heard or felt when the contact cable assembly is seated correctly.
6. Fasten the lock screws on positive and negative connectors into respective insulated enclosure and make them tight.
7. Connect the positive and negative connectors into positive and negative DC input terminals of the inverter, a “click” should be heard or felt when the contact cable assembly is seated correctly.





## 1. Connection port

Figure 5.12 Connect the inverter

|  |
|--|
|  <b>NOTICE</b>                                      |
| · Before inserting the connector into DC input terminal of the inverter, please make sure that the DC switch of the inverter is OFF. |
| · Please use the original H4 terminal to install .   |

**5.4.1 DC isolator**

The DC switch features a padlockable handle for increased safety.

|                          |     |
|--------------------------|-----|
| Diameter of padlock hole | 6mm |
|--------------------------|-----|

Table 5.5 Specification of DC switch

It is recommended to lock the DC switch with a padlock when it is in off position.

The DC switch is locked by the following procedures:

- 5.4.1.1 Turn the DC switch to the OFF position
- 5.4.1.2 Inserting a lock through the knob hole.

Note: \* The padlock is prepared by customer.

\* During maintenance or repairing, the DC switch must be in off position and locked.

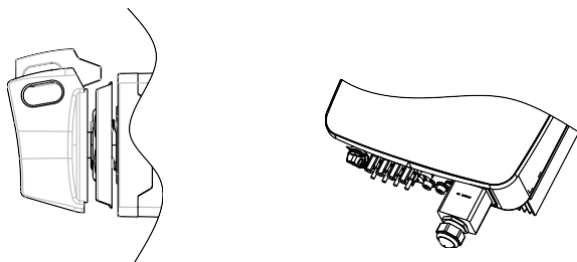


Figure 5.13 DC switch appearance

## 5.5 Communication Connection

R5 inverter is standardly equipped with a RS485 interface, a DRM interface and a RS232 interface.

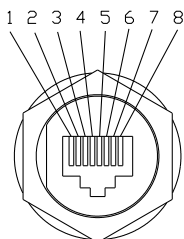


Figure 5.14 RS485 pin and DRM pin

| Pin Number | Description  | Function |
|------------|--------------|----------|
| 1          | White-orange | NC       |
| 2          | Orange       | GND_W    |
| 3          | White-green  | +7V_W    |
| 4          | Blue         | NC       |
| 5          | White-blue   | NC       |
| 6          | Green        | NC       |

|   |             |         |
|---|-------------|---------|
| 7 | White-brown | RS485-A |
| 8 | Brown       | RS485-B |

Table 5.6 RS485 pin port definition

To comply with Australian and New Zealand safety requirements, the DRMs terminals should be connected. DRM0 is supported. A RJ45 plug is being used as the inverter DRED connection.

| Pin No. | Name     |
|---------|----------|
| 1       | NC       |
| 2       | NC       |
| 3       | NC       |
| 4       | NC       |
| 5       | REF GEN  |
| 6       | COM LOAD |
| 7       | NC       |
| 8       | NC       |

Table 5.7 Demand Response Modes (DRM)

| Mode | Corresponding pins | Requirement                     |
|------|--------------------|---------------------------------|
| DRM0 | 5 & 6              | The inverter is on standby mode |

Table 5.8 DRM0 mode

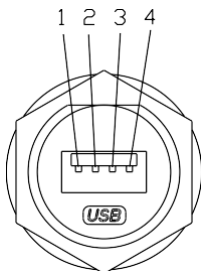


Figure5.15 RS232 pin

| Pin Number | Description | Function     |
|------------|-------------|--------------|
| 1          | +7V         | Power supply |
| 2          | RS-232 TX   | Send data    |
| 3          | RS-232 RX   | Receive data |
| 4          | GND         | Ground wire  |

Table 5.9 USB pin port definition

1. USB interface could be externally connected with eSolar GPRS/4G module, for operation in details please refer to eSolar GPRS/4G module Quick Installation Guide in <https://www.saj-electric.com/>.
2. USB interface could be externally connected with eSolar WiFi module, for operation in details please refer to eSolar WiFi module Quick Installation Guide in <https://www.saj-electric.com/>.

## 5.6 Start up and Shut down Inverter

### 5.6.1 Start Up the Inverter

1. Follow the installation standard from previous chapter strictly to connect the photovoltaic panels and AC power grid to inverter.
2. Using multimeter to check whether AC side and DC side voltage have met the inverter start voltage.
3. Turn ON DC switch (if applicable), LED indicators will be lit up.

4. Select country grid code (For compliance with AS/NZS 4777.2:2020, please select from Australia Region A/B/C, please contact your local grid operator for which region to select). Inverter will be in self-testing mode, if inverter has met all the grid connecting condition, inverter will connect to grid and generate power automatically.

### **5.6.2 Shut Down the Inverter**

1. Automatically shut down, when the solar light intensity is not strong enough during sunrise and sunset or the output voltage of photovoltaic system is less than the minimum input power of inverter, inverter will shut down automatically.
2. Shut down manually, disconnect AC side circuit breaker first, if multiple inverters are connected, disconnect the minor circuit breaker prior to disconnection of main circuit breaker. Disconnect the DC switch after inverter has reported grid connection lost alarm.

## Chapter 6 Debugging Instructions

### 6.1 Introduction of Human-computer Interface

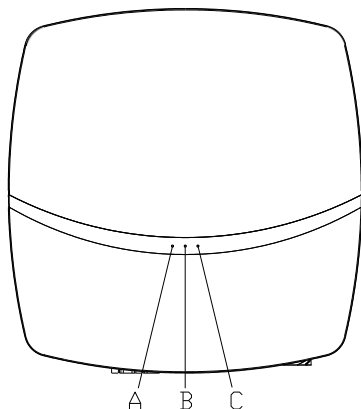


Figure 6.1 Human-computer interface

#### A-Power indicator    B-System status    C-Communication indicator

| Indicator lamp | LED indicators state               |                       | Description  |
|----------------|------------------------------------|-----------------------|--|
| A              | Yellow                             | Solid                 | The inverter is power on.                                  |
| B              | Green                              | Blinking:<br>1 s/time | The inverter is in the initialization or waiting state.    |
|                |                                    | Solid                 | The inverter is in normal on-grid state.                   |
|                | Red                                | Solid                 | Inverter is reporting fault.                               |
|                | Blinks green and red alternatively |                       | Inverter software is upgrading.                            |
| C              | Blue                               | Blinking              | The inverter is communicating with the monitoring platform |

Table 6.1 Interface description

## 6.2 eSAJ APP Connection


### 6.2.1 Downloading the eSAJ Home App

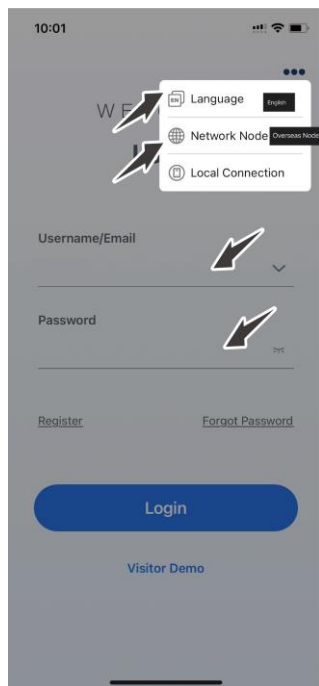
1. The eSAJ Home App can be used for both nearby and remote monitoring. It supports AIO3, 4G and Wi-Fi module to communicate with the device.

2. On your mobile phone, search for “eSAJ Home” in the App store and download the App. Nearby Monitoring

### 6.2.2 Logging in to the App

#### Procedure

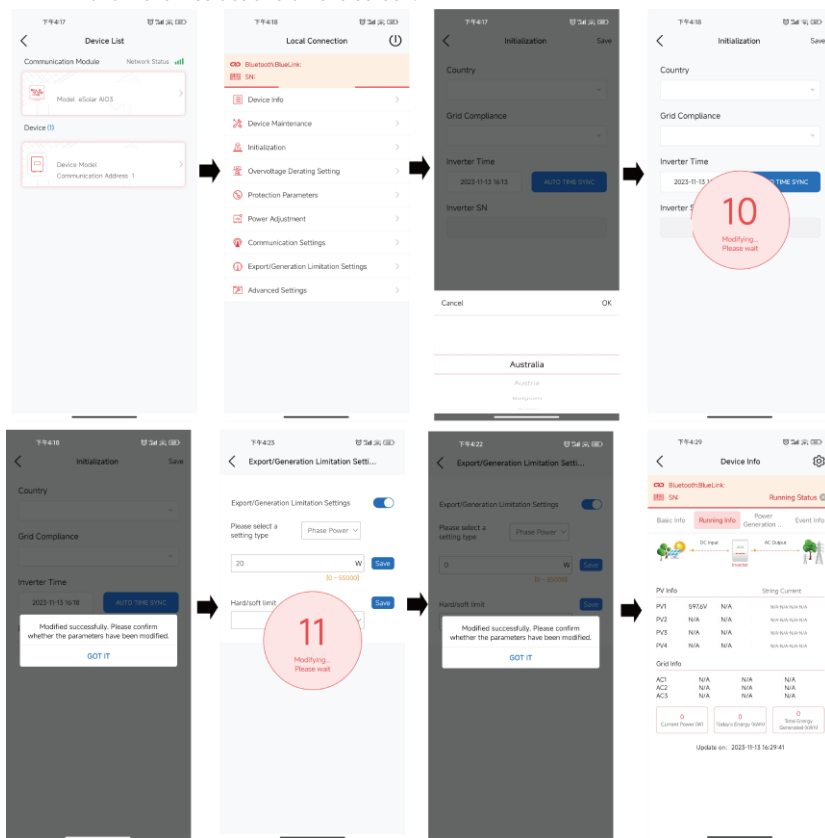
1. Open the App and click on the three-dot icon  on the top right corner.
2. Set the Language to English and Network Node to Overseas Node.



3. If you do not have an account, register first.
  - a. Click Register. Choose whether you are an owner or an installer or distributor.
  - b. Follow the instructions on the screen to complete the registration.
4. Use the account and password to log in to the App.
5. Go to the Tool interface and select Remote Configuration. Click on Bluetooth and enable the Bluetooth function on your mobile phone. Then, click on Next.

### 6.2.3 Completing the Initialization Settings

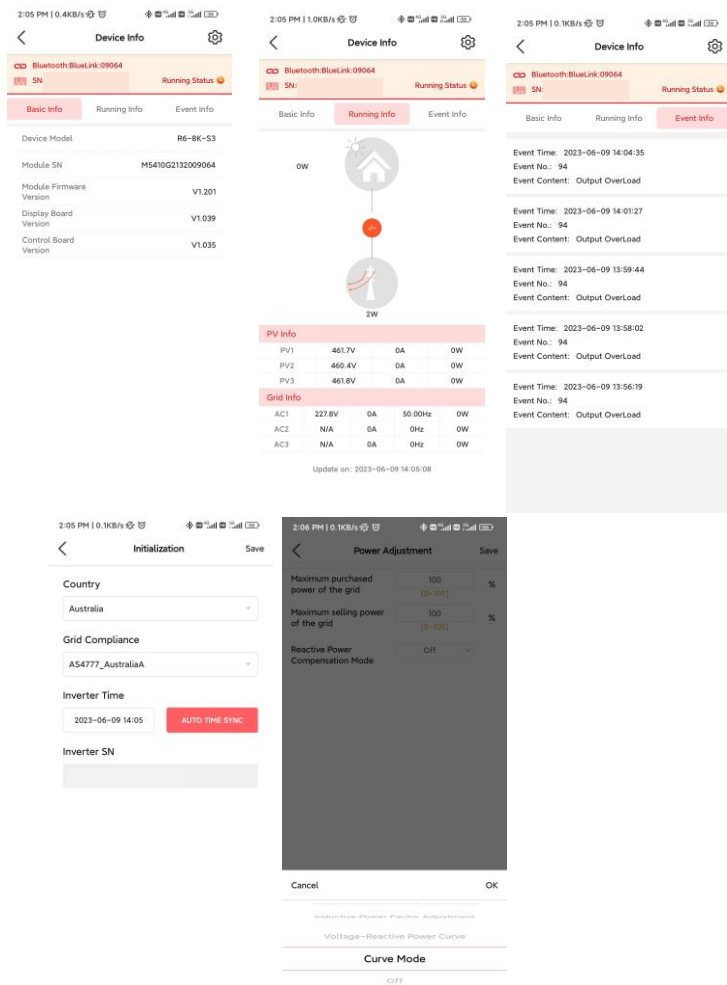
Follow the instructions on the screen.





## 6.2.4 Inverter Setting Review

After commissioning, the device info including device basic info, running info and event info can be viewed. Country and grid code can be viewed from initial setting.



## 6.2.5 Remote Monitoring

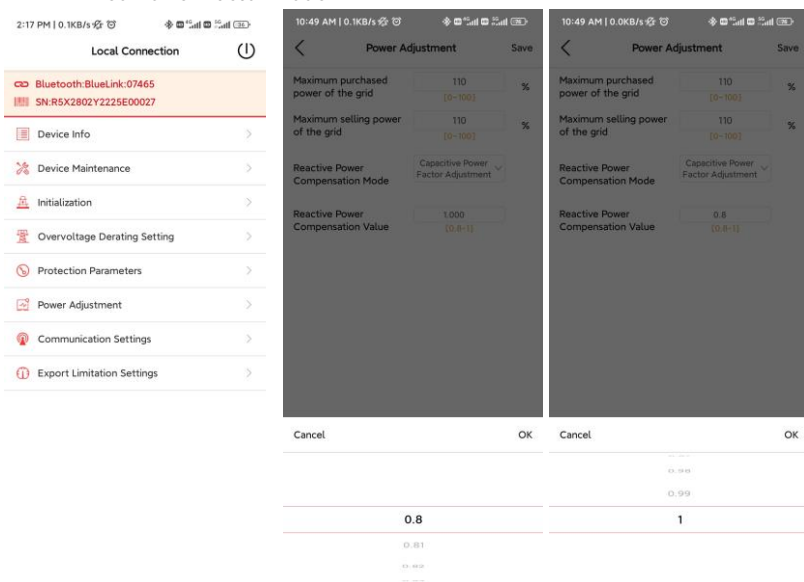
A Connect the internet via the eSolar/4G/WiFi module, and upload the inverter data onto the server and customers could monitor running information of the inverter remotely via the eSolar Web Portal or their mobile customer terminals.

For details, refer to the user manual of the communication module.

## 6.3 Setting Reactive Power Control

### 6.3.1 Setup Fixed Power Factor mode

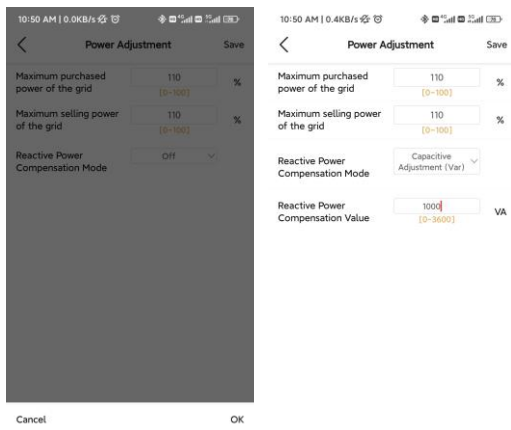
#### Fixed Power Factor Mode



Step 1: Select Power Adjustment and enter password “201561”.

Step 2: Select Capacitive Power Factor or Inductive Power Factor according to your local grid regulation. The power factor range is from 0.8 leading ~ 0.8 lagging.

## Fixed Reactive Power Mode



Capacitive Adjustment (Var)

Inductive Adjustment (Var)

Capacitive Power Factor Adjustment

Step 1: Select Inductive Adjustment Var or Capacitive Var according to your local grid regulation. The power range is from  $-60\%P_n \sim 60\%P_n$ .

### 6.3.2 Setup V-Watt and Volt-Var mode

This inverter complies with AS/NZS 4777.2:2020 for power quality response modes. The inverter satisfies different regions of DNSPs' grid connection rules requirements for volt-watt and volt-var Settings. e.g.: AS4777 series setting as below Fig 6.2&6.3.

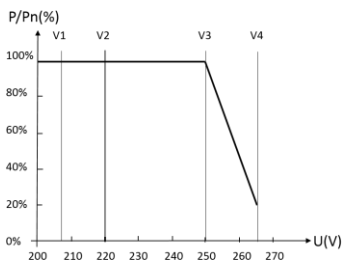


Figure 6.2 Curve for a Volt-Watt response mode (AS4777 Series)

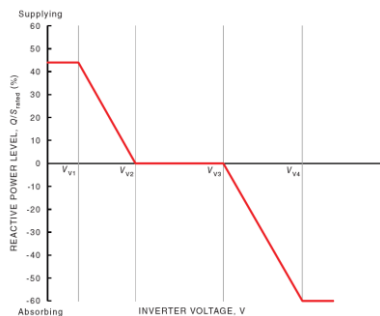
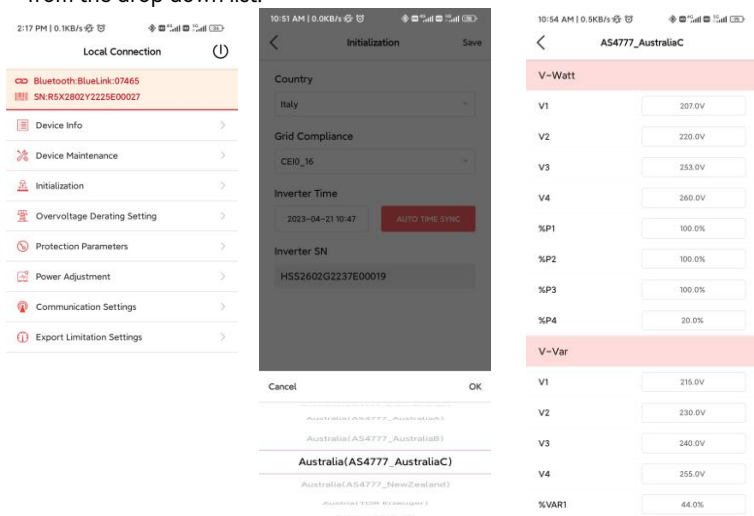


Figure 6.3 Curve for a Volt-Var control mode (AS4777 Series)

### Setting procedure:

1. AS4777 grid compliance has been set during production, please select corresponding grid compliance according to state regulation during installation. You can choose a state regulation compliance with your local grid via eSAJ Home.
2. Log in to eSAJ Home. For connection procedure please refer to chapter 6.2 eSAJ APP Connection.
3. Click “V-Watt/V-Var” to enter DNSPs settings, choose a suitable state regulation from the drop down list.



## 6.4 Export Limit Setting

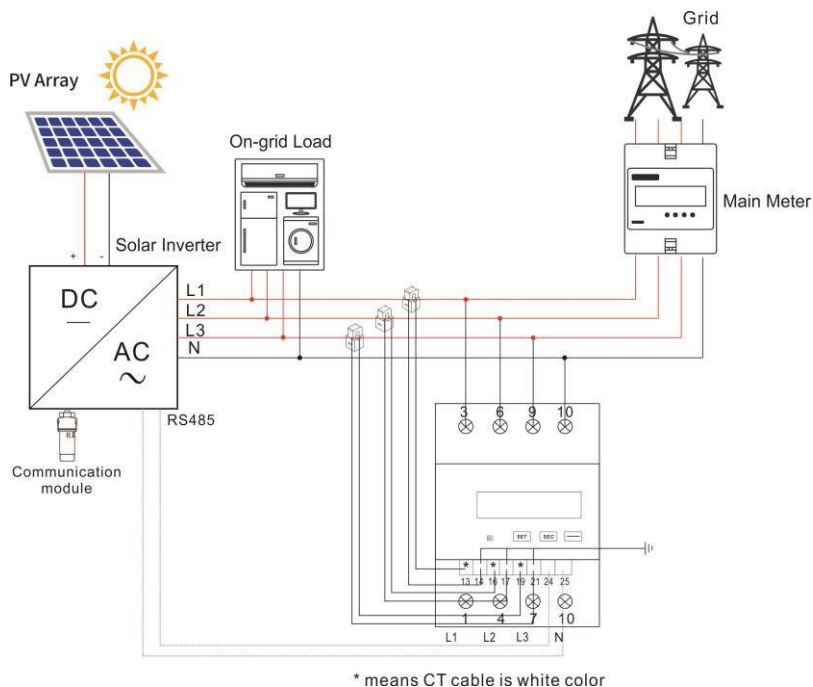




Figure 6.4 Export limit wiring schematic

### 6.4.1 APP Setting










Enter the main page of local connection and click on Export limitation setting, enter the password “201561”.

### Local connect

 Bluetooth connection:BlueLink:00456

 R5T2033J2032E20354

---

-  device info >
-  Maintenance >
-  Initial Setting >
-  InvWaveCheck Set >
-  Protection data >
-  Feature data >
-  Power adjustment >
-  Communication >
-  **Export limitation setting** >

### < Export limitation setting

Export limitation

Setup type Phase Power ▾

Wp

[0~3300]

## Chapter 7 Fault Code and Troubleshooting

| Error Code  | Explanation   |
|-------------|---|
| 01          | Relay Error Master                                    |
| 02          | Storer Error Master                                   |
| 03          | High Temperature Master                               |
| 04          | Low Temperature Master                                |
| 05          | Interior Communication Error Master                   |
| 06          | GFCI Devices Error Master                             |
| 07          | DCI Devices Error Master                              |
| 08          | Current Sensor Error Master                           |
| 09/11/13    | L1/L2/L3 Over Voltage Master                          |
| 10/12/14    | L1/L2/L3 Low Voltage Master                           |
| 15/16/17    | L1/L2/L3 High Average Voltage of 10 minutes Master    |
| 18/20/22    | L1/L2/L3 Over Frequency Master                        |
| 19/21/23    | L1/L2/L3 Low Frequency Master                         |
| 24/25/26    | L1/L2/L3 Grid Lost Error Master                       |
| 27          | GFCI Error Master                                     |
| 28/29/30    | L1/L2/L3 DCI Error Master                             |
| 31          | Insulation Error Master                               |
| 32          | Unbalanced Bus Voltage Master                         |
| 33          | Over Bus Voltage Master                               |
| 34          | Under Bus Voltage Master                              |
| 35/36/37    | L1/L2/L3 Overcurrent Master                           |
| 38          | Bus Hardware Overvoltage Master                       |
| 39/40       | PV1/PV2 Hardware Overcurrent Master                   |
| 41/42/43    | L1/L2/L3 Hardware Overcurrent Master                  |
| 45/46/47/48 | Fan 1/2/3/4 Error Master                              |
| 49          | Loss of communication between Power Meter and Control |

|          |  |
|----------|--|
|          | Board Master   |
| 50       | Interior communication Error Slave                                   |
| 51/52/53 | L1/L2/L3 Voltage Consistency Error Slave                             |
| 54/55/56 | L1/L2/L3 Frequency Consistency Error Slave                           |
| 57       | GFCI Consistency Error Slave   |
| 58/59/60 | L1/L2/L3 DCI Consistency Error Slave                                 |
| 61/63/65 | L1/L2/L3 Overvoltage Slave   |
| 62/64/66 | L1/L2/L3 Under Voltage Slave   |
| 67/69/71 | L1/L2/L3 Over Frequency Slave  |
| 68/70/72 | L1/L2/L3 Under Frequency Slave                                       |
| 73/74/75 | L1/L2/L3 Grid Lost Error Slave                                       |
| 76/77/80 | PV1 /PV2/PV3 Overvoltage Slave                                       |
| 78/79/82 | PV1/PV2/PV3 Overcurrent Slave  |
| 81       | Loss of Communication between Display Panel and Control Board Master |
| 83       | Grounding Detection Error Master                                     |
| 84       | PV Input Error Master  |
| 86       | DRM0 Error Master  |

Table 7.1 Error Code

General troubleshooting methods for inverter are as follows:

| Fault Information      | Troubleshooting  |
|------------------------|--|
| Relay Error            | If this error occurs frequently, please contact your distributor or call SAJ technical support.  |
| Storer Error           | If this error occurs frequently, please contact your distributor or call SAJ technical support.  |
| High Temperature Error | Check whether the radiator is blocked, whether the inverter is in too high or too low temperature, if the above mentioned is in normal, please contact your distributor or call SAJ technical support. |
| GFCI Device Error      | If this error occurs frequently, please contact your distributor or call SAJ technical support.  |
| DCI Device Error       | If this error occurs frequently, please contact your distributor or call SAJ technical support.  |



| Fault Information        | Troubleshooting   |
|--------------------------|---|
| GFCI Devices Error       | If this error occurs frequently, please contact your distributor or call SAJ technical support.   |
| DCI Devices Error Master | If this error occurs frequently, please contact your distributor or call SAJ technical support.   |
| Current Sensor Error     | If this error occurs frequently, please contact your distributor or call SAJ technical support.   |
| AC Voltage Error         | <ul style="list-style-type: none"> <li>·Check the volt . of the grid</li> <li>·Check the connection between the inverter and the grid.</li> <li>·Check the settings of the on -grid standards of the inverter.</li> <li>·If the volt . of the grid is higher than the volt. regulated by local grid, please inquire the local grid workers whether they can adjust the volt. at the feed point or change the value of the regulated volt.</li> <li>·If the volt . of the grid is in regulated range as allowed and LCD still in this error, please contact your distributor or call SAJ technical support.</li> </ul> |
| Frequency Error          | Check the setting of country and check the frequency of the local grid. If the above mentioned are in normal, please contact your distributor or call SAJ technical support.  |
| Grid Lost Error          | Check the connection status between the AC side of the inverter and the grid, if the above mentioned are in normal, please contact your distributor or call SAJ technical support.  |
| GFCI Error               | Check the insulation resistance of the positive side and negative side of the solar panel; check whether the inverter is in wet environment; check the grounding of the inverter. If the above mentioned are in normal, please contact your distributor or call SAJ technical support.  |
| DCI Error                | If this error exists always, please contact your distributor or call SAJ technical support.   |
| ISO Error                | Check the insulation resistance of the positive side and negative side of the solar panel; check whether the inverter is in wet environment; check whether the grounding of the inverter is loose or not. If the above mentioned are in normal, please contact your distributor or call SAJ technical support.  |
| Overcurrent              | Check the connection status between the inverter and the grid and test whether the volt. of the grid is stable or not, if the above mentioned are in normal, please contact your distributor or call SAJ technical support.   |

| Fault Information                | Troubleshooting   |
|----------------------------------|---|
| Over Bus Voltage                 | Check the settings of the solar panel. SAJ designer can help you. If the above mentioned are in normal, please contact your distributor or call SAJ technical support.                      |
| PV Overcurrent                   | If this error always exists, please contact your distributor or call SAJ technical support.   |
| PV Voltage Fault                 | Check the settings of the solar panel. SAJ designer can help you. If the above mentioned are in normal, please contact your distributor or call SAJ technical support.                      |
| Lost Communication               | Check the connection of communication cables between control board and display board. If the above mentioned are in normal, please contact your distributor or call SAJ technical support.  |
| Null line-to-earth voltage fault | Check if connection of the AC output grounding terminal is stable and reliable. If the content mentioned as above is normal, please contact your distributor or call SAJ technical support. |

Table 7.2 Troubleshooting

## Chapter 8 Routine Maintenance

### Inverter Cleaning

Clean the enclosure lid and LED indicator of the inverter with moistened cloth with clear water only. Do not use any cleaning agents as it may damage the components.

### Heat Sink Cleaning

Clean the heat sinks with dry cloth or air blower. Do not clean the heat sink with water or cleaning agents. Make sure there is enough space for ventilation of inverter.

## **Chapter 9 Recycling and Disposal**

This device should not be disposed as residential waste. An inverter that has reached the end of its life and is not required to be returned to your dealer it must be disposed carefully by an approved collection and recycling facility in your area.

## Chapter 10 Contact SAJ

### **Guangzhou Sanjing Electric Co., Ltd.**

SAJ Innovation Park, No.9, Lizhishan Road, Guangzhou Science City, Guangdong, P.R.China.

Web: <http://www.saj-electric.com>

### **Technical Support & Service**

Tel:+86 20 6660 8588

Fax:+86 20 6660 8589

E-mail: [service@saj-electric.com](mailto:service@saj-electric.com)

### **International Sales**

Tel: +86 20 6660 8618/6660 8619/6660 0082/6660 0086

Fax: +86 20 6660 8589

E-mail:[info@saj-electric.com](mailto:info@saj-electric.com)

### **Domestic Sales**

Tel: +20 6660 0058/6660 0082

Fax: +20 6660 8589

## **SAJ Warranty Policy in Australia**

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

### **1.1 Standard Warranty Period**

Guangzhou Sanjing Electric, Co., Ltd (“SAJ”) grants a standard warranty period of 66 months (5.5 years) starting from the date of shipment from SAJ factory or 60 months (5 years) starting from the date of commercial invoice marked (whichever is longer).

### **1.2 Extension of Warranty**

The purchaser of SAJ inverters (R5 series, Sununo Plus series, Suntrio Plus series, Sunfree hybrid series and AC-coupled inverters) should extend the warranty period in 18 months from the date of settlement or 30 months from the date of shipment from SAJ by providing the serial number of the unit and purchased receipt (whichever is shorter). You can purchase the warranty extension for 10 years, 15 years, 20 years or 25 years but do not apply the extension beyond the specified date, or else your application will be unacceptable. Please refer to the Warranty Extension Order Form for more details.

Once the purchase of the warranty extension goes into effect, SAJ will send the warranty extension certificate to the customer for confirming the extended warranty period.

### **1.3 Warranty Conditions**

If your inverter gets fault and requires troubleshooting, please contact your distributor or dealer directly. Alternatively, feedback briefly to SAJ for logging and

send your scanned warranty card to SAJ Service Team (service@saj-electric.com) by email to process the warranty claim.

During the Warranty Period, SAJ only covers the costs of materials, delivery (land or sea transportation) and other derived expense, for example custom taxation, when you send defective products to SAJ/SAJ distributor or/and SAJ/SAJ distributor send refurbished products to you for replacing any product or parts of the product proved to be defective in design or manufacture. To claim the warranty under the warranty policy of SAJ, you need to supply us with the following information and documentation regarding the faulty inverter:

- (1) Product Model No.(e.g. R5-3K-S2) and serial number (e.g. R5S2302G1821E00001).
- (2) Copy of the invoice and warranty certificate of the inverter.
- (3) Copy of the installation report and installation date.
- (4) Error message on eSolar Portal ( if available ) or any information which would be helpful to determine the defect.
- (5) Detailed information about the entire system (battery, circuits, etc.).

Documentation of previous claims/exchanges (if applicable).

#### **1.4 After receiving above information, SAJ will decide how to proceed the service**

- Repaired by SAJ factory, or SAJ authorized service center overhaul.
- Repaired on-site by SAJ Service Center.
- Offer a replacement device of equivalent value according to model.

In the case of an exchange, the remaining portion of the original warranty period will be transferred to the replacement device. You will not receive a new certificate, as your entitlement is documented at SAJ. While the original model stop producing or out of stock, SAJ will provide new model type of inverter or an equivalent value product.

If the inverter needs to be replaced following assessment, SAJ will send a

replacement unit immediately. The defective inverter should be sent back to the closest SAJ Service Center by packing in its original package if possible. SAJ keeps the right to accomplish the warranty service works via SAJ authorized service partner.

### 1.5 Service after Warranty Expiration

If the inverters for maintenance are out of warranty, SAJ charges an on-site service fee, parts, labor cost and logistic fee to end-user. Detailed standard refers to the listed table.

| Item                      | Return to Factory for Maintenance               | On-site Maintenance                    |
|---------------------------|---|--|
| Without parts replacement | Labor + Logistic fee<br>(to & from SAJ)         | Labor + On-site attendance fee         |
| With parts replacement    | Labor + Parts + logistic fee<br>(to & from SAJ) | Labor + On-site attendance fee + Parts |

- On-site attendance fee: Cost of travel and time for the technician in attending on-site.
- Parts: Cost of replacement parts (including any shipping/admin fee that may apply).
- Labor: Labor time fee charged for the technician, who is repairing, maintaining, installing (hardware or software) and debugging the faulty product.
- Logistic fee: Cost of delivery, tariff and other derived expense when defective products are sent from user to SAJ or/and repaired products are sent from SAJ to user.

### 1.6 Exclusion of Liability

Any defect caused by the following circumstances will not be covered by the manufacturer's warranty (the Dealers or Distributors are responsible and authorized by SAJ for the following investigation):

- ◆ "Warranty Card" not being sent back to Distributor/Dealer or SAJ;
- ◆ Product modified, parts replaced or attempt to maintain;
- ◆ Changes, or attempted repairs and erasing of series number or seals by non SAJ

technician;

- ◆ Incorrect installation or commissioning;
- ◆ Failure in complying with the safety regulations (VDE standards, etc.);
- ◆ The inverter has been improperly stored and damaged while being stored by the Dealer or the end user;
- ◆ Transport damage (including scratch caused by movement inside packaging during shipping). A Claim should be made directly to shipping company/insurance Company as soon as the container/packaging is unloaded and such damage is identified;
- ◆ Failure in following any / all of the user manual, the installation guide and the maintenance regulations;
- ◆ Improper use or misuse of the inverter;
- ◆ Insufficient ventilation of the inverter;
- ◆ Influence of foreign objects and force majeure (lightning, grid overvoltage, severe weather, fire, etc.)
- ◆ Any out-of-pocket costs incurred by Installer/Distributor or compensation from electricity production loss are not borne by SAJ in the standard warranty;

For further information on SAJ warranty regulation and reliability, please visit our website: [www.saj-electric.com](http://www.saj-electric.com)



## Warranty Card

The installer should fill in the second form while installing the inverter. For warranty claim, please complete the below forms and send this page to SAJ attached with the Customer's invoice.

### For customer to fill in

|       |          |         |
|-------|----------|---------|
| Name: |          |         |
| City: | Country: | Zip:    |
| Tel:  | Fax:     | E-mail: |

### Information on device

|                                  |                     |
|----------------------------------|---------------------|
| Device type:                     | Serial No.(S/N):    |
| Invoice No:                      | Commissioning date: |
| Fault time:                      |                     |
| Error message (Display reading): |                     |
| Brief fault description & photo: |                     |
| Signature: _____ Date: _____     |                     |

**For installer to fill in**

|                              |                            |         |
|------------------------------|----------------------------|---------|
| Modules used:                |                            |         |
| Modules per string:          | No. of string:             |         |
| Installation company:        | Contractor license number: |         |
| Company:                     |                            |         |
| City:                        | Country:                   | Zip:    |
| Tel:                         | Fax:                       | E-mail: |
| Signature: _____ Date: _____ |                            |         |





## Guangzhou Sanjing Electric CO., LTD.

ADD: SAJ Innovation Park, No.9, Lizhishan Road, Science City,

Tel: +86 20 6660 8588 Zip : 510663 Fax: +86 20 6660 8589

Web: <http://www.saj-electric.com>

- Due to the continuous improvement of products, technical parameters in this manual are modified without prior notice.