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to change without notice.

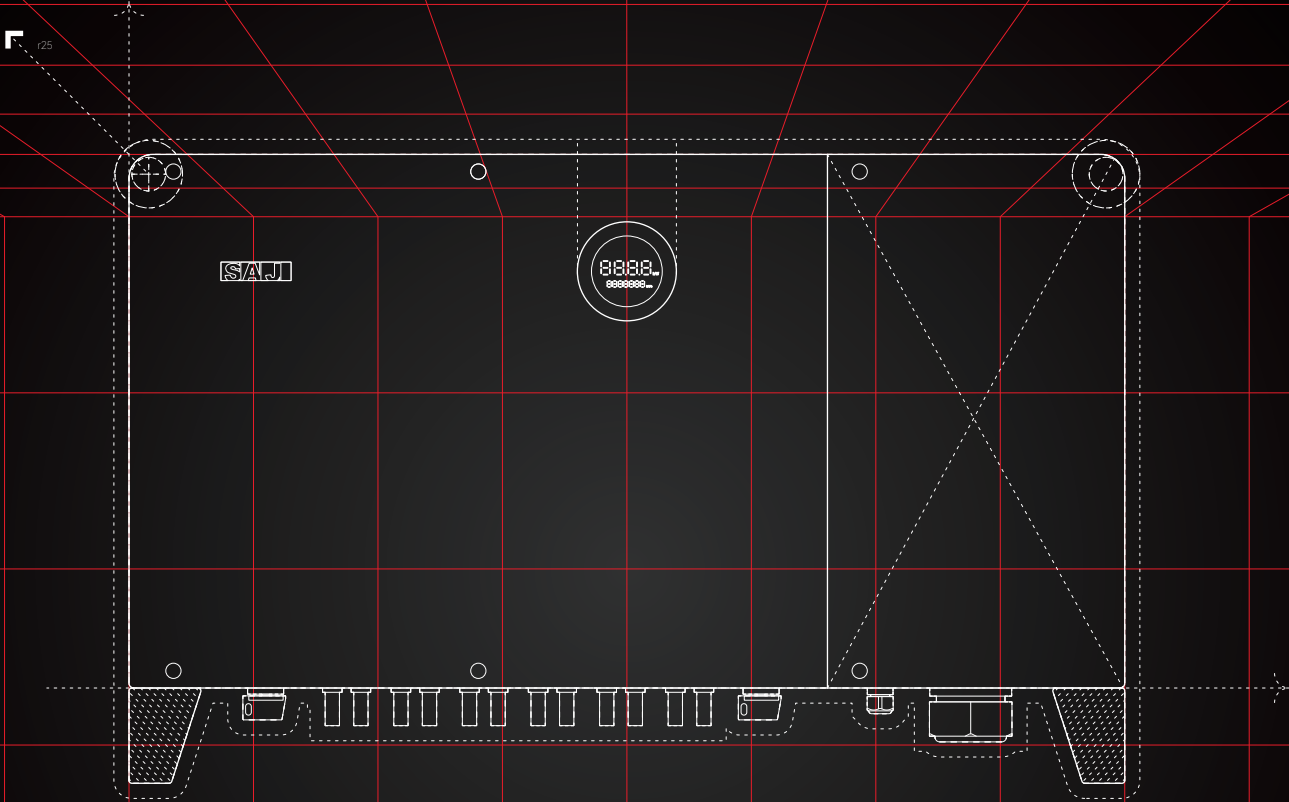


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C6-50K-T6-LV / C6-60K-T9-LV / C6-70K-T12-LV  
C6-75K-T6 / C6-100K-T9 / C6-110K-T12 / C6-125K-T12

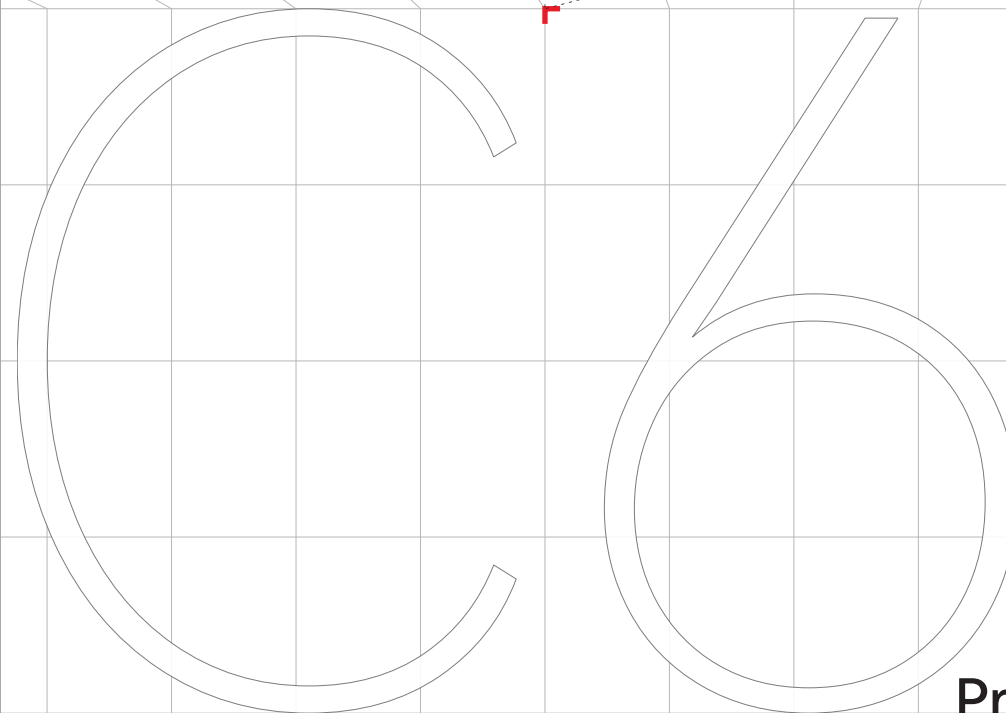


# C6 series

**COMMERCIAL ON-GRID  
SOLAR INVERTER** User Manual



The World's Leading Provider of Digital Energy  
Management Services for Green Buildings



## 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.

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## Safety Precautions

### 1.1

#### 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 inverter

**C6-75K-T6 / C6-100K-T9 / C6-110K-T12 / C6-125K-T12  
C6-50K-T6-LV, C6-60K-T9-LV, C6-70K-T12-LV**

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

### 1.2

#### Safety Instruction



##### **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

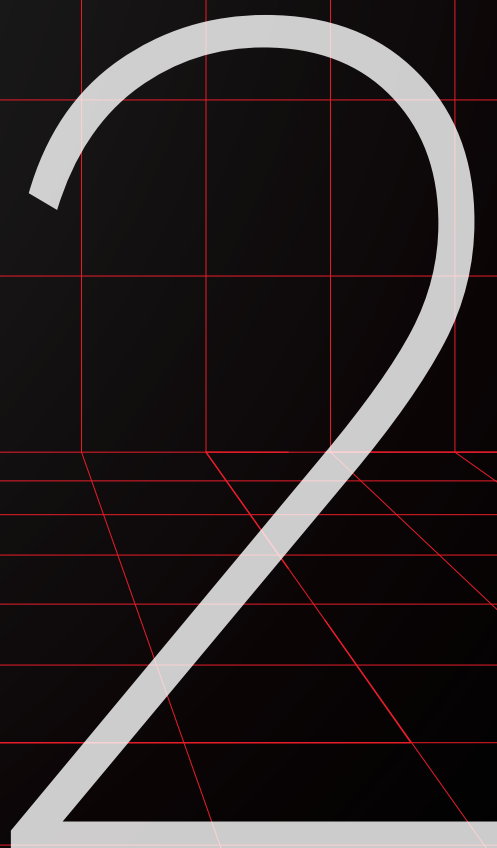
#### Target Group

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.





## Symbols



## 2.1 Symbols

|  <b>DANGER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>· There is possibility of danger to life due to electrical shock and high voltage.</li> <li>· Do not touch non-insulated parts or cables.</li> <li>· Disconnect the inverter from voltage sources and make sure it cannot be reconnected before working on the device.</li> <li>· Do not disconnect the DC connector under load.</li> <li>· Do not touch the live parts and cables inside the inverter during operation, it might result in burning or death.</li> <li>· To prevent risk of electric shock during installation and maintenance, please make sure that all AC and DC terminals are disconnected.</li> <li>· Do not touch the surface of the inverter while the housing is wet, otherwise, it might cause electrical shock.</li> <li>· Do not stay close to the inverter while there are severe weather conditions including storm, lighting, etc.</li> <li>· 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.</li> </ul> |

|  <b>WARNING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Danger to life due to fire or explosion</p> <ul style="list-style-type: none"> <li>· In the event of fault, do not conduct any direct action on the inverter.</li> <li>· Disconnect PV array from inverter via an external disconnection device. If there is no external disconnection device present, wait until no more DC power is applied to the inverter.</li> <li>· Disconnect the AC circuit breaker, or keep it disconnect if it is tripped, and secure it against reconnection.</li> <li>· Do not touch non-insulated parts or cables.</li> <li>· Do not touch non-insulated parts or cables.</li> <li>· 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.</li> <li>· 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.</li> <li>· The SAJ inverter must only be operated with PV generator. Do not connect any other source of energy to the SAJ inverter.</li> <li>· Be sure that the PV generator and inverter are well grounded in order to protect properties and persons.</li> </ul> |

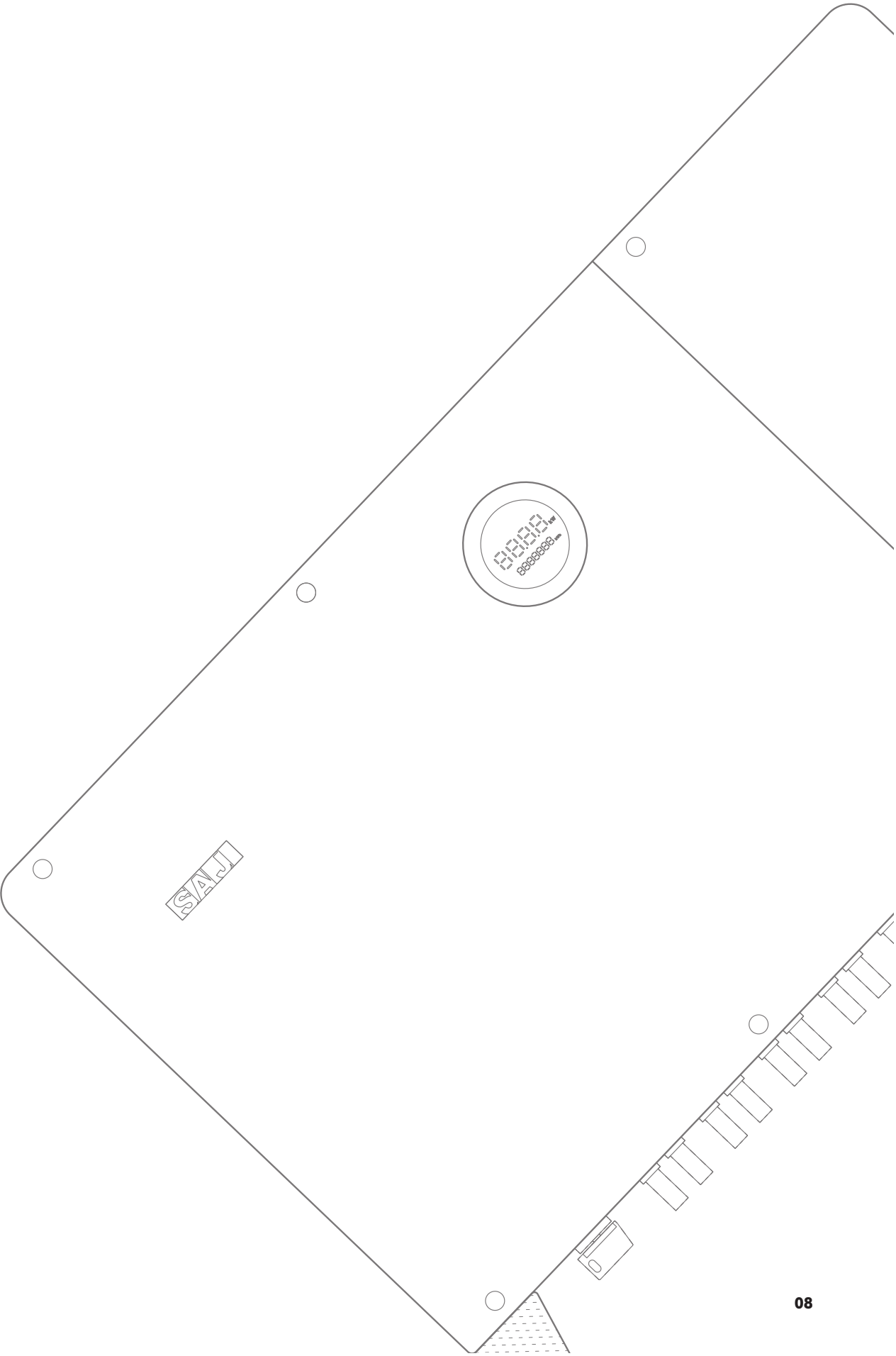
|  <b>CAUTION</b>                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>· The solar inverter enclosure will become hot during operation. Please do not touch the heat sink or enclosure during operation.</li> <li>· Risk of damage due to improper modifications.</li> </ul> |

|  <b>NOTICE</b>                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>· Public utility only.</li> <li>· 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.</li> </ul> |

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>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.                                                                                     |





## Product Information

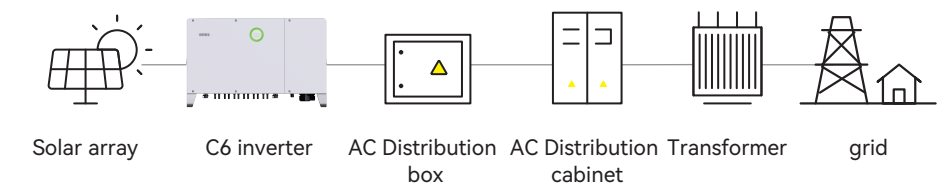
# 3

### 3.1

#### Application Scope of Products

C6 series product is grid-tied three phase inverter without transformer. The product 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 C6 inverter.

Figure 3.1  
C6 series application



#### C6 Applicable Grid

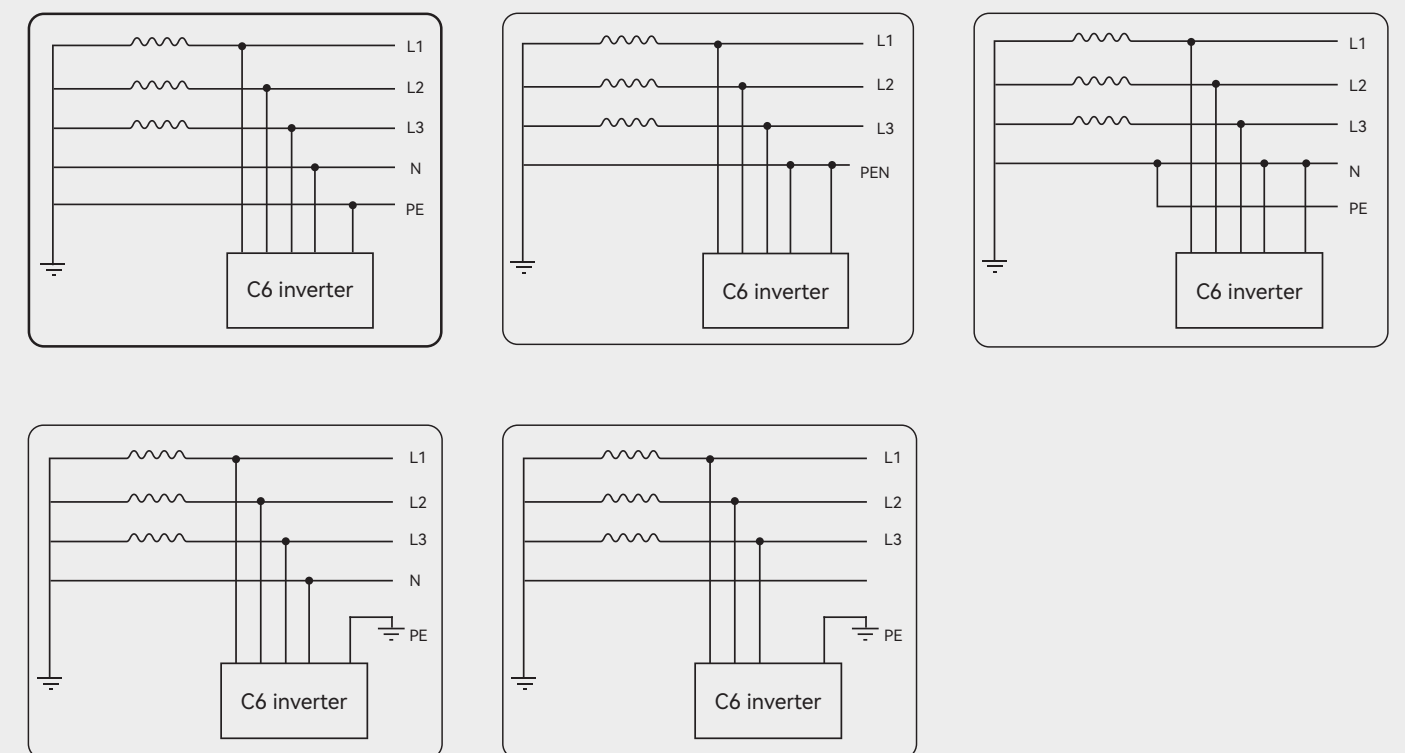
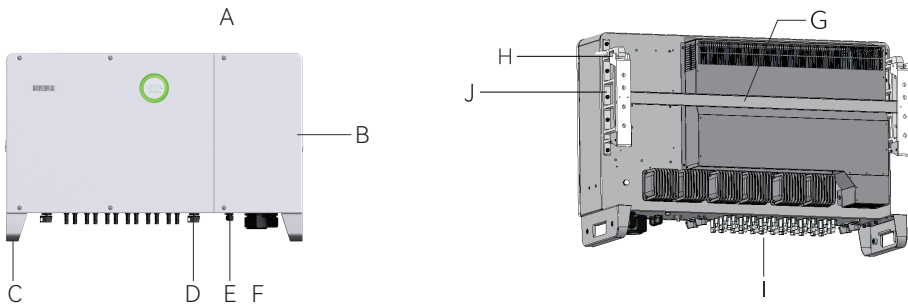


Figure 3.2  
C6 applicable grid

3.2  
Specification for  
Product Model

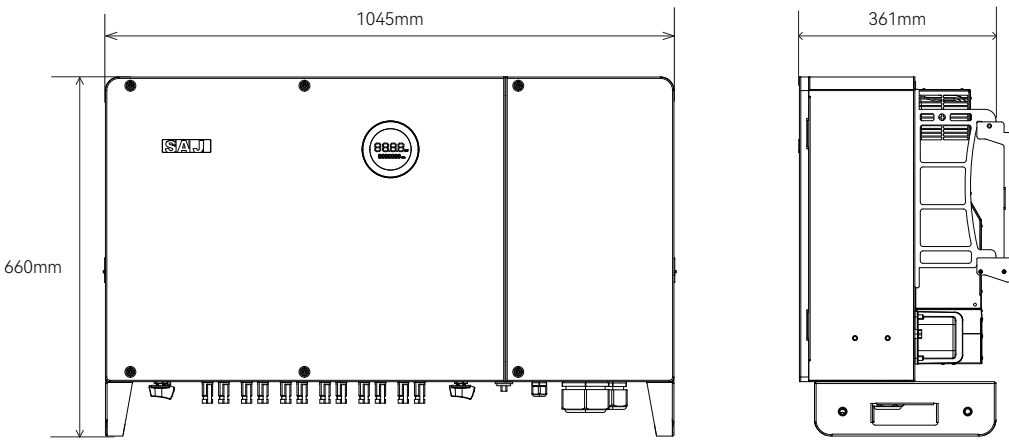
C6 – XK – TX – LV  
① ② ③ ④  
① C6 represents for product name.  
② XK represents rated power XkW of inverter, for example, 125K means 125kW.  
③ T means three phase; X represents the number of MPPT of inverter  
④ LV means low voltage

3.3  
Overview of products



| Item | Name                           |
|------|--------------------------------|
| A    | LED Display Board              |
| B    | Wiring Cabinet Cover           |
| C    | Handle (Base)                  |
| D    | DC Switch                      |
| E    | Communication Port             |
| F    | AC Output                      |
| G    | Mounting Bracket (Beam)        |
| H    | Mounting Bracket (side hanger) |
| I    | DC Input                       |
| J    | Handel (Side)                  |

3.4  
Dimensions of products



3.5  
Datasheet

C6-75K/100K/110K/125K-T6/T9/T12

| Model                                 | C6-75K-T6                 | C6-100K-T9 | C6-110K-T12 | C6-125K-T12 |
|---------------------------------------|---------------------------|------------|-------------|-------------|
| Input (DC)                            |                           |            |             |             |
| Max. PV Array Power[kWp]@STC          | 112.5                     | 150        | 165         | 180         |
| Max. Input Voltage[V]                 | 1100                      |            |             |             |
| MPP Voltage Range[V]                  | 180 ~ 1000                |            |             |             |
| Nominal Input Voltage[V]              | 600                       |            |             |             |
| Startup Voltage[V]                    | 200                       |            |             |             |
| Min. Input Voltage[V]                 | 180                       |            |             |             |
| Max. Input Current[A]                 | 6*30                      | 9*30       | 12*30       |             |
| Max. Short-Circuit Current[A]         | 6*45                      | 9*45       | 12*45       |             |
| Number of Strings per MPP Tracker     | 2                         |            |             |             |
| Number of MPP Trackers                | 6                         | 9          | 12          |             |
| DC Switch                             | Integrated                |            |             |             |
| Output (AC)                           |                           |            |             |             |
| Rated AC Output Power[kW]             | 75                        | 100        | 110         | 125         |
| Max. AC Output Power[kW]              | 82.5                      | 110        | 121         | 125         |
| Max. AC Apparent Power[kVA]           | 82.5                      | 110        | 121         | 125         |
| Rated AC Output Current[A]            | 108.3                     | 144.3      | 158.8       | 180.4       |
| Max. AC Output Current[A]             | 119.1                     | 158.8      | 174.6       | 180.4       |
| Nominal AC Voltage[V]                 | 3L+N+PE/3L+PE,230/400     |            |             |             |
| Nominal AC Grid Frequency/ Range [Hz] | 50, 60 / 44-55, 54-65     |            |             |             |
| Total Distortion Harmonic[THDi]       | <3%                       |            |             |             |
| Adjustable Power Factor               | 0.8 leading ~ 0.8 lagging |            |             |             |
| Feed-in phases/AC connection phases   | 3/3                       |            |             |             |
| Efficiency                            |                           |            |             |             |
| Max. Efficiency                       | 98.8%                     |            |             |             |
| Euro. Efficiency                      | 98.5%                     |            |             |             |

| Model                                       | C6-75K-T6                                           | C6-100K-T9 | C6-110K-T12 | C6-125K-T12 |
|---------------------------------------------|-----------------------------------------------------|------------|-------------|-------------|
| Protection                                  |                                                     |            |             |             |
| PV String Current Monitoring                | Integrated                                          |            |             |             |
| Internal Temperature Detection              | Integrated                                          |            |             |             |
| Residual Current Monitoring Unit            | Integrated                                          |            |             |             |
| DC Insulation Resistance Detection          | Integrated                                          |            |             |             |
| Anti-islanding Protection                   | Integrated                                          |            |             |             |
| DC Reverse Polarity Protection              | Integrated                                          |            |             |             |
| DC Surge Protection                         | Type II                                             |            |             |             |
| AC Surge Protection                         | Type II                                             |            |             |             |
| AC Overcurrent Protection                   | Integrated                                          |            |             |             |
| AC Short-Circuit Protection                 | Integrated                                          |            |             |             |
| AC Overvoltage Protection                   | Integrated                                          |            |             |             |
| AFCI Protection                             | Optional                                            |            |             |             |
| PID Recovery                                | Optional                                            |            |             |             |
| Interface                                   |                                                     |            |             |             |
| AC Connection                               | OT/DT Terminal (Max. 240 mm <sup>2</sup> )          |            |             |             |
| DC Connection                               | MC4                                                 |            |             |             |
| Display                                     | LED+APP (Bluetooth)                                 |            |             |             |
| Communication Port                          | RS232+RS485                                         |            |             |             |
| Communication Mode                          | Wi-Fi/Ethernet/4G/PLC(Optional)                     |            |             |             |
| General Data                                |                                                     |            |             |             |
| Topology                                    | Transformerless                                     |            |             |             |
| Nighttime Power Consumption[W]              | <2                                                  |            |             |             |
| Operating Temperature Range                 | -30°C ~ +60°C [45°C to 60°C with derating]          |            |             |             |
| Cooling Method                              | Intelligent fan cooling                             |            |             |             |
| Ambient Humidity Max. Operating Altitude[m] | 0% ~ 100% non-condensing4000 (>3000 power derating) |            |             |             |

| Model                  | C6-75K-T6                                                                                                       | C6-100K-T9 | C6-110K-T12 | C6-125K-T12 |
|------------------------|-----------------------------------------------------------------------------------------------------------------|------------|-------------|-------------|
| General Data           |                                                                                                                 |            |             |             |
| Noise[dBA]             | <60                                                                                                             |            |             |             |
| Ingress Protection     | IP66                                                                                                            |            |             |             |
| Mounting               | Wall mounting                                                                                                   |            |             |             |
| Dimensions [H*W*D][mm] | 660*1045 *361                                                                                                   |            |             |             |
| Weight[kg]             | 93                                                                                                              |            | 98          |             |
| Warranty[Year]         | 5(Standard)/10/15/20/25 (Optional)                                                                              |            |             |             |
| Certifications         | EN50549-2,IEC/EN62109-1/2 EN61000-6-2/4,PPDS, RD1669,RD413, UNE217001,IEC 62116, IEC61727,G99, CEI 0-16, C10/11 |            |             |             |

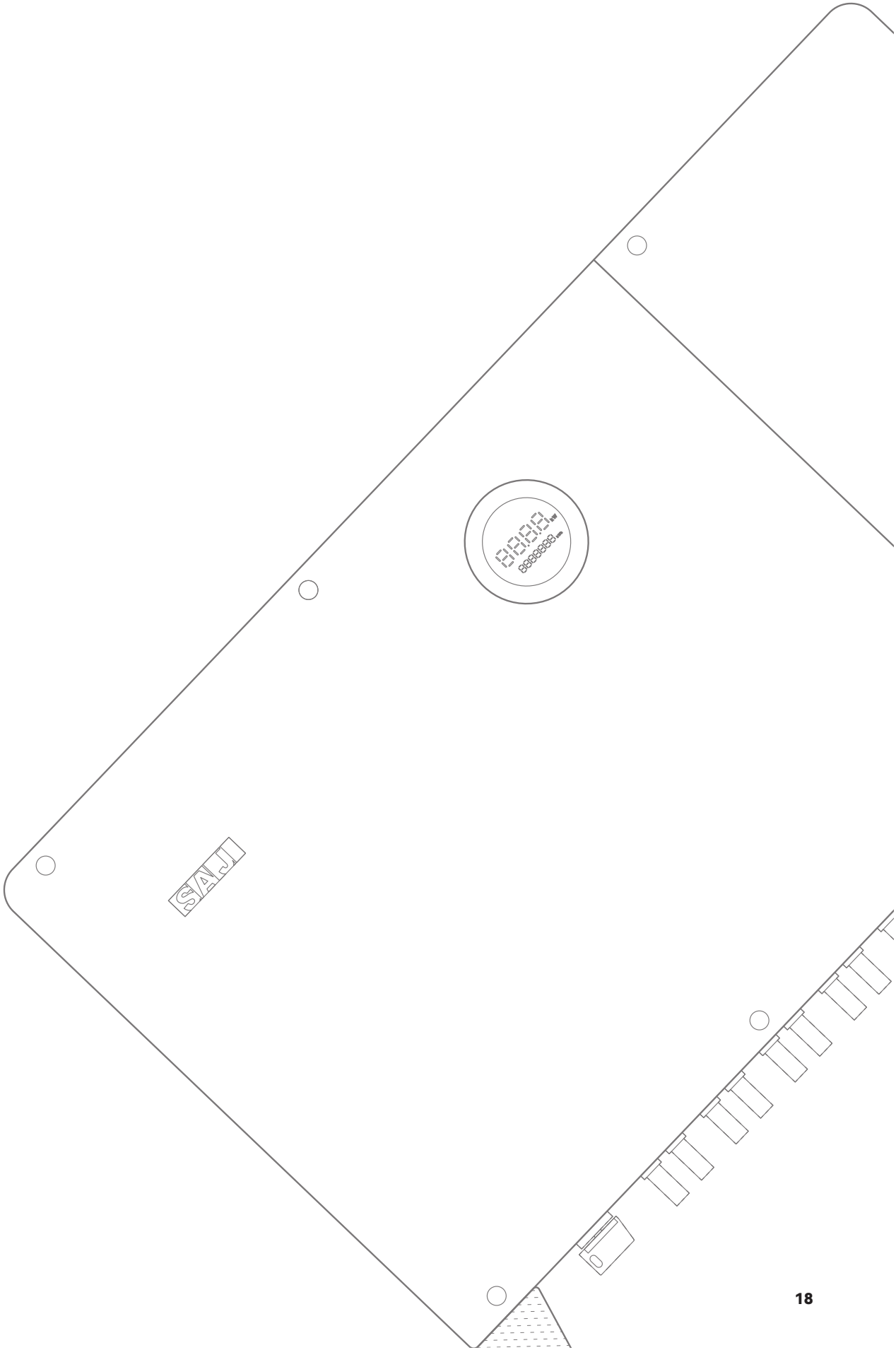
C6-50K-T6-LV,C6-60K-T9-LV,C6-70-T12-LV

| Model                                 | C6-50K-T6-LV              | C6-60K-T9-LV | C6-70K-T12-LV |
|---------------------------------------|---------------------------|--------------|---------------|
| Input (DC)                            |                           |              |               |
| Max. PV Array Power[kWp]@STC          | 75                        | 90           | 105           |
| Max. Input Voltage[V]                 | 1100                      |              |               |
| MPP Voltage Range[V]                  | 180 ~ 1000                |              |               |
| Nominal Input Voltage[V]              | 380                       |              |               |
| Startup Voltage[V]                    | 200                       |              |               |
| Min. Input Voltage[V]                 | 180                       |              |               |
| Max. Input Current[A]                 | 6*30                      | 9*30         | 12*30         |
| Max. Short-Circuit Current[A]         | 6*45                      | 9*45         | 12*45         |
| Number of Strings per MPP Tracker     | 2                         |              |               |
| Number of MPP Trackers                | 6                         | 9            | 12            |
| DC Switch                             | Integrated                |              |               |
| Output (AC)                           |                           |              |               |
| Rated AC Output Power[kW]             | 50                        | 60           | 70            |
| Max. AC Output Power[kW]              | 55                        | 60           | 70            |
| Max. AC Apparent Power[kVA]           | 55                        | 60           | 70            |
| Rated AC Output Current[A]            | 131.2                     | 157.5        | 183.7         |
| Max. AC Output Current[A]             | 144.3                     | 157.5        | 183.7         |
| Nominal AC Voltage[V]                 | 3L+N+PE/3L+PE,127/220     |              |               |
| Nominal AC Grid Frequency/ Range [Hz] | 50, 60/44-55, 54-65       |              |               |
| Total Distortion Harmonic[THDi]       | <3%                       |              |               |
| Adjustable Power Factor               | 0.8 leading ~ 0.8 lagging |              |               |
| Feed-in phases/AC connection phases   | 3/3                       |              |               |
| Efficiency                            |                           |              |               |
| Max. Efficiency                       | 98.8%                     |              |               |
| Euro. Efficiency                      | 98.5%                     |              |               |

| Model                              | C6-50K-T6-LV                           | C6-60K-T9-LV | C6-70K-T12-LV |
|------------------------------------|----------------------------------------|--------------|---------------|
| Protection                         |                                        |              |               |
| PV String Current Monitoring       | Integrated                             |              |               |
| Internal Temperature Detection     | Integrated                             |              |               |
| Residual Current Monitoring Unit   | Integrated                             |              |               |
| DC Insulation Resistance Detection | Integrated                             |              |               |
| Anti-islanding Protection          | Integrated                             |              |               |
| DC Reverse Polarity Protection     | Integrated                             |              |               |
| DC Surge Protection                | Type II                                |              |               |
| AC Surge Protection                | Type II                                |              |               |
| AC Overcurrent Protection          | Integrated                             |              |               |
| AC Short-Circuit Protection        | Integrated                             |              |               |
| AC Overvoltage Protection          | Integrated                             |              |               |
| AFCI Protection                    | Optional                               |              |               |
| PID Recovery                       | Optional                               |              |               |
| Interface                          |                                        |              |               |
| AC Connection                      | OT/DT Terminal (Max. 240 mm²)          |              |               |
| DC Connection                      | MC4                                    |              |               |
| Display                            | LED+APP (Bluetooth)                    |              |               |
| Communication Port                 | RS232+RS485                            |              |               |
| Communication Mode                 | Wi-Fi/Ethernet/4G/PLC(Optional)        |              |               |
| General Data                       |                                        |              |               |
| Topology                           | Transformerless                        |              |               |
| Nighttime Power Consumption[W]     | <2                                     |              |               |
| Operating Temperature Range        | -30℃ ~ +60℃ [45℃ to 60℃ with derating] |              |               |
| Cooling Method                     | Intelligent Fan Cooling                |              |               |
| Ambient Humidity                   | 0% ~ 100% Non-condensing               |              |               |



| Model                      | C6-50K-T6-LV                       | C6-60K-T9-LV | C6-70K-T12-LV |
|----------------------------|------------------------------------|--------------|---------------|
| General Data               |                                    |              |               |
| Max. Operating Altitude[m] | 4000 (>3000 Power Derating)        |              |               |
| Noise[dBA]                 | <60                                |              |               |
| Ingress Protection         | IP66                               |              |               |
| Mounting                   | Wall mounting                      |              |               |
| Dimensions [H*W*D][mm]     | 660*1045*361                       |              |               |
| Weight[kg]                 | 93                                 | 98           |               |
| Warranty[Year]             | 5(Standard)/10/15/20/25 (Optional) |              |               |
| Certifications             | IEC/EN62109-1/2, EN61000-6-1/2/3/4 |              |               |





# Instruction for Installation

## 4.1

### Safety Instruction

#### 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 thoroughly tested and are checked before delivery, 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

##### Scope of Delivery

Please refer to the packing list inside the package container.

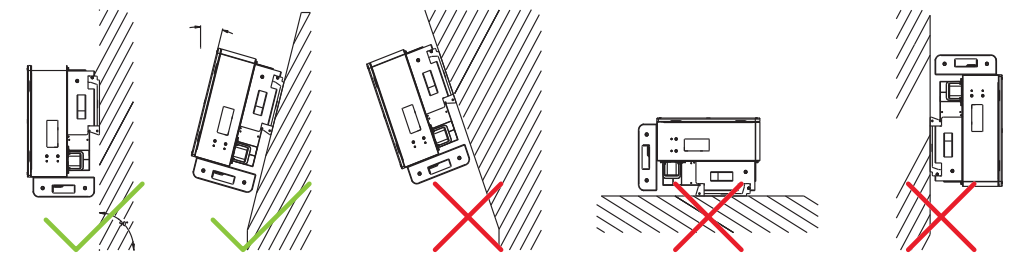
## 4.3

### The Determination of the Installation Method and Position

#### 4.3.1

##### Mounting methods

Fig 4.1  
Mounting methods



- ① The equipment employs natural convection cooling, and it can be installed indoor or outdoor.
- ② Vertical installation on eye 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 eye level.
- ④ When mounting the inverter, please consider the solidity of wall for inverter, including accessories, make sure the wall has enough strength to hold the screws and bear the weight of products. Please ensure the mounting bracket mounted tightly.

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.  
DO NOT install the inverter near any inflammable and explosive items.

Fig 4.2  
Installation clearance

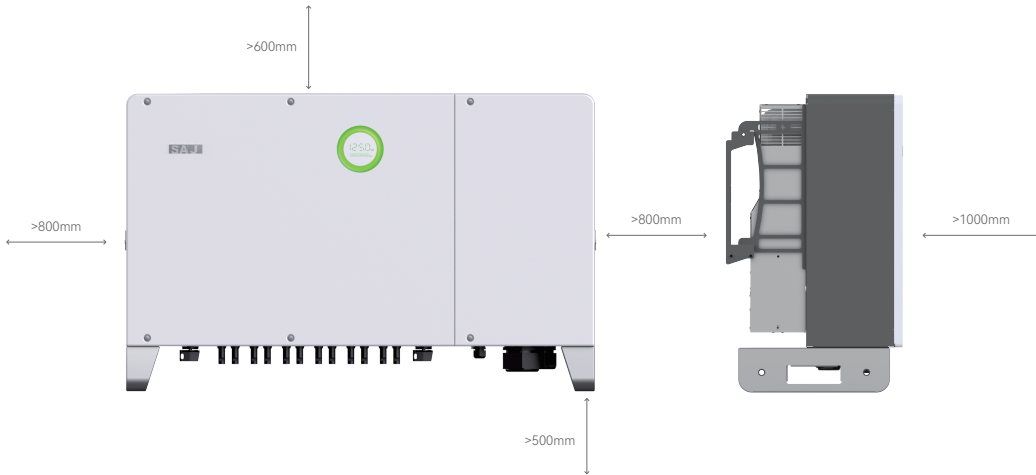
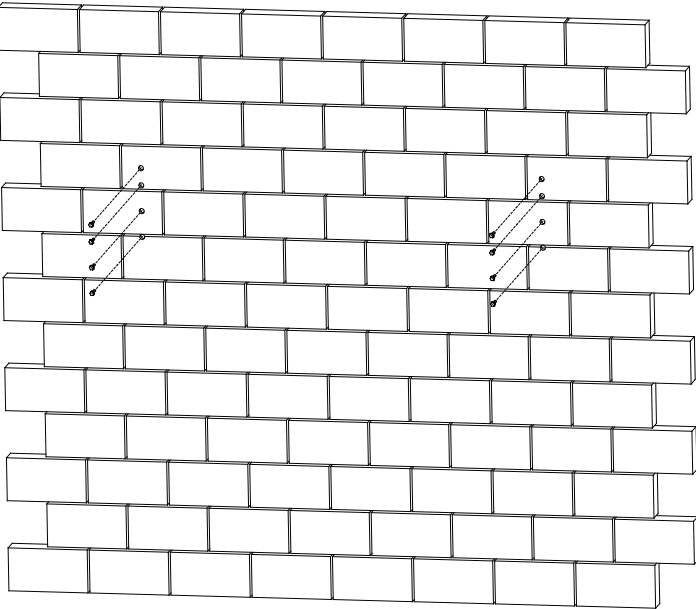


Fig 4.4  
C6-75K/100K/125K-T6/T9/T12  
mounting panel drill holes' position



#### 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.

#### Mount the Screws and the Mounting Bracket

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

### 4.4 Mounting Procedure

Mark the Positions of the Drill Holes of the Mounting Bracket  
The mounting position should be marked as below.

#### 4.4.1 Wall Mounting

Fig 4.3  
Dimensions of mounting bracket  
(Dimensions in mm)

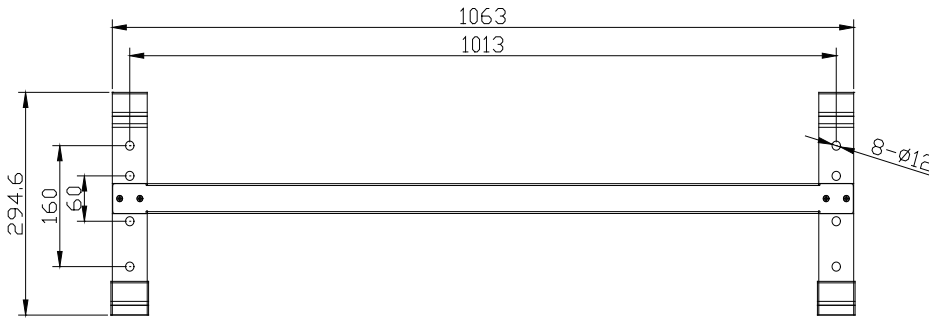
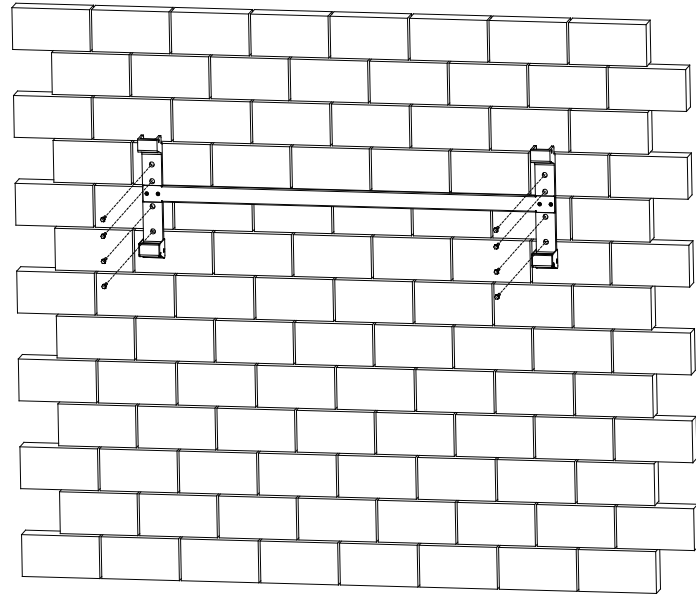


Fig 4.5  
Mount the mounting bracket



Mount the Inverter

Carefully mount the inverter to the mounting bracket. Make sure that the rear part of the equipment is closely mounted to the mounting bracket.

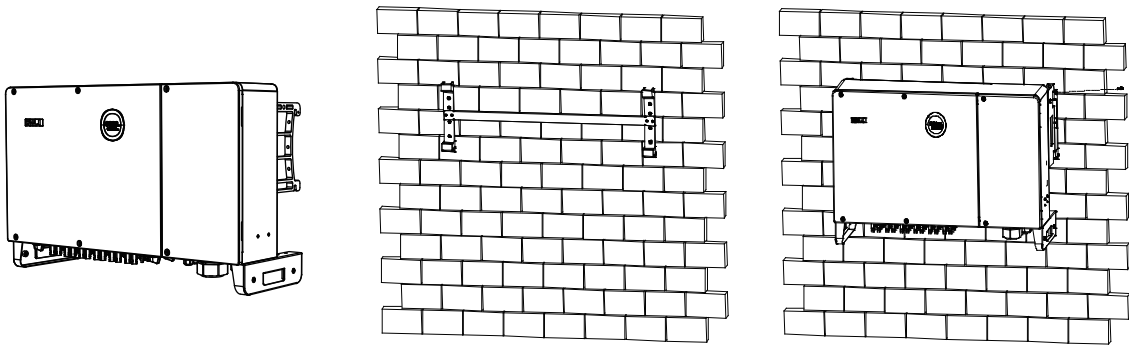


Fig 4.6  
Mounting inverter

Mount the Screws and the Mounting Bracket

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

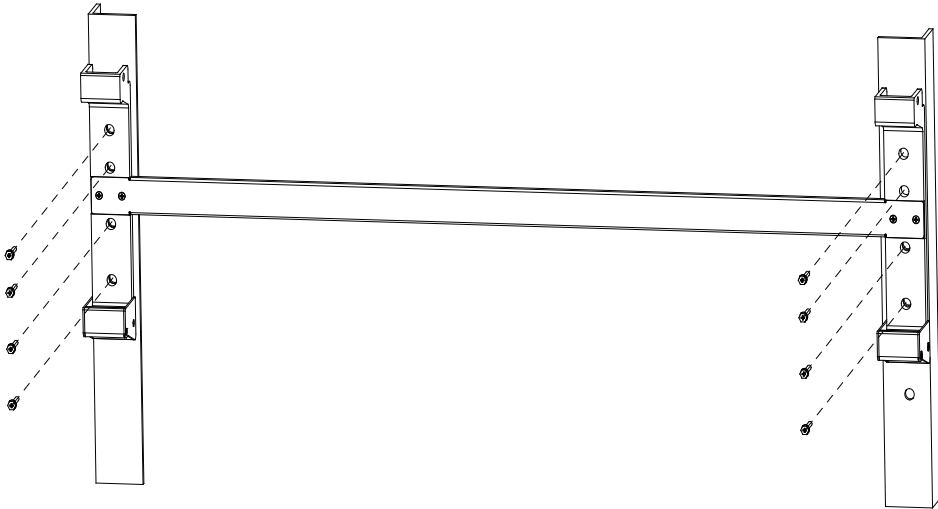


Fig 4.9  
Mount the mounting bracket

4.4.2  
Bracket Installation

Mark the Positions of the Drill Holes of the Mounting Bracket

The mounting position should be marked as below.

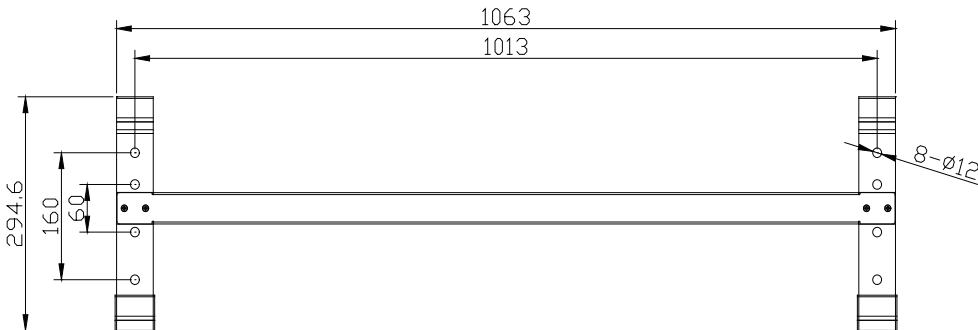


Fig 4.7  
Dimensions of mounting bracket  
(Dimensions in mm)

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.

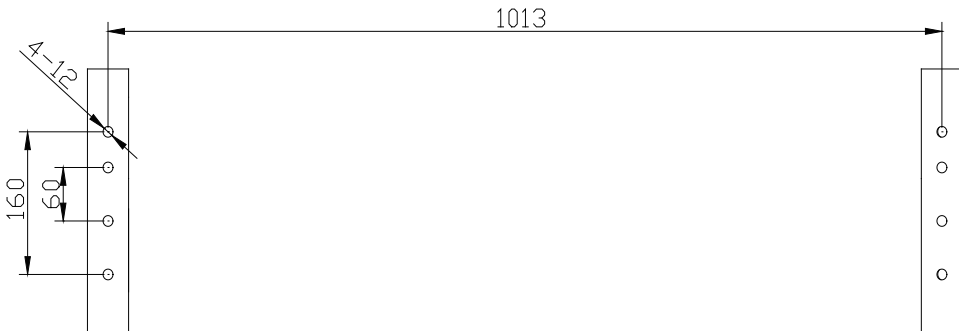


Fig 4.8  
Drill holes' dimensions (dimensions in mm)

Mount the Inverter

Carefully mount the inverter to the mounting bracket. Make sure that the rear part of the equipment is closely mounted to the mounting bracket.

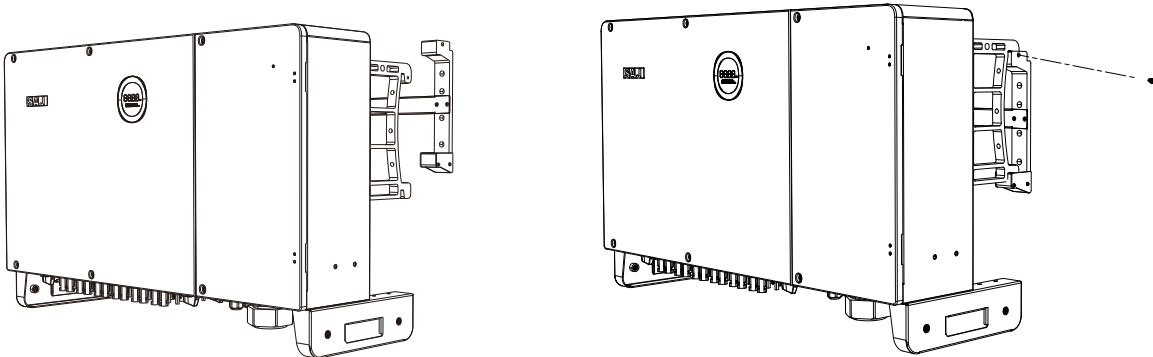


Fig 4.10  
Mounting inverter

# Electrical Connection

5

## 5.1 Safety Instruction

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.

- The PV panel string will produce lethal high voltage when exposed to sunlight.
- Disconnect DC and AC circuit breakers before starting electrical connections.
- Ensure all the cables have no voltage before conducting cable connection

 **WARNING**

- Any improper operations during cable connection can cause device damage or personal injury.
- All cables must be undamaged, firmly attached, properly insulated and adequately dimensioned.

 **NOTICE**

- 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.

## 5.2 Specification for Electrical Interface

Figure 5.1  
Electrical terminals

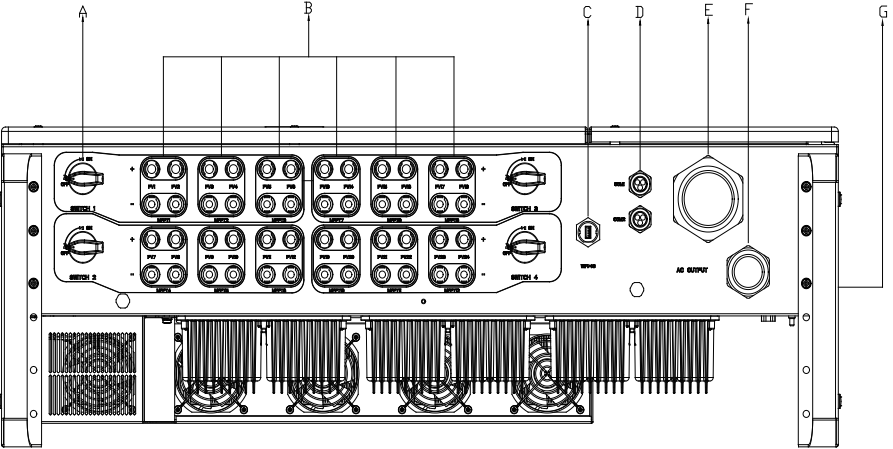


Table 5.1  
Specifications for interface

| Item | Name                |
|------|---------------------|
| A    | DC Switch           |
| B    | DC Input            |
| C    | RS232 Communication |
| D    | RS485 Communication |
| E    | AC Output           |
| F    | Ground Connection   |
| G    | Ground Connection   |

5.3 AC Connection

5.3.1 Electrical Connection Overview

Fig 5.2 Electrical connection overview

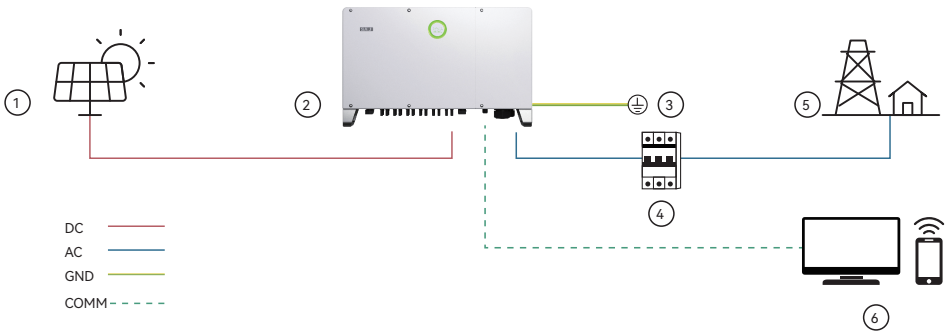


Table 5.2 Electrical connection overview

| Item | Name                                    |
|------|-----------------------------------------|
| 1    | PV Array                                |
| 2    | C6 Inverter                             |
| 3    | Inverter enclosure grounding connection |
| 4    | Circuit Breaker                         |
| 5    | Grid                                    |
| 6    | Monitoring Platform                     |

5.3.2 Cable Specification

Table 5.3 Recommended power grid connecting cable specification

| Cross-sectional area of cables(mm²)      |           |                                   | External diameter (mm) |
|------------------------------------------|-----------|-----------------------------------|------------------------|
| Cable type                               | Scope (S) | Recommended grounding cable (Spe) |                        |
| Three core, four core<br>five core cable | 95-240    | Spe≥S/2                           | 38-66                  |
| Four single core cable                   |           |                                   | 14-32                  |

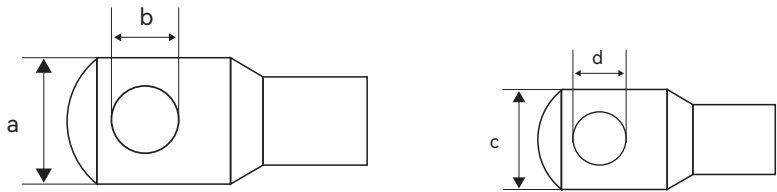
5.3.3 Circuit Breaker Specification

Table 5.4 Recommended circuit breaker specification

| Model       | Recommended circuit breaker rated voltage | Recommended circuit breakerrated current |
|-------------|-------------------------------------------|------------------------------------------|
| C6-75K-T6   | ≥400V                                     | 160A                                     |
| C6-100K-T9  |                                           | 200A                                     |
| C6-110K-T12 |                                           | 225A                                     |
| C6-125K-T12 |                                           | 250A                                     |

5.3.4 OT/OD Terminal Specification

Fig 5.3 OT/OD terminal



L1/L2/L3/N cable terminal Specification:

|                           |          |                       |
|---------------------------|----------|-----------------------|
| L1/L2/L3/N cable terminal | M12 size | a≤46mm, 13mm≤b≤15.5mm |
| PE cable terminal         | M8 size  | c≤30mm, 8mm≤d≤11mm    |

Note: Do not connect Aluminum OT/OD terminal with AC output terminal, as it will have electrochemical reaction with AC output terminal and affect the reliability of connection. Please choose the OT/OD terminal material according to the cable conductor material as below.

Table 5.5 Specification of cables

Table 5.6 Specification of cable conductor material

| Cable conductor material | Recommended OT/OD terminal material |
|--------------------------|-------------------------------------|
| Copper                   | Copper                              |
| Copper clad aluminum     | Copper                              |
| Aluminum                 | Copper to aluminum adapter terminal |

5.3.5 Connection of Additional Grounding

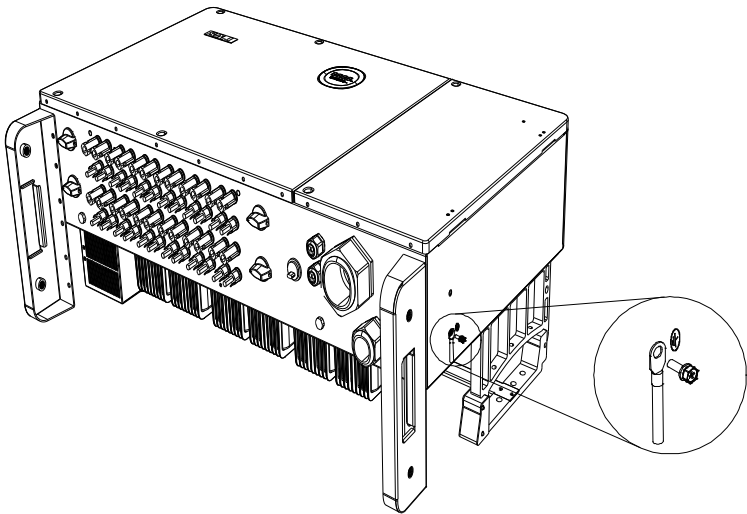
 **WARNING**

- The ground connection of this additional grounding connection cannot replace the AC cable PE terminal connection.
- Make sure that all the grounding points on the enclosures are equipotential connected when there are multiple inverters
- Connect this additional grounding cable before AC cable connection, DC cable connection and communication cable connection.

Note: The additional cable and OT/DT terminal should be prepared by user themselves.

Remove the screw of grounding terminal and secure the additional grounding cable by insert a screw into the screw hole in the OT/DT terminal.

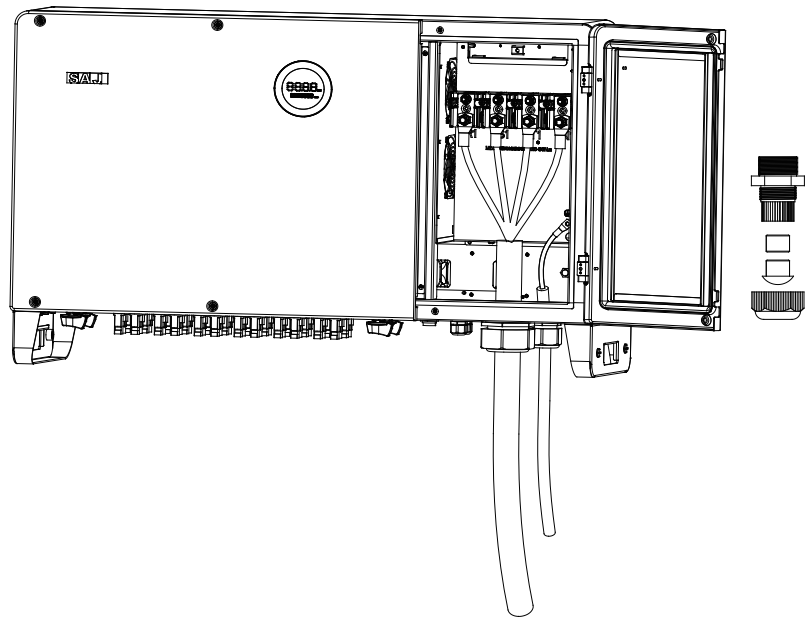
Fig 5.4  
Installing additional grounding cable



5.3.6  
AC Side Electrical Connection

- 1.Strip off wire insulation skin and AC cable insulation skin to a proper length
- 2.Crimp the AC cable with OT/OD terminal
- 3.Disconnect AC circuit breaker, open the wiring cabinet cover
- 4.Insert the cable through waterproof cable gland and housing
- 5.Insert the conductors into the corresponding ports and fix it with screws
- 6.Secure the cable gland by fastening sealing nut
- 7.Plug the AC connector into the AC connector port of inverter

Fig 5.5  
AC side electrical connection



5.4  
DC Side Electrical Connection

5.4.1  
DC cable specification

Table5.7  
Recommended specifications of DC cables

| Cross-sectional area of cables(mm²) | External diameter of the cables(mm) |
|-------------------------------------|-------------------------------------|
| Scope                               | 6mm-9mm                             |
| 4≤S≤6                               |                                     |

5.4.2  
PV Connector Assembly

**DANGER**

Dangerous to life due to electric shock when live components or DC cables are touched.

- The PV panel string will produce lethal high voltage when exposed to sunlight. Touching live DC cables results in death or lethal injuries.
- DO NOT touch non-insulated parts or cables
- Disconnect inverter from voltage sources.
- DO NOT disconnect DC connectors under load.
- Wear suitable personal protective equipment for all work.

**WARNING**

- Make sure the PV array is well insulated to ground before connecting it to the inverter.
- Make sure the maximum input voltage of each string is not exceeding 1100V
- When input voltage is between 950V~1100V, the inverter will enter standby mode. When the input voltage returns to MPPT operating voltage range, which is 180V~950V, the inverter will return to normal mode.
- Make sure the maximum short-circuit current of DC side is within the permissible range.

Fig 5.6  
Positive connector

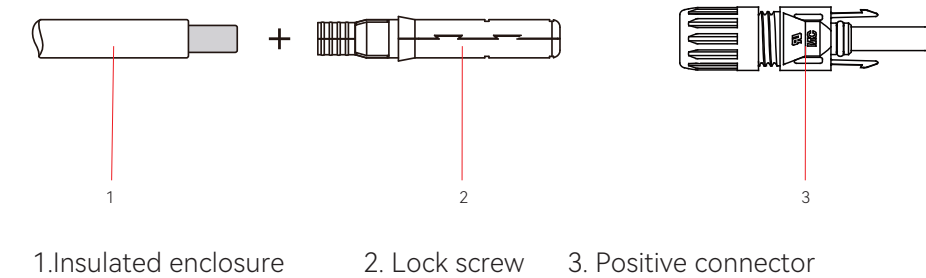
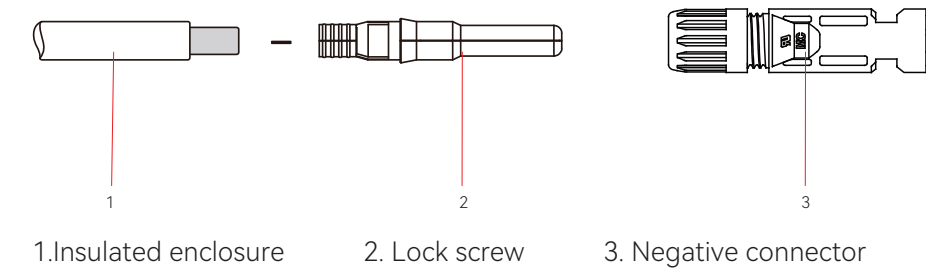


Fig 5.7  
Negative connector





Connecting Procedures:

1. Tighten the lock screws on positive and negative connector.
2. Strip the insulation of the positive and negative cables with 8-10mm length.

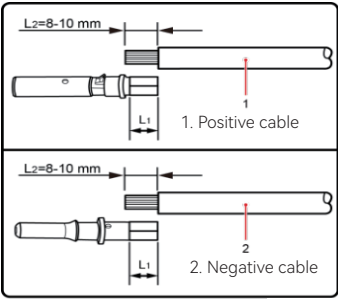


Fig 5.8  
Stripping off the insulation skin of cables

3. Feed the positive and negative cables into corresponding lock screws.

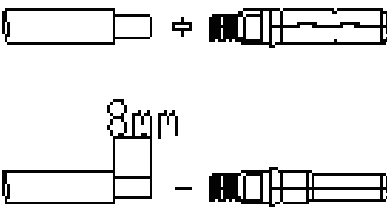


Fig 5.9  
Inserting cables to lock screws

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.

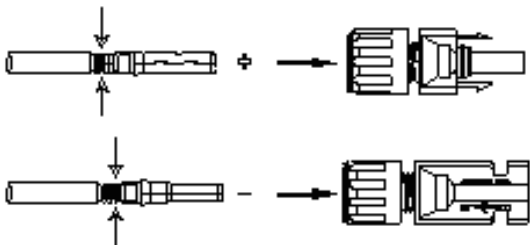


Fig 5.10  
Inserting crimped cables to connectors

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.

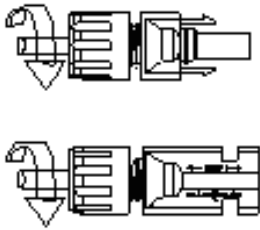
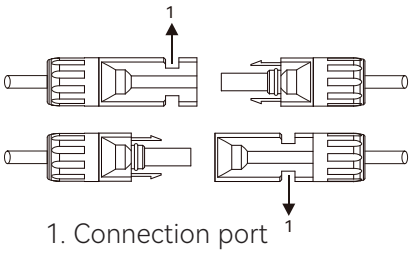


Fig 5.11  
Securing the connectors

7. Make sure the DC switch is at OFF position
8. 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.

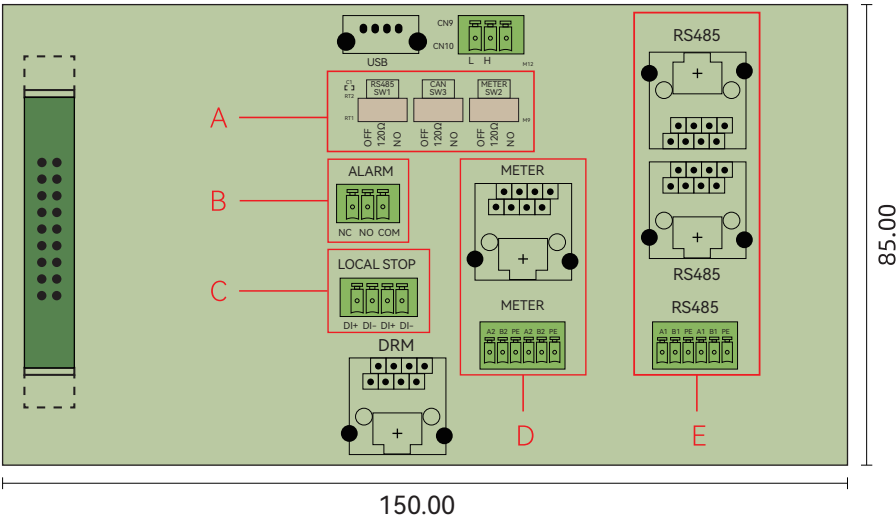
Fig 5.12  
Plug in connectors



## 5.5 Communication Connection

### 5.5.1 Communication Terminal Overview

Fig 5.13  
Communication terminal overview

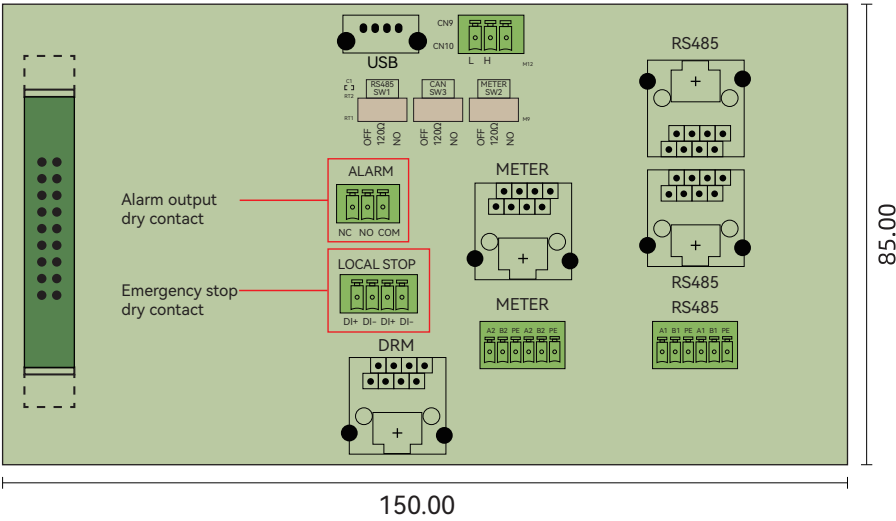


| Position | Description                |
|----------|----------------------------|
| A        | DIP Switch                 |
| B        | Alarm Output Dry Contact   |
| C        | Emergency Stop Dry Contact |
| D        | Meter Output               |
| E        | RS485 Communication Port   |

Table 5.8  
Terminal description

### 5.5.2 Dry Contact Connection

Fig 5.14  
Dry contact overview



The inverter is integrated with alarm output dry contact and emergency stop dry contact.

Alarm output dry contact:  
Relay can be set to normal open contact (COM&NO) or normal close contact (COM&NC), when inverter is in alarm/fault state, the fault status can be indicated by LED indicator or other external display device.

1.LED indicator as the alarm/fault indicator. When relay is in normal close contact (NC) and no alarm/fault occurs, LED indicator is on; When there is fault occurs, relay is in normal open contact (NO), LED indicator is off.

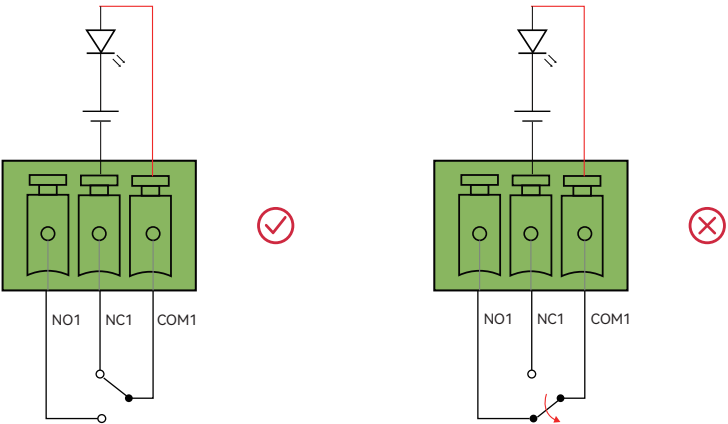


Fig 5.15  
Relay is in normal close contact

2.LED indicator as the alarm/fault indicator. When relay is on normal open contact (NO) and no alarm/fault occurs, LED indicator is off; When there is fault occurs, relay is on normal close contact (NC), LED is on.

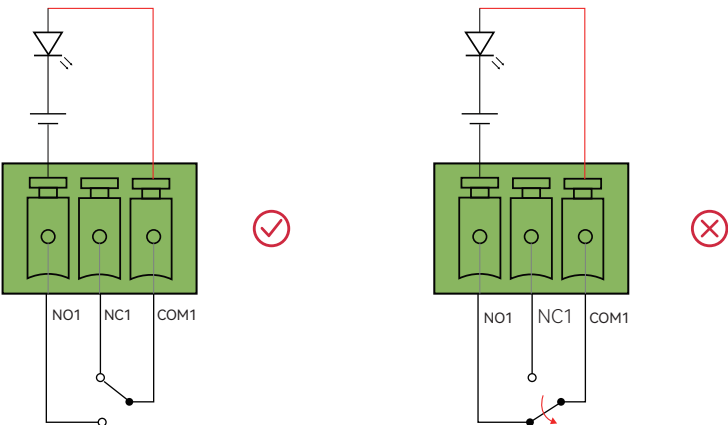


Fig 5.16  
Relay is in normal open contact

**Emergency stop dry contact:**

When DI+ contact and DI- contact are shorted by external controlled switch, the inverter will stop immediately.

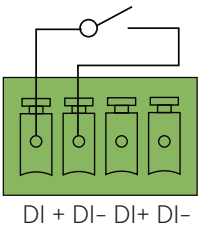
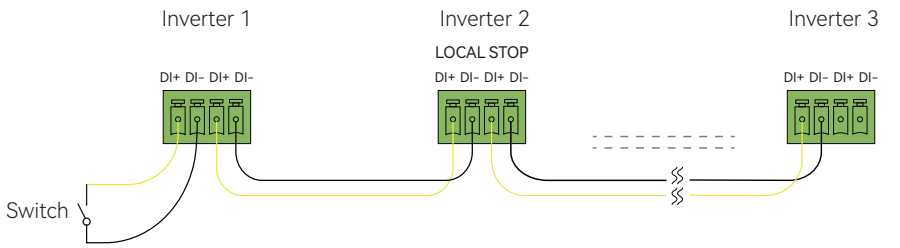


Fig 5.17  
Emergency stop dry contact

Fig 5.18  
Multiple inverter dry contact

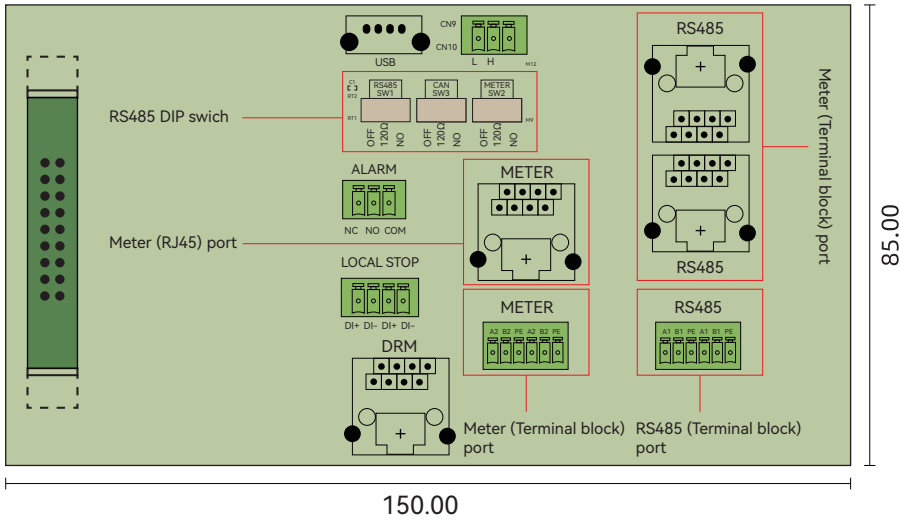
**Multiple inverter dry contact connection**



**5.6  
RS485 Communication  
Connection**

The inverter is integrated with RS485 communication terminal and meter communication terminal. RS485 communication terminal is mainly for multiple inverters communication which can be connected in a daisy chain manner. Meter communication terminal is mainly for data interaction between monitoring device and inverter.

Fig 5.19  
RS485 communication



Note: Meter and RS485 communication have two kinds of interface, one is RJ45 terminal, another is terminal block, these two ports perform the same function but with different wiring. Please choose either one interface for cable connection.

Table 5.9  
RS485 pin port description

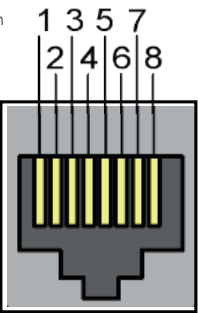


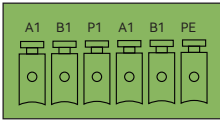
Fig 5.20  
RS485 pin

| Pin Number | Wire color   | Function |
|------------|--------------|----------|
| 1          | White-orange | NC       |
| 2          | Orange       | NC       |
| 3          | White-green  | NC       |
| 4          | Blue         | NC       |
| 5          | White-blue   | NC       |
| 6          | Green        | NC       |
| 7          | White-brown  | RS485-A  |
| 8          | Brown        | RS485-B  |



Table 5.10  
Terminal block description

Fig 5.21  
RS485 terminal block



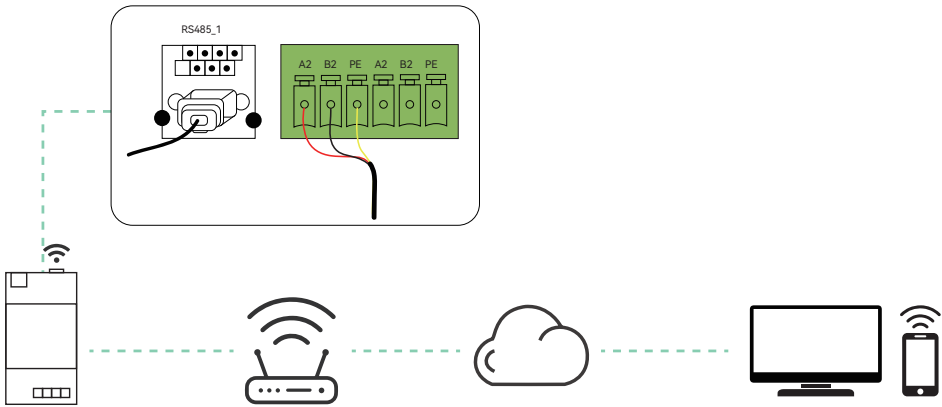
Terminal block:

| Pin | name     | Function                               |
|-----|----------|----------------------------------------|
| A1  | RS485-A+ | RS485 in, RS485A differential signal + |
| B1  | RS485-B- | RS485 in, RS485B differential signal - |
| PE  | PE       | GND, shielded earthing point           |
| A1  | RS485-A+ | RS485 in, RS485A differential signal + |
| B1  | RS485-B- | RS485 in, RS485B differential signal - |
| PE  | PE       | GND, shielded earthing point           |

Note: When there are multiple inverters connected, please connect a terminating resistor between A1 and B1 by switching the RS485 DIP switch, to ensure the communication quality.

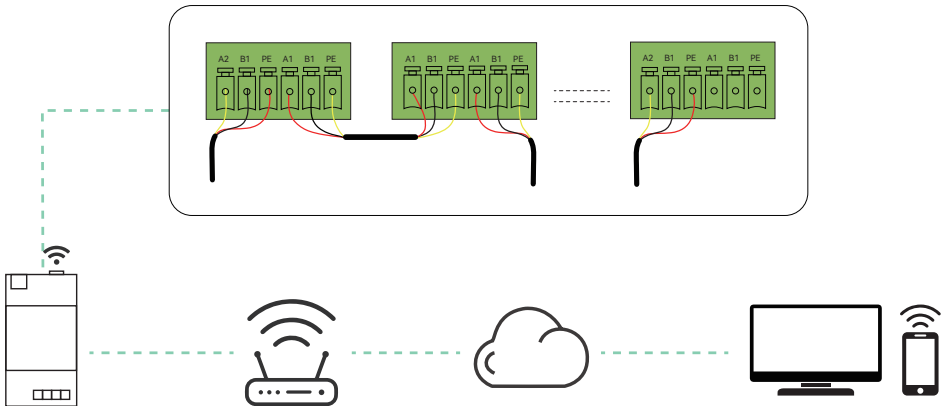
Single inverter terminal block connection:

Fig 5.22  
Single inverter terminal block connection



Multiple inverter terminal block connection:

Fig 5.23  
Multiple inverter terminal block



## 5.7 RS232/USB Connection

Figure5.24  
RS232 pin

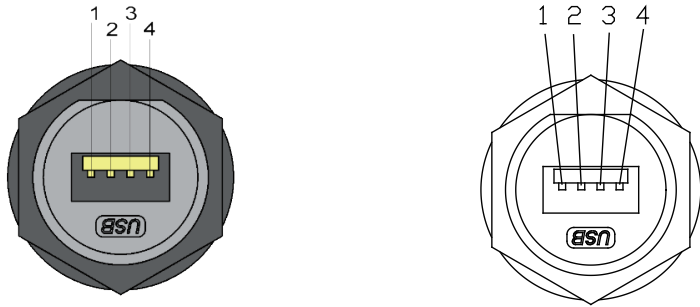


Table 5.11  
USB pin port definition

| Pin Number | Description | Function     |
|------------|-------------|--------------|
| 1          | +5V         | Power supply |
| 2          | RS-232 TX   | Send data    |
| 3          | RS-232 RX   | Receive data |
| 4          | GND         | Ground wire  |

USB interface could be externally connected with eSolar WiFi /4G/AIO3 communication module, for operation in details please refer to communication module Quick Installation Guide in <https://www.saj-electric.com/>.

# Introduction of Human-computer Interface

## 6.1 Introduction of Human-computer Interface

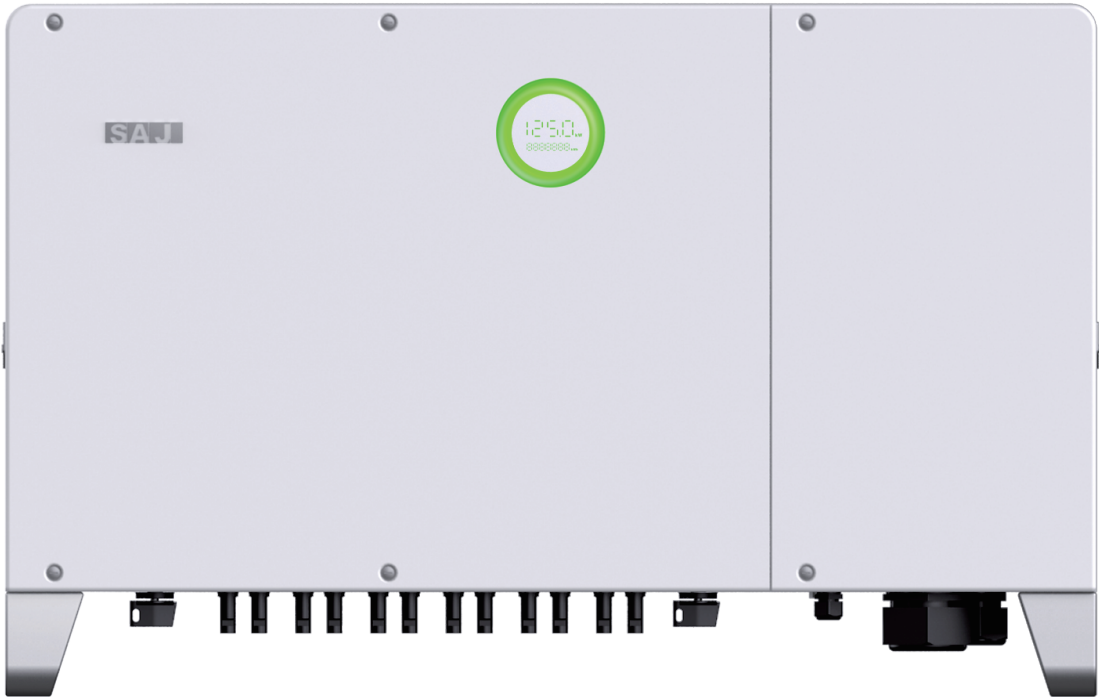


Fig 6.1 Human-computer interface

| Display     | Status |                | Description                                        |
|-------------|--------|----------------|----------------------------------------------------|
| Ring Light  |        | Solid Green    | The inverter is in normal on-grid state            |
|             |        | Breathing Mode | The inverter is in initialization or waiting state |
|             |        | Solid Red      | An error occurs                                    |
|             |        | Breathing Mode | Software is upgrading in the inverter              |
|             |        | Off            | Power off                                          |
| LED Panel 1 |        |                | Current power(kW)/ Error code                      |
| LED Panel 2 |        |                | Total yield (kWh)                                  |

Table 6.1 Interface description

6.2  
Installer APP Installation

eSolar O&M could achieve communication with the equipment via Bluetooth, GPRS/4G and Wi-Fi and it is an APP for nearby and remote monitoring.

Download eSolar O&M APP

iOS system: search for “eSolar O&M” in App Store and download this App.

Android system: search for “eSolar O&M” in Google play and download this App.

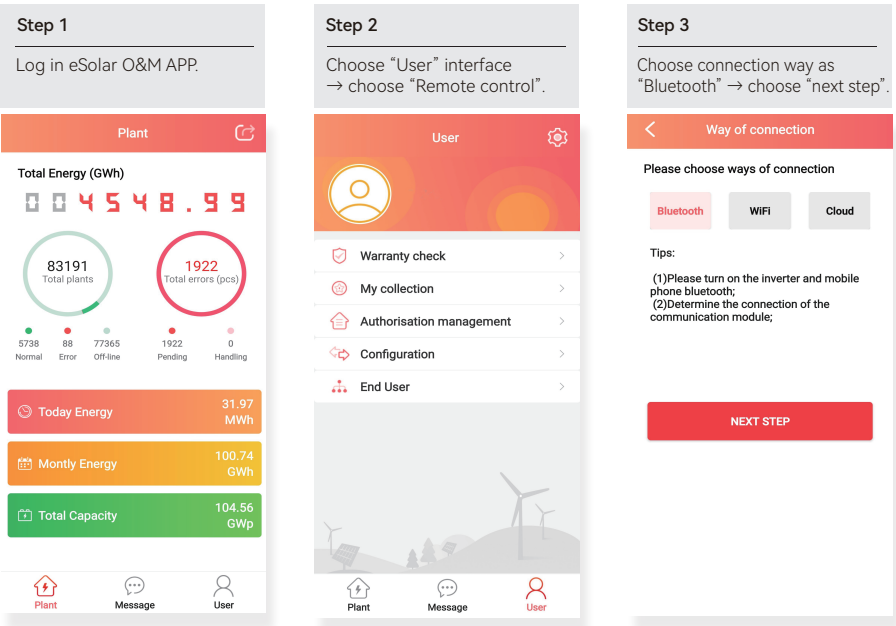
For iOS/Android system, you could visit SAJ official website: [www.saj-electric.cn](http://www.saj-electric.cn) and scan the QR code to download “eSolar O&M” APP.

Account---Please use the installer account to login.

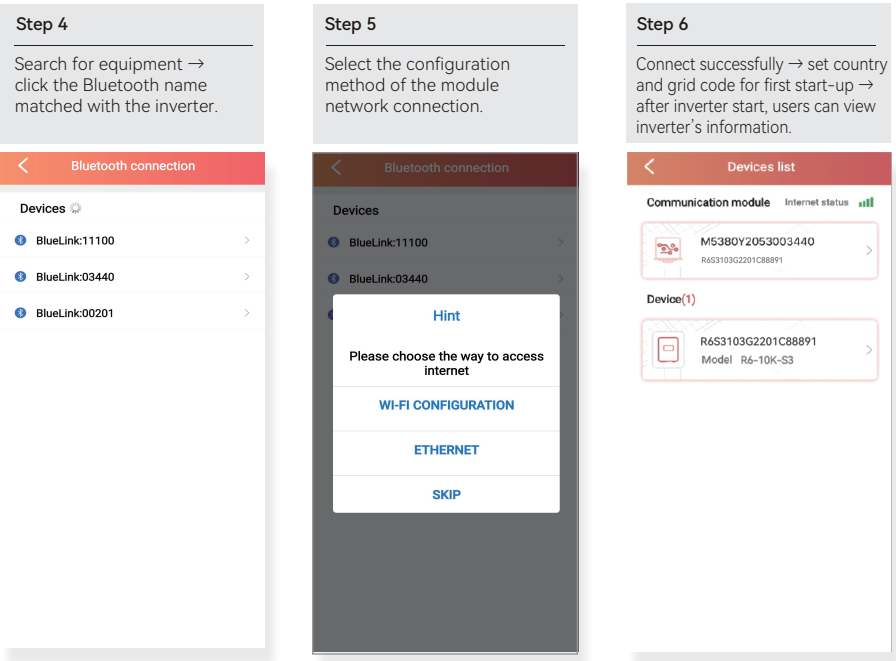
Note: For the end user, please download and install the “eSolar Air” APP and log in to the APP or SAJ official website to register your account.

6.2.1  
Nearby Monitoring

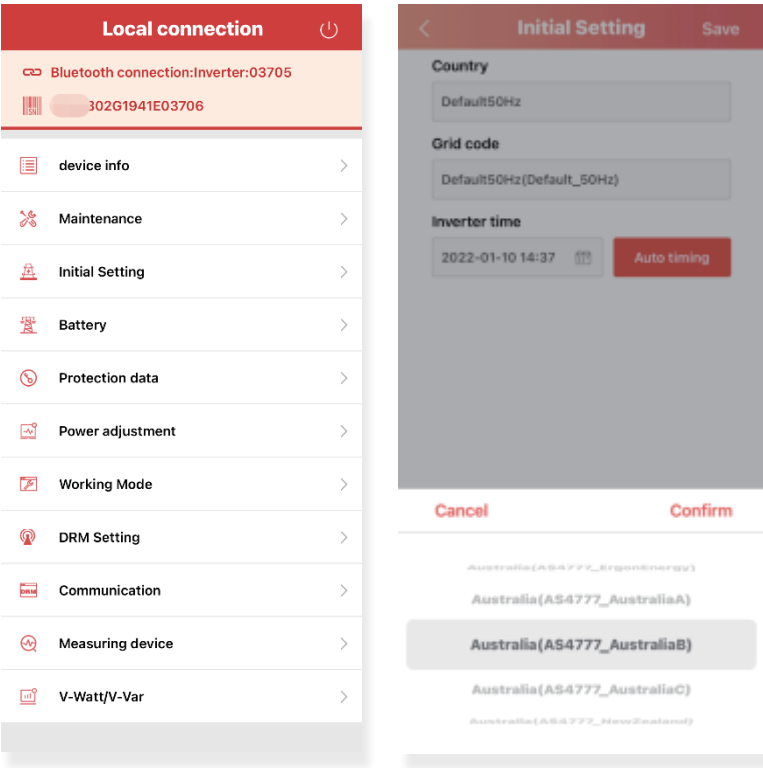
Connection setting



6.2.2  
Initial Set Up



Select the initial setting. Choose your corresponding country/region and grid compliance, please contact your local grid operator for which grid compliance to select. Set the inverter time based on your location.



# Fault Code and Troubleshooting

## 7.1 Fault Code

| Error Code | Explanation                                    |
|------------|------------------------------------------------|
| 01         | Master Relay Error                             |
| 02         | Master EEPROM Error                            |
| 03         | Master Temperature High Error                  |
| 04         | Master Temperature Low Error                   |
| 05         | Master Lost Communication M<-->S               |
| 06         | Master GFCI Device Error                       |
| 07         | Master DCI Device Error                        |
| 08         | Master Current Sensor Error                    |
| 09/11/13   | Master Phase1/2/3 Voltage High                 |
| 10/12/14   | Master Phase1/2/3 Voltage Low                  |
| 15         | Master Voltage 10Min High                      |
| 18         | Master Grid Frequency High                     |
| 19         | Master Grid Frequency Low                      |
| 24         | Master No Grid Error                           |
| 27         | Master GFCI Error                              |
| 28/29/30   | Master Phase1/2/3 DCI Error                    |
| 31         | Master ISO Error                               |
| 32         | Master SW Bus Voltage Balance Error            |
| 33         | Master SW Bus Voltage High                     |
| 34         | Master SW Bus Voltage Low                      |
| 35         | Master Grid Phase Error                        |
| 36         | Master PV Voltage Low                          |
| 37         | Master Islanding Error                         |
| 38         | Master HW Bus Voltage High                     |
| 39         | Master HW PV Current High                      |
| 41         | Master HW Inv Current High                     |
| 42         | Master AC SPD Error                            |
| 43         | Master DC SPD Error                            |
| 44         | Master Grid NE Voltage Error                   |
| 45/46      | Master Fan1/2 Error                            |
| 49         | Lost Communication between DSP and Power Meter |
| 50         | Lost Communication between M<-->S              |

| Error Code | Explanation                 |
|------------|-----------------------------|
| 61         | Slave Phase1 Voltage High   |
| 62         | Slave Phase1 Voltage Low    |
| 63         | Slave Phase2 Voltage High   |
| 64         | Slave Phase2 Voltage Low    |
| 65         | Slave Phase3 Voltage High   |
| 66         | Slave Phase3 Voltage Low    |
| 67         | Slave Frequency High        |
| 68         | Slave Frequency Low         |
| 73         | Slave No Grid Error         |
| 74         | PV Input Mode Fault         |
| 75         | HW PV Current High Fault    |
| 76         | Slave PV Voltage High Fault |
| 77         | HW Bus Voltage High Fault   |
| 81         | Lost Communication D<->C    |
| 83         | Master Arc Device Error     |
| 84         | Master PV Input Error       |
| 85         | Authority expired           |
| 86         | Master DRM0 Error           |
| 87         | Master Arc Error            |

7.2  
Troubleshooting

| Error info               | Troubleshooting                                                                                                                                                                                        |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relay Error              | If this error occurs frequently, please contact your distributor or call SAJ technical support.                                                                                                        |
| Storage 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.                                                                                                        |
| 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.                                                                                                        |
| DCI Devices Error Master | If this error occurs frequently, please contact your distributor or call SAJ technical support.                                                                                                        |

| Error info                       | Troubleshooting                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AC Voltage Error                 | · Check the volt. of the grid<br>· Check the connection between the inverter and the grid.<br>· Check the settings of the on-grid standards of the inverter.<br>· 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.<br>· 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. |
| 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.                                                                                                                                                                                                                                                                                                                  |
| 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.                                                                                                                                                                                                                                                                                                                                                  |





## Routine Maintenance



### 8.1

#### Routine Maintenance

##### Inverter Cleaning

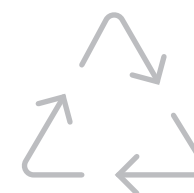
Clean the enclosure lid and LED indicator of the inverter with moistened cloth with clear water only. Do not use any cleaning agents as it may damage the components.

##### 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.



## 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