





R3-75K

R3-75KL



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#### **About This Manual**

The manual mainly describes the product information, guidelines for installation, operation and maintenance. The manual cannot include complete information about the photovoltaic (PV) system.

#### Validity

This manual is valid for the following inverter types:

75K/75KL

They will be referred to as "inverter" hereinafter unless otherwise specified.

#### **Target Group**

This manual is intended for:

- qualified personnel who are responsible for the installation and commissioning of the inverter:
- · inverter owners who will have the ability to interact with the inverter.
- Contact the nearest hazardous waste disposal station when the products or components are discarded

#### **How to Use This Manual**

Read the manual and other related documents before performing any work on the inverter is carried out. Documents must be stored carefully and be available at all times. The contents of the manual will be periodically updated or revised due to the product development. It is probably that there are changes of manual in the subsequent inverter edition.

#### **Symbols**

Important instructions contained in this manual should be followed during installation, operation and maintenance of the inverter. They will be highlighted by the following symbols.

| Symbol           | Explanation   |
|------------------|---|
| ▲ DANGER         | Indicates a hazard with a high level of risk that, if not voided, will result in death or serious injury.     |
| <b>▲</b> WARNING | Indicates a hazard with a medium level of risk that, if not avoided, could result in death or serious injury. |
| <b>▲</b> CAUTION | Indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.   |

| NOTICE | Indicates a situation that, if not avoided, could result in equipment or property damage. | Indicates additional information, emphasized contents or tips that may be helpful, e.g. to help you solve problems or save time.

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## 1 Safety

The inverter has been designed and tested strictly according to international safety regulations. Read all safety instructions carefully prior to any work and observe them at all times when working on or with the inverter.

Incorrect operation or work may cause:

- injury or death to the operator or a third party;
- damage to the inverter and other property safety of the operator or a third party.

All detailed work-related safety warnings and notes will be specified at critical points in this manual.



The safety instructions in this manual cannot cover all the precautions that should be followed. Perform operations considering actual onsite conditions. Company shall not be held liable for any damage caused by violation of the safety instructions in this manual.

#### 1.1 PV Panels

#### **A** DANGER

PV strings will produce electrical power when exposed to sunlight and can cause a lethal voltage and an electric shock.

- Always keep in mind that the inverter is dual power supplied. electrical operators must wear proper personal protective equipment: helmet, insulated footwear, glove, etc.
- Before touching the DC cables, operator must use a measuring device to ensure that the cable is voltage-free.
- Must follow all warnings on the PV strings and in its manual.

#### 1.2 Utility Grid

Please follow the regulations related to the utility grid.

#### NOTICE

All electrical connections must be in accordance with local and national standards

Only with the permission of the utility grid, the inverter can be connected to the utility grid.

#### 1.3 Inverter

#### **⚠** DANGER

Danger to life from electric shocks due to live voltage

 Do not open the enclosure at any time. Unauthorized opening will void guarantee and warranty claims and in most cases terminate the operating license.

#### **⚠** WARNING

Risk of inverter damage or personal injury

- · Do not pull out the PV connectors when the inverter is running.
- Wait at least 5 minutes for the internal capacitors to discharge. Ensure that there is no voltage or current before pulling any connector.

#### **MARNING**

All safety instructions, warning labels, and nameplate on the inverter:

- Must be clearly legible.
- · Should not be removed or covered.

#### **CAUTION**

Risk of burns due to hot components!

Do not touch any hot parts (such as heat sink) during operation. Only the DC switch can safely be touched at any time.

#### NOTICE

Only qualified personnel can perform the country setting.

 Unauthorized alteration of the country setting may cause a breach of the typecertificate marking.

By touching the electronic components, you may damage the inverter. For inverter handling, be sure to:

- · avoid any unnecessary touching;
- · wear a grounding wristband before touching any connectors.

#### Warning Label

| Label    | Description   |
|----------|---|
| $\wedge$ | Danger to life due to high voltages!                            |
| <u> </u> | Only qualified personnel can open and service the inverter.     |
| 5min     | Caution,risk of electric shock,energy strorage timed discharge. |
|          | Caution,hot suface.   |
| 4        | Caution,risk of electric shock.                                 |
|          | Check the user manual before service!                           |

#### 1.4 Skills of Qualified Personnel

All installations should be performed by qualified personnel. They should have:

- Training in the installation and commissioning of the electrical system, as well as the dealing with hazards;
- · Knowledge of the manual and other related documents;
- · Knowledge of the local regulations and directives.

■ 02 03 ■

## 2 Product Introduction

#### 2.1 Intended Usage

75K/75KL, a transformerless three-phase PV grid-connected inverter, is an integral component in the PV power system.

The inverter is designed to convert the direct current power generated from the PV modules into grid-compatible AC current and feeds the AC current to the utility grid. The intended usage of the inverter is illustrated in "figure 2-1 Inverter application in PV power system".

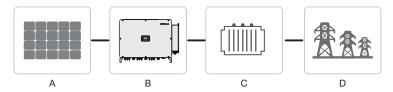


figure 2-1 Inverter application in PV power system

#### **M** WARNING

Inverter cannot connect the PV strings whose positive and negative terminals need to be grounded.

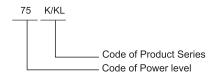
Do not connect any local load between the inverter and the AC circuit breaker.

| Item | Description  | Note   |
|------|--------------|--|
| А    | PV strings   | Monocrystalline silicon, polycrystalline silicon and thin- film without grounding. |
| В    | Inverter     | 75K/75KL   |
| С    | Transformer  | Boost the low voltage from inverter to grid-compatible medium voltage.             |
| D    | Utility grid |  |

#### 2.2 Product Introduction

#### 2.2.1 Model Description

The device model description is as follows:

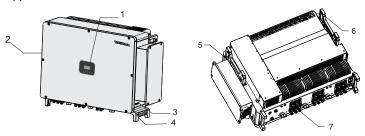


| Model    | Nominal Output<br>Power | Three-phase system mode              |
|----------|-------------------------|--------------------------------------|
| 75K/75KL | 75KW                    | 3W+PE(default),3W+N+PE(configurable) |

The device model can be found on the nameplate attached to the side of the inverter. For details, refer to "3.2 Identifying the Inverter".

**■** 04 05 **■** 

#### 2.2.2 Appearance



\*The image shown here is for reference only. The actual product you receive may differ.

| No. | Name                           | Description   |
|-----|--------------------------------|---|
| 1   | LED controlled panel           | HMI interface to indicate the present working state of the inverter.  |
| 2   | Labels                         | Nameplate.  |
| 3   | Additional grounding terminals | use at least one of them to ground the inverter.  |
| 4   | Bottom handles                 | used to move the inverter.  |
| 5   | Side handles                   | used to move the inverter.  |
| 6   | Mounting ears                  | used to hang the inverter onto the mounting-bracket.  |
| 7   | Wiring area                    | DC switches, AC terminals, DC terminals, and communication terminals. For details, refer to "5.2 Terminal Description". |

#### 2.2.3 Dimensions

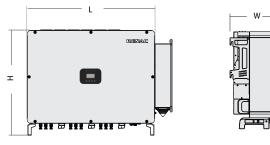


figure 2-2 Dimensions of the Inverter

\*The image shown here is for reference only. The actual product you receive may differ.

| Туре     | Dimensions (W*H*D) |
|----------|--------------------|
| 75K/75KL | 965*700*355mm      |

#### 2.2.4 LED board

Five LEDs are set on the board of the inverter, as shown in Fig.



LED board

Table 1 LED description

| LED light | description                             |
|-----------|---|
| WAIT      | On-grid waiting indicator               |
| NORMAL    | Normal operation (generation) indicator |
| ALARM     | Alarm indicator                         |
| FAULT     | Error indicator                         |

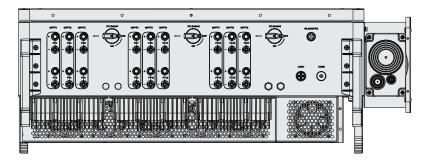
Table 2 Buttons function description

| Buttons | Functions                                       |
|---------|---|
| ESC     | Return/Cancel/Exit                              |
| UP      | Pull up menu /Value added                       |
| DOWN    | Drop down menu/Value decreased                  |
| ENTER   | Enter the menu/confirm settings/move the cursor |

**■** 06 07 **■** 

#### 2.2.5 DC Switch

The DC switch is used to disconnect the DC current safely whenever necessary. The 75K/75KL is equipped with four DC switches,each DC switch controls its corresponding DC terminals.





Turn the DC switches to the ON position before restarting the inverter.

#### 2.3 Circuit Diagram

The MPPT is utilized for DC input to ensure the maximum power from the PV array at different PV input conditions. The inversion circuit converts the DC power into AC power and feeds the AC power into the utility grid through the AC terminal. The protection circuit is equipped to ensure the safe operation of the device and personal safety.

The following figure shows the main circuit of the inverter.

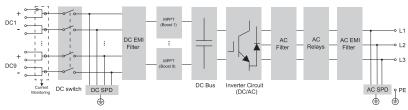


figure 2-3 Circuit diagram

#### 2.4 Function Description

The inverter is equipped with the following functions:

#### Conversion function

The inverter converts the DC current into grid-compatible AC current and feeds the AC current into the grid.

#### Data storage

The inverter logs running information, error records, etc.

#### Parameter configuration

The inverter provides various settable parameters. Users can set parameters via the APP to meet the requirements and optimize the performance.

#### Communication interface

The inverter is designed with standard RS485 communication interfaces.

The standard RS485 communication interfaces are used to establish communication connection with monitoring devices and upload monitoring data by using communication cables.

After communication connection is established, users can view inverter information or set inverter parameters through the Cloud.

#### **Protection Function**

The protective functions are integrated in the inverter, including anti-island protection, LVRT/ZVRT, DC reversed polarity protection, AC short circuit protection, leakage current protection, DC overvoltage/overcurrent protection, etc.

## 3 Unpacking and Storage

#### 3.1 Unpacking and Inspection

The inverter is thoroughly tested and strictly inspected before delivery. Damage may still occur during shipping. Conduct a thorough inspection after receiving the device.

- · Check the packing for any visible damage.
- · Check the inner contents for damage after unpacking.
- · Check the delivery scope for completeness according to the packing list.

Contact Company or the supplier in case there is any damage or incompleteness.

Do not dispose of the original packing case. It is recommended to store the inverter in it.

#### 3.2 Identifying the Inverter

The nameplate can be found on both the inverter and the packing case. It provides information on type of inverter, important specifications, marks of certification institutions, and serial number which are available and identified by Company.

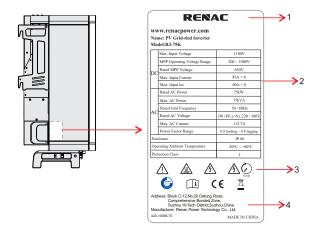


figure 3-1 Nameplate of Inverters

| Item | Description                   |
|------|-------------------------------|
| 1    | Company logo and product type |
| 2    | Technical data of inverter    |
| 3    | Icon                          |
| 4    | Company name                  |

table 3-1 Description of Icons on the Nameplate

# Do not dispose of the inverter together with household waste. Refer to the corresponding instructions. CE mark of conformity.

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<sup>\*</sup> The image shown here is for reference only. The actual product you receive may differ.

#### 3.3 Scope of Delivery

| Item | Description Model  |      | /lodel | Unit | Qty. | Check     | Remarks |
|------|--|------|--------|------|------|-----------|---------|
| 1    | Inverter   |      |        | PC   | 1    | $\sqrt{}$ |         |
| 2    | User manual  |      |        | PC   | 1    | $\sqrt{}$ |         |
| 3    | Quick install manual   |      |        | PC   | 1    | $\sqrt{}$ |         |
| 4    | Certificate of Approval  |      |        | PC   | 1    | $\sqrt{}$ |         |
| 5    | Warranty Card  |      |        | PC   | 1    | $\sqrt{}$ |         |
| 6    | PV connection terminal (+)   | 75K  |        | PC   | 16   | $\sqrt{}$ |         |
|      |  | 75KL |        | PC   | 18   | $\sqrt{}$ |         |
| 7    | PV connection terminal (-)   | 75K  |        | РС   | 16   | $\sqrt{}$ |         |
| ,    | 1 V connection terminal (-)  | 75KL |        | PC   | 18   | $\sqrt{}$ |         |
| 8    | Terminal   |      |        | PC   | 6    | $\sqrt{}$ |         |
| 9    | Heat shrinkable casing   |      |        | PC   | 4    | $\sqrt{}$ |         |
| 10   | Bolt(M10)  |      |        | PC   | 4    | $\sqrt{}$ |         |
| 11   | Mounting-bracket(2 mounting-bracket) components and 1 connecting bar |      |        | PC   | 1    | $\sqrt{}$ |         |
| 12   | Combination screw (M6)   |      |        | PC   | 2    | $\sqrt{}$ |         |
| 13   | Combination screw (M4)   |      |        | PC   | 2    | √         |         |
| 14   | Spanner(used for removing the PV connector)                          |      | tor)   | PC   | 1    | √         |         |
| 15   | L-type spanner(used for removing the cover)                          |      | r)     | PC   | 1    | $\sqrt{}$ |         |
| 16   | RS485 connector  |      |        | PC   | 1    | √         |         |
|      |  |      |        |      |      |           |         |

#### 3.4 Inverter Storage

Proper storage is required if the inverter is not installed immediately.

- · Store the inverter in the original packing case.
- The storage temperature must be always between -40° C and +70° C, and the storage relative humidity must be always between 0 and 100%, non-condensing.
- In case of stacking storage, the number of stacking layers should never exceed the limit marked on the outer side of the packing case.
- · The packing case should be upright.
- If the inverter has been stored more than half a year, the qualified personnel should thoroughly check and test it before using.

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## 4 Mechanical Mounting

#### 4.1 Safety during Mounting

#### **A** DANGER

Make sure there is no electrical connection before installation. In order to avoid electric shock or other injury, be sure there is no electricity or plumbing installations before drilling holes.

#### **CAUTION**

Risk of injury due to improper handling

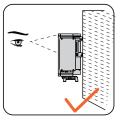
- · Always follow the instructions when moving and positioning the inverter.
- Improper operation may cause injuries, serious wounds, or bruise. System performance loss due to poor ventilation!
- · Keep the heat sinks uncovered to ensure heat dissipation performance.

#### 4.2 Location Requirements

Select an optimal mounting location for safe operation, long service life, and outstanding performance.

- The inverter with IP66 can be installed both indoors and outdoors.
- Install the inverter in a place convenient for electrical connection, operation, and maintenance.

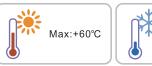




#### 4.2.1 Installation Environment Requirements

- · The installation environment is free of inflammable or explosive materials.
- · The location should be not accessible to children.

The ambient temperature and relative humidity must meet the following requirements.







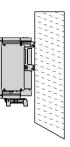
- Prevent the inverter from direct exposure to sun, rain and snow.
- The inverter should be well ventilated. Ensure air circulation.
- Never install the inverter in living areas. The inverter will generate noise during operation, affecting daily life.

#### 4.2.2 Carrier Requirements

The installation carrier should meet the following requirements:

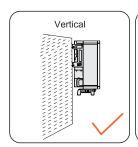


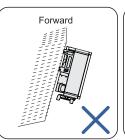
Made of non-inflammable materials Max.load bearing capacity≥4 times of inverter weight

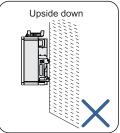


#### 4.2.3 Installation Angle Requirements

Inverter vertically . Forward installation or upside down installation is prohibited.



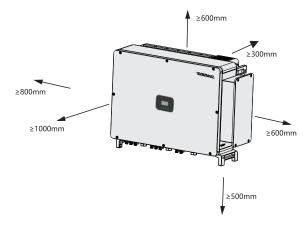




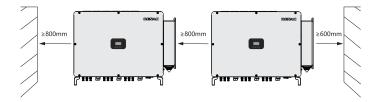
**■** 14 15 **■** 

#### 4.2.4 Installation Clearance Requirements

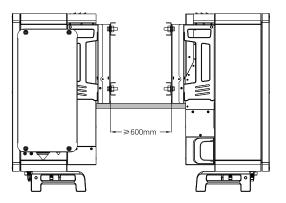
• Reserve enough clearance around the inverter to ensure sufficient space for heat dissipation. (The fan is installed on the left and right sides of the inverter, which requires more space for maintenance. You are advised to reserve a distance of more than 300mm from the rear air outlet for better heat dissipation.)



• In case of multiple inverters, reserve specific clearance between the inverters.



• In case of back-to-back installation, reserve specific clearance between the two inverters. At the same time, a baffle plate needs to be added above the air inlet to prevent the hot air of the air outlet from returning, which affects the heat dissipation effect.



• Install the inverter at an appropriate height for ease of viewing LED indicators and operating switches.

**■** 16 17 **■** 

#### 4.3 Installation Tools

Installation tools include but are not limited to the following recommended ones. If necessary, use other auxiliary tools on site.

table 4-1 Tool specification

| No. | Specification   |
|-----|---|
| а   | Slotted screwdriver   |
| b   | Phillips screwdriver  |
| С   | Hammer drill(Drill bit: φ12, φ14)                           |
| d   | Socket wrench(Includes sleeve with opening size 16mm, 19mm) |
| е   | Wrench(Opening:16mm)  |
| f   | UTX terminal crimping pliers(Crimp range 4~6mm²)            |
| g   | Multineter(Range≥1100Vdc)                                   |

#### 4.4 Moving the Inverter

Move the inverter to the specified position before installation. The inverter can be moved manually or via a hoist.

#### 4.4.1 Manual Transport

Use the handles on the backplane and base to transport the inverter to the destination.

#### **A** CAUTION

Inappropriate moving operation may cause personal injury!

It is recommended that at least four installers carry the inverter together and wear protective equipment such as smash-proof shoes and gloves.

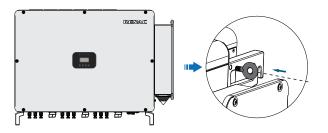
Always beware of the gravity center of the inverter and avoid tipping.

#### NOTICE

The ground surface on which the inverter is to be placed should be covered with a sponge pad, foam cushion or the like to prevent the inverter bottom from scratches.

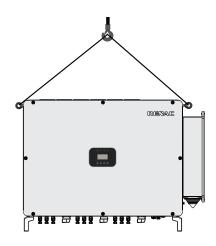
#### **4.4.2 Hoisting Transport**

step 1 Anchor two M10 thread lifting rings to the hangers of the inverter.



- step 2 Lead the sling through the two lifting rings and fasten the tie-down strap.
- step 3 Hoist the inverter, and stop to check for safety when the inverter is 100mm above the ground. Continue hoisting the device to the destination after ensuring the safety.

**■** 18 19 **■** 



step 4 Remove the lifting rings.

#### **A** CAUTION

Keep the inverter balanced throughout the hoisting process and avoid collisions with walls or other objects.

Stop hoisting in the event of severe weather, such as heavy rain, thick fog, or strong wind.



The lifting rings and the sling are not within the delivery scope.

--End

#### 4.5 Dimensions of mounting-bracket

Dimensions of the assembled mounting-bracket are as follows:

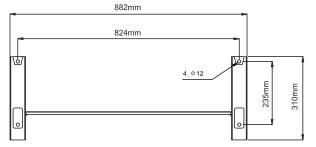




figure 4-1 Dimensions of mounting-bracket

#### 4.6 PV Bracket-Mounted Installation

#### 4.6.1 Preparation before Mounting

| Item  | Specification         |
|---|-----------------------|
| Phillips screwdriver/ electric screw driver | M4, M6                |
| Marker                                      | -                     |
| Level                                       | -                     |
| Hammer drill                                | Drill bit: φ12        |
| Socket wrench                               | Including 16mm socket |
| wrench                                      | Opening: 16mm         |

#### Spare parts

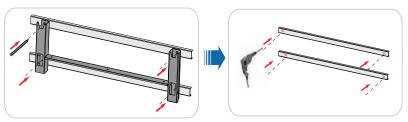
| Item          | Quantity | Specification | Source         |
|---------------|----------|---------------|----------------|
| Oh            | 2        | M4×10         | Delivery scope |
| Grub screw    | 2        | M6×35         | Delivery scope |
| Bolt assembly | 4        | M10           | Delivery scope |

#### 4.6.2 Mounting Steps

step 1 Assemble the mounting-bracket by using the connecting bar.



step 2 Level the assembled mounting-bracket by using the level, and mark the positions for drilling holes on the PV bracket. Drill the holes by using a hammer drill.



step 3 Secure the mounting-bracket with bolts.

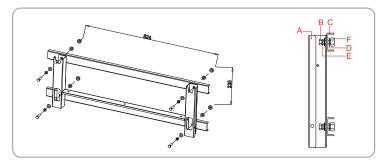
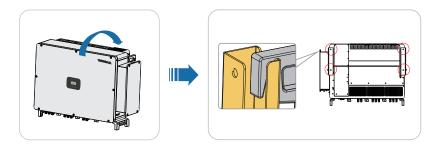


table 4-2 Fastening sequence

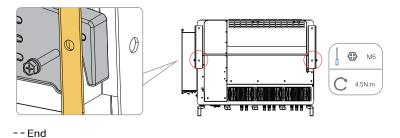
| No. | Components         | Description |  |
|-----|--------------------|-------------|--|
| А   | Mounting-bracket   | -           |  |
| В   | Full threaded bolt | M10*35      |  |
| С   | Metal bracket      | -           |  |
| D   | Flat washer        | -           |  |
| Е   | Spring washer      | -           |  |
| F   | Hex nuts           | M10         |  |

- step 4 Take out the inverter from the packing case.
- step 5 Hoist the inverter to the installation position when necessary (refer to "4.4.2 Hoisting Transport"). If the installation position is not high enough, skip performing this step.

step 6 Hang the inverter to the mounting-bracket and ensure that the mounting ears perfectly engage with the mounting-bracket.



step 7 Fix the inverter with two M6×35 screws.



#### 4.7 Wall-Mounted Installation

#### 4.7.1 Preparation before Mounting

#### Tools

| Item  | Specification  |
|---|--|
| Phillips screwdriver/ electric screw driver | M4, M6   |
| Marker                                      | -  |
| Level                                       | -  |
| Hammer drill                                | Drill bit(Select according to expansion bolt specifications) |
| Socket wrench                               | Including 16mm socket  |
| wrench                                      | Opening: 16mm  |

#### Spare parts

| Item            | Quantity | Specification           | Source         |
|-----------------|----------|-------------------------|----------------|
| Court consu.    | 2        | M4×10                   | Delivery scope |
| Grub screw -    | 2        | M6×35                   | Delivery scope |
| Expansion bolts | 4        | M10×95<br>(Recommended) | Self-prepared  |

#### 4.7.2 Mounting Steps

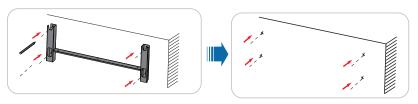
step 1 Assemble the mounting-bracket by using the connecting bar.

#### NOTE

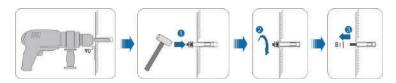
 When the machine is mounted on the wall, the hanger connecting rod must be installed.



step 2 Level the assembled mounting-bracket by using the level, and mark the positions for drilling holes on the installation site.



step 3 Insert the expansion bolts into the holes and secure them with a rubber hammer. Fasten the nut with a wrench to expand the bolt. Remove the nut, spring washer, and flat washer, and store them properly.



step 4 Fix the mounting-bracket with the expansion bolts.

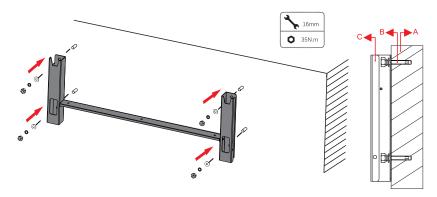


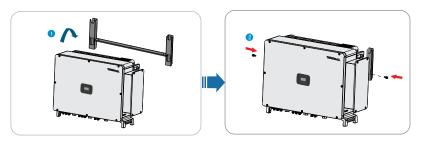
table 4-3 Fastening sequence

| Item | Designation          | Description   |
|------|----------------------|---|
| Α    | Wall                 | -   |
| В    | Expansion bolt       | Fastening the bolt in the sequence of nut, spring washer, slat washer |
| С    | Mounting-<br>bracket | -   |

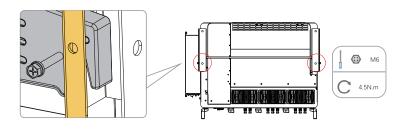
step 5 Take out the inverter from the packing case.

step 6 Hoist the inverter to the installation position when necessary (refer to "4.4.1 Hoisting Transport"). If the installation position is not high enough, skip performing this step.

step 7 Hang the inverter to the mounting-bracket and ensure that the mounting ears perfectly engage with the mounting-bracket.



step 8 Fix the inverter with screws.



--End

■ 24 25 **■** 

## 5 Electrical Connection

#### 5.1 Safety Instructions

Prior to any electrical connections, keep in mind that the inverter has dual power supplies. It is mandatory for the qualified personnel to wear personal protective equipments (PPE) during the electrical work.

#### **⚠** DANGER

Danger to life due to a high voltage inside the inverter!

- The PV string will generate lethal high voltage when exposed to sunlight.
- Before starting electrical connections, disconnect the DC and AC circuit breakers and prevent them from inadvertent reconnection.
- Ensure that all cables are voltage free before performing cable connection.

#### **MARNING**

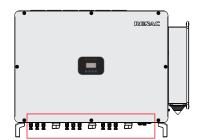
- Any improper operations during cable connection can cause device damage or personal injury.
- · Only qualified personnel can perform cable connection.
- All cables must be undamaged, firmly attached, properly insulated and adequately dimensioned.

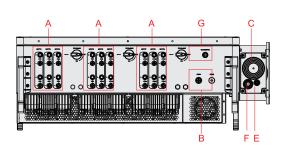
Comply with the safety instructions related to the PV strings and the regulations related to the utility grid.

- All electrical connections must be in accordance with local and national standards.
- Only with the permission of the utility grid, the inverter can be connected to the utility grid.

#### 5.2 Terminal Description

Wiring terminals are at the bottom of the inverter, as shown in the figure below.





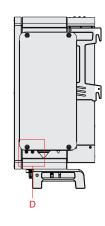


figure 5-1 Wiring terminals

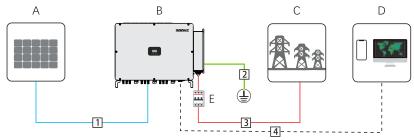
\* Figure shown here is for reference only. The actual product you receive may differ!

| Item | Terminal                            | Mark       | Note  |
|------|-------------------------------------|------------|---|
| Α    | PV terminals                        | + / -      | 16 PV connector                                       |
| В    | Communica-<br>tion terminal         | COM1       | RS485 communication(COM2 is standby).                 |
| С    | AC wiring terminal                  | AC         | Used for AC output cable connection.                  |
| D    | Additional<br>grounding<br>terminal | <u></u>    | Two ground shall be connected.                        |
| Е    | Spare grounding                     | g terminal | The internal PE ground cable is connected separately. |
| F    | Bracket tracking<br>system terminal |            | Bracket tracking system power cable.                  |
| G    | WLAN/GPRS                           |            | Adaptive collector.                                   |

**2**6

#### 5.3 Electrical Connection Overview

Electrical connection in the PV system includes additional grounding connection, AC connection, and PV string connection.



| Item | Designation        |
|------|--------------------|
| Α    | PV string          |
| В    | Inverter           |
| С    | Grid               |
| D    | Monitoring device  |
| E    | AC circuit breaker |

table 5-1 Cable requirements

|     |                                  |  |                           | Specification                                   |
|-----|----------------------------------|--|---------------------------|---|
| No. | Cable                            | Туре   | Cable<br>Diameter<br>(mm) | Cross-sectional area (mm²)                      |
| 1   | DC cable                         | PV cable<br>complying with<br>1100V standard         | 6~9                       | 4~6   |
| 2   | Additional<br>Grounding<br>cable | Outdoor single-<br>core copper wire<br>cable         | /                         | The same as that of the PE wire in the AC cable |
| 3   | AC cable                         | Four (or five) core<br>copper or aluminum<br>cable * | 30~60                     | L1,L2,L3, wire:70~240                           |
| 4   | Commun-<br>ication<br>cable      | Shielded twisted pair                                | 5~8                       | 1~1.5   |

<sup>\*</sup> A copper to aluminum adapter terminal is required when an aluminum cable is used. For details, refer to "5.6.3 Aluminium Cable Requirements".

table 5-2 PE wire requirements

| PE wire cross section                     | Note  |
|---|---|
| S/2<br>(S: Phase wire<br>cross-section S) | The specifications are valid only when the phase wire and PE wire use the same material. If otherwise, ensure that the cross section of the PE wire produces a conductance equivalent to that of the wire specified in the table. |

#### 5.4 Additional Grounding Connection

#### **MARNING**

Since the inverter is a transformerless inverter, neither the negative pole nor the positive pole of the PV string can be grounded. Otherwise, the inverter will not operate normally.

Connect the additional grounding terminal to the protective grounding point before AC cable connection, PV cable connection, and communication cable connection.

The ground connection of this additional grounding terminal cannot replace the connection of the PE terminal of the AC cable. Make sure thoes terminals are both grounded reliably.

#### 5.4.1 Additional Grounding Requirements

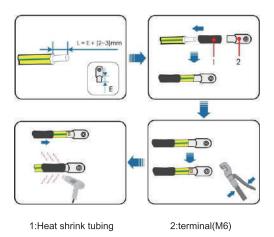
All non-current carrying metal parts and device enclosures in the PV power system should be grounded, for example, brackets of PV modules and inverter enclosure.

When there is only one inverter in the PV system, connect the additional grounding cable to a nearby grounding point.

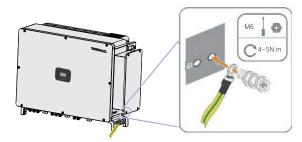
When there are multiple inverters in the PV system, connect grounding points of all inverters and the PV array frames to the equipotential cable (according to the onsite conditions) to implement an equipotential connection.

#### 5.4.2 Connection Procedure

step 1 Prepare the cable and terminal.



step 2 Remove the screw on the grounding terminal and fasten the cable with a screwdriver.



step 3 Apply paint to the grounding terminal to ensure corrosion resistance.

-- End



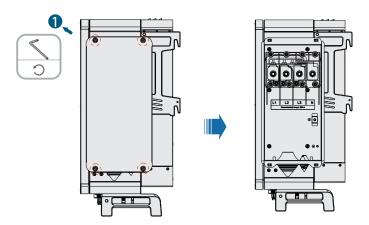
The grounding screws have been anchored to the side of the inverter before delivery, and do not need to be prepared.

There are two grounding terminals. Use at least one of them to ground the inverter.

#### 5.5 Opening the Wiring Compartment

step 1 Release three screws on the front cover of the wiring compartment with supplied wrench.

step 2 Open the wiring compartment.



--End



Close the wiring compartment in reverse order after completing wiring operations.

■ 30 31 **■** 

#### 5.6 AC Cable Connection

#### 5.6.1 AC Side Requirements

Before connecting the inverter to the grid, ensure the grid voltage and frequency comply with requirements, for which, refer to "10.1 Technical Data". Otherwise, contact the electric power company for help.



Connect the inverter to the grid only after getting an approval from the local electric power company.

#### **AC Circuit Breaker**

An independent three-pole circuit breaker is installed on the output side of the inverter to ensure safe disconnection from the grid.

| Inverter | Recommended rated voltage | Recommended rated current |
|----------|---------------------------|---------------------------|
| 75K/75KL | 400V                      | 250A                      |

If multiple inverters need to share a circuit breaker, the circuit breaker should be selected according to the capacity.

#### NOTICE

Never connect a load between the inverter and the circuit breaker.

#### Multiple Inverters in parallel Connection

If multiple inverters are connected in parallel to the grid, ensure that the total number of parallel inverters does not exceed 28. Otherwise, please contact Company for technical scheme.

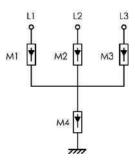
#### **MV** transformer

The MV transformer used together with the inverter should meet the following requirements:

- The transformer may be a distribution transformer, and it must be designed for the typical cyclical loads of a PV system (load in the day and no load at night).
- The transformer may be of the liquid-immersed type or dry type, and shield winding is not necessary.

- The line-to-line voltage on the LV side of the transformer should endure the output voltage of inverter. When the transformer is connected to to the IT grid, to-ground withstanding voltage of the LV winding of the transformer, the AC cables, and the secondary equipment (including the relay protection device, detection & measuring device, and other related auxiliary devices) should not be lower than 1,100V.
- The line-to-line voltage on the HV side of transformer should comply with local power grid voltage.
- A transformer with a tap changer on the HV side is recommended in order to keep consistent with the grid voltage.
- At an ambient temperature of 45°C, the transformer can run in 1.1 times of load for long time.
- Transformer with a short-circuit impedance 6% (permissible tolerance: ±10%) is recommended.
- The voltage drop of system cable is no more than 3%.
- The DC component that the transformer can withstand is 1% of the fundamental current at rated power.
- For thermal rating, the load curve of the transformer and environment conditions should be taken into account.
- The apparent power of the inverter should never exceed the power of the transformer. The maximum AC current of all inverters connected in parallel must be taken into account. If more than 28 inverters are connected to the grid, contact Company.
- · The transformer must be protected against overloading and short circuit.
- The transformer is an important part of grid-connected PV generation system. The fault tolerance capacity of the transformer should be taken into account at all times. The fault include: system short circuit, grounding fault, voltage drop, etc.
- Take ambient temperature, relative humidity, altitude, air quality, and other environmental conditions into account when selecting and installing the transformer.
- When the anti-PID function is enabled, observe the following items:
  - If the LV side winding is in Y shape, neutral point grounding is prohibited.
  - Surge protective devices (SPD) for the AC combiner box and on the LV side of the transformer are recommended to be connected in the "3 +1" manner, as shown in the figure below. The Min. continuous operating voltages of M1-M4 are 750VAC.
  - The LV side winding of the transformer, AC cables, and secondary devices (-including protective relay, detection and measurement instruments, and related auxiliary devices) must withstand the voltage to ground of at least 906V.

■ 32 33 ■



#### 5.6.2 Requirements for OT/DT Terminal

The factory default standard SC-70 terminal, if customers need to use OT/DT terminal, they need to purchase according to the following requirements.

- · Specification: M12;
- Dimensions: a≤45mm/b≥12,5mm/c≤20mm.



figure 5-2 Dimensions of Terminal

#### 5.6.3 Aluminium Cable Requirements

If an aluminium cable is selected, use a copper to aluminium adapter terminal to avoid direct contact between the copper bar and the aluminium cable.

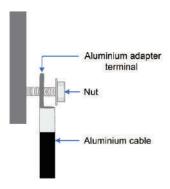


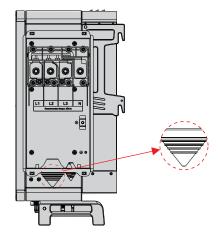
figure 5-3 Aluminium cable terminal connection sequence

#### NOTICE

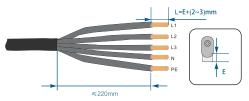
Ensure that the selected terminal can directly contact with the copper bar. If there are any problems, contact the manufacturer of terminal. Direct contact between the copper bar and the aluminium cable will cause electrochemical corrosion and impair the reliability of electrical connection.

#### 5.6.4 Connection Procedure

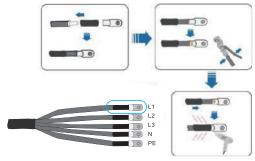
- step 1 Open the wiring compartment. For details, refer to 5.5 Opening the Wiring Compartment".
- step 2 Disconnect the AC-side circuit breaker and prevent it from inadvertent reconnection.
- step 3 Cut the seal ring according to the outer diameter of the cable and pass the cable through the seal ring.



step 4 Strip the protection layer and insulation layer by specific length, as described in the figure below.



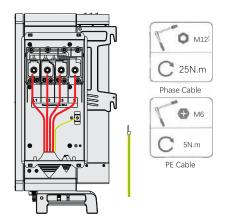
step 5 Make the cable and crimp terminal.

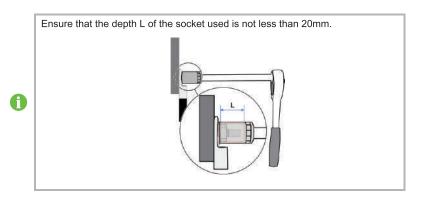


step 6 Secure the wires to corresponding terminals.

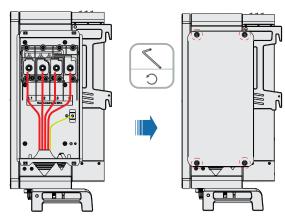
#### NOTICE

Note the terminal positions of PE wire and N wire. If a phase wire is connected to the PE terminal or N terminal, unrecoverable damage may be caused to the inverter.





step 7 Gently pull the cable backwards to ensure firm connection, and fasten the swivel nut clockwise.



--End

**■** 36 37 **■** 

#### 5.7 DC Cable Connection

#### **A** DANGER

Electric shock!

The PV array will generate lethal high voltage once exposed to sunlight.

#### **CAUTION**

Make sure the PV array is well insulated to ground before connecting it to the inverter.

#### NOTICE

There is a risk of inverter damage! The following requirements should be met. Failure to do so will void guarantee and warranty claims.

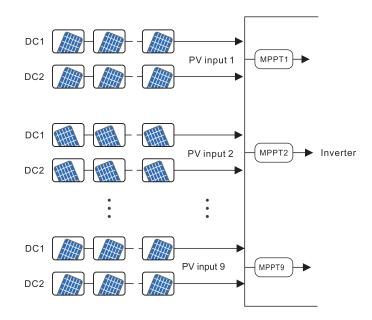
- Make sure the maximum voltage of each string is always less than 1100V.
- Make sure the maximum short circuit current on the DC side is within the permissible range.

#### 5.7.1 PV Input Configuration

As shown in the figure below, the inverter is provided with multiple PV inputs: PV inputs 1~10; and each PV input is designed with an MPP tracker.

Each PV input operates independently and has its own MPPT. In this way, string structures of each PV input may differ from each other, including PV module type, number of PV modules in each string, angle of tilt, and installation orientation.

Each PV input area includes two DC inputs DC1 and DC2. For the best use of DC power, DC1 and DC2 should be the same in PV string structure, including the type, number, tilt, and orientation of the PV modules.



| Type     | Open circuit voltage limit | Max. current for input connector |
|----------|----------------------------|----------------------------------|
| 75K/75KL | 1100V/800V                 | 31A                              |

#### 5.7.2 Connection Procedure

Company provides corresponding plug connectors in the scope of delivery for quick connection of PV inputs.

DC cables should be connected to the inverter via PV connectors which are included in the scope of delivery.



To ensure IP66 protection, use only the supplied connector or the connector with the same ingress of protection.

#### **▲** DANGER

High voltage may be present in the inverter!

- · Ensure all cables are voltage-free before performing electrical operations.
- Do not connect the AC circuit breaker before finishing electrical connection.

**■** 38

#### NOTICE

Use the UTX DC terminal within the scope of delivery. Damage to the device due to the use of incompatible terminal shall not be covered by the warranty.

The electrical connection of the inverter must follow the steps listed below:

- 1. Switch the Grid Supply Main Switch (AC) OFF.
- 2. Switch the DC Isolator OFF.
- 3. Assemble PV input connector to the Inverter.



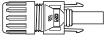
Check whether the polarity of the connecting cable of the photovoltaic string is correct, and ensure that the open circuit voltage under any condition does not exceed the upper limit of the inverter input value of 1100V.



Please don't connect PV array positive or negative pole to the ground, it could cause serious damages to the inverter.



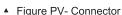
Before connection, please make sure the polarity of the output voltage of PV array matches the "PV+" and "PV-" symbols.





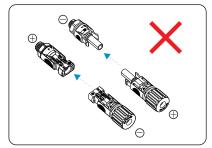


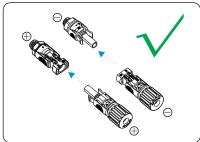
▲ Figure PV+ Connector





Check the positive and negative polarity of the PV strings, and connect the PV connectors to the right terminals. Serious damages to the inverter and connector over temperature may occur.





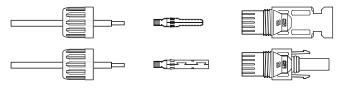


Please use approved DC cable for PV system.

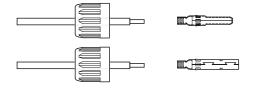
| Cable type                             | Cross section      |                   |
|--|--------------------|-------------------|
| Cable type                             | Range              | Recommended value |
| Industry generic PV cable(model:PV1-F) | 4.0-6.0 (12-10AWG) | 4.0 (12AWG)       |

The steps to assemble the DC connectors are listed as follows:

1.Strip off the DC wire for about 7mm, Disassemble the connector cap nut.

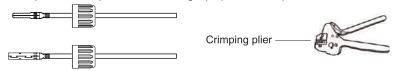


- ▲ Figure Disassemble the Connector Cap nut
- 2.Insert the wire into the connector cap nutand contact pin.



▲ Figure Insert the Wire into the Connector Cap nut and contact pin

3. Crimp the contact pin to the wire using a proper wire crimper.



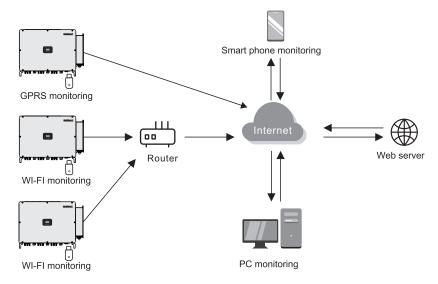
- ▲ Figure Crimp the contact pin to the wire
- 4.Insert the contact pin to the top part of the connector and screw up the cap nut to the top part of the connector.



- ▲ Figure Connector with Cap nut Screwed on
- 5. Then connect the DC connectors to the inverter. Small click will confirm connection.
- --End

#### 5.8 Inverter monitoring connection

The inverter can be monitored via Wi-Fi or GPRS. All communication devices are optional . For connection instructions, please refer to the Monitoring Device installation manuals.



▲ Figure Communication function

The inverter is equipped with standard RS485 and WLAN/GPRS communication ports, and the RS485 communication port is mainly used for the software upgrade, WLAN/GPRS communication port is for inverter wireless monitoring.

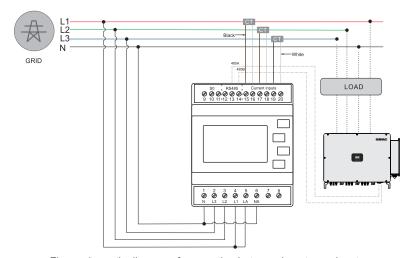
| Pin | Description | Pin | Description |
|-----|-------------|-----|-------------|
| 1   | VCC         | 3   | 485A        |
| 2   | GND         | 4   | 485B        |



▲ Figure Inverter WLAN/GPRS port

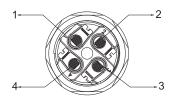
#### 5.8.1 Meter connections(optional)

This inverter has integrated export limitation functionality. To use this function, a CT must be installed, if use the CT, please reference below picture. The CT should be fitted around the live conductor on the grid side of the main incoming consumer unit. Use the directional flow indication arrow on the CT to ensure it is fitted in the correct orientation. The arrow should be pointing towards the grid , not the load.



▲ Figure chematic diagram of connection between inverter and meter (Inverter on the right side of load)

| Pin | Description             | Pin | Description             |
|-----|-------------------------|-----|-------------------------|
| 1   | 485A positive electrode | 3   | 485B positive electrode |
| 2   | 485A negative pole      | 4   | 485B negative pole      |

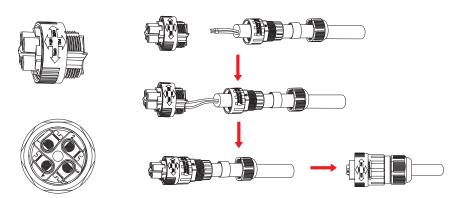




Note:

This communication interface can be used for RS485 communication.

Please follow below figure to assemble CT connector.

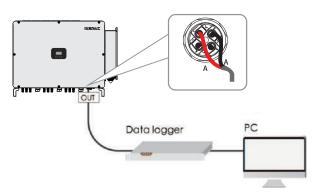


▲ Figure DRM connector

#### **RS485 Communication System**

#### Single-inverter communication system

In case of a single inverter, communication cable connection requires only one RS485 cable.

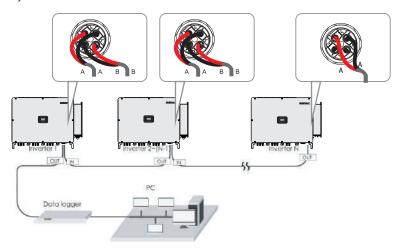


RS485\_1 Terminal definition

| No | Definition                                |
|----|---|
| 1  | RS485 A IN, RS485A differential signal+   |
| 2  | RS485 B IN, RS485B differential signal+   |
| 3  | RS485 A OUT, RS485A communication signal- |
| 4  | RS485 B OUT, RS485B communication signal- |

#### Multi-inverter communication system

In case of multiple inverters, all the inverters can be connected via RS485 cables in the daisy chain manner.



#### 5.9 PLC Communication Connection(optional)

The inverter can be equipped with PLC communication module, the inverter can communicate with the Photovoltaic communication box provided by Company. For specific wiring method, refer to the photovoltaic communication box user manual.

- The photovoltaic communication box is an optional device that can be ordered from Company.
- The photovoltaic communication box conducts data communication by directly
  using the AC output cable of the inverter and thus saves the trouble to lay and
  maintain the special communication cables. The RS485 port of the photovoltaic
  communication box supports the transparent transmission of the MODBUSRTU
  and is completely compatible with the monitoring devices and software of the
  original RS485 communication method.



## 6. Commissioning

#### 6.1 Inspection before Commissioning

Check the following items before starting the inverter:

- The inverter DC switch and external circuit breaker are disconnected.
- The inverter should be accessible for operation, maintenance and service.
- · Nothing is left on the top of the inverter.
- The inverter is correctly connected to the external devices, and the cables are routed in a safe place or protected against mechanical damage.
- The selection of the AC circuit breaker is in accordance with this manual and all applicable local standards.
- · All unused terminals at the bottom of the inverter are properly sealed.
- · Warning signs & labels are suitably affixed and durable.

#### 6.2 Commissioning Procedure

If all of the items mentioned above meet the requirements, proceed as follows to start up the inverter for the first time.

step 1 Rotate the DC switch of the inverter to "ON" position.



Skip performing step1 when the actual device is not equipped with DC switches.

- step 2 Connect the AC switch (if applicable) between the inverter and the grid.
- step 3 Connect the DC switch (if applicable) between the inverter and the PV string.
- step 4 Set initial protection parameters via the RENAC APP. For details, please refer to "7.4.2 Login Steps". If the irradiation and grid conditions meet requirements, the inverter will normally operate.
- step 5 Observe the LED indicator to ensure that the inverter operates normally. (Refer to Tab2.2.4 LED indicator description).

--End

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### 7. LCD Operation Menu

#### 7.1 Initialization

| Interface                    | Explanation   |
|------------------------------|---|
| Initializing<br>Please Wait! | After starting-up of inverter, LCD will firstly enter this interface, and deliver parameters required by operation of the machine to DSP. |

#### 7.2 Major cycle menuon

After initialization, LCD will enter a major cycle menu to display running information of the inverter in a circulating mode, including 10 interfaces for network voltage, frequency of electric network, etc. Time for automatic switch-over between interfaces is 3 seconds, also the interfaces can be switched manually by pressing UP or DOWN buttons, if you want to fix at a certain interface, press ENTER to lock this interface, after successful locking, a lock icon will occur at upper right corner of this interface, press ENTER button again, this interface will be unlocked, and the menu will continue to display in a circulating mode.

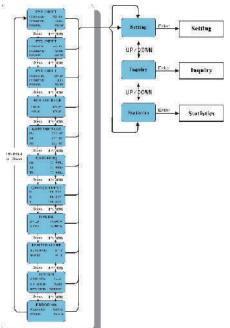


Figure: Interface of recycling display

When the menu is in an automatic cycling display mode, if error (fault) or warning alarm occurs, it will skip into system interface immediately and lock to it, and this will make convenience for the user to determine its cause based on codes on the interface. After disappearing of error (fault) or warning alarm, the menu will return to automatic circulating mode. Press ESC button to exit major circulating menu interface and enter user interface (refer to 7.3).

#### 7.3 User interface

| Interface |   | Explanation   |
|-----------|---|---|
|           | USER<br>→1:Setting<br>2:Inquire<br>3:Statistics | Select corresponding options by pressing UP or DOWN button, enter "setting", "inquiry" and "statistics" menus by pressing ENTER button. Press ESC to return major circulating menu. |

#### 7.4 Setting

| Setting   |  |
|---|--|
| Interface                                       | Explanation  |
| PASSWORD<br>Input:XXXXX                         | After entering into the setup interface, the system will prompt to input password, the default password is "00000", and this password can be altered Password setting menu (refer to 7.4.12); press UP/DOWN to increase or decrease the input figure, press ENTER button to move the cursor backwards, press ESC button to move the cursor frontward.  |
| SETUP →1: INPUT MODE 2: GRID STD 3: REMOTE CTRL | After successful input of password, it will enter setting option interface. Press UP/DOWN to move corresponding options, and enter the selected menu by pressing ENTER button; press ESC button to return back the user interface (refer to 7.3), there are 15 options in total, including input mode, grid std, remote ctrl, run setting, 485 address, baud rate, protocol, language, backlight, date/time, clear rec, password ,maintenance, fctry reset, array detec. |

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#### 7.4.1 Input mode

### Interface

#### Explanation

--- INPUT MODE ---→1:INDEPENDENT 2:PARALLEL

Press UP/DOWN button to move corresponding option. Then confirm the selected option and enter interface of please restart (refer to 7.4.4.11) by pressing ENTER button. Press ESC button to cancel choice and return back setup interface (refer to 7.4). Default option is independent.

#### 7.4.2 Standard for electric network

#### Interface

#### Explanation

----GRID STD----→1:China 2:Germany

3:Australia

4:Italy 5:Spain 6:U.K.

Press UP/DOWN button to move corresponding options. including China, Germany, Australia, Italy, Spain, U.K. with 16 kinds in total. Then confirm the selected option and enter interface of please restart (refer to 7.4.4.11) by pressing ENTER button. Press ESC button to cancel choice and return back setup interface (refer to 7.4).

#### 7.4.3 Remote CTRL

#### Interface

#### Explanation

--REMOTE CTRL ----→1:DISABLE 2:ENABLE

Press UP/DOWN button to move corresponding options. Then confirm the selected option and return back setup interface (refer to 7.4) by pressing ENTER button. Press ESC to cancel choice and return back setup interface (refer to 7.4). Default option is disability.

#### 7.4.4 Working parameters

#### Interface

#### Explanation

-- RUN SETTING--→1: VPV-START

2: DELAY-START 3: VAC-MIN

Press UP/DOWN button to move corresponding options. press ENTER to enter into the selected menu; return back setup interface (refer to 7.4) by pressing ESC, there are 6 options in total, including VPV-START, DELAY-START, VAC-MIN, VAC-MAX, FAC-MIN. FAC-MAX. ACTIVE POWER. REACT POWER. FREQ POWER and V LOAD.

#### 7.4.4.1 Starting-up voltage

#### Interface

#### Explanation

---START-UP VOLT--INPUT:350V UNIT: V

Press UP/DOWN to increase or decrease the input figure, move the cursor backwards and confirm completion of input as well as enter into interface of please restart (refer to 7.4.4.11) by pressing ENTER button, press ESC to move the cursor frontward and return back working interface (refer to 7.4.4); the input figure is between 350 and 850, default is 350.

#### 7.4.4.2 Starting-up delay time

#### Interface

#### Explanation

START-UP DELAY--INPUT: 60 UNIT: SEC

Press UP/DOWN to increase or decrease the input figure, confirm input and enter into interface of please restart (refer to 7.4.4.11) by pressing ENTER button; press ESC to 4 cancel input and return back working interface (refer to 7.4.4), input figure is between 60 and 300. This parameter is changed by grid standards.

#### 7.4.4.3 Low voltage of electric network

#### Interface

#### Explanation

--GRID VOLT LOW--INPUT: <u>187</u> UNIT: V

Press UP/DOWN to increase or decrease the input figure, confirm input and enter into interface of please restart (refer to 7.4.4.11) by pressing ENTER button; press ESC to cancel input and return back working interface (refer to 7.4.4), input figure is between 150 and 210. This parameter is changed by grid standards.

#### 7.4.4.4 High voltage of electric network

#### Interface

#### Explanation

-- GRID VOLT HIGH -INPUT:264 UNIT:V

Press UP/DOWN to increase or decrease the input figure, confirm input and enter into interface of please restart (refer to 7.4.4.11) by pressing ENTER button; press ESC to cancel input and return back working interface (refer to 7.4.4), the input figure is between 240 and 280. This parameter is changed by grid standards.

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#### 7.4.4.5 Low frequency of electric network

#### Interface

#### Explanation

Explanation

-- GRID FREQ LOW--INPUT:<u>49.5</u> UNIT:Hz Press UP/DOWN to increase or decrease the input figure, confirm input and enter into interface of please restart (refer to 7.4.4.11) by pressing ENTER button; press ESC to cancel input and return back working interface (refer to 7.4.4), the input figure is between 45.0 and 49.8. This parameter is changed by grid standards.

#### 7.4.4.6 High frequency of electric network

## -- GRID FREQ HIGH--INPUT:50.5

UNIT:Hz

Interface

Press UP/DOWN to increase or decrease the input figure, confirm input and enter into interface of please restart (refer to 7.4.4.11) by pressing ENTER button; press ESC to cancel input and return back working interface (refer to 7.4.4), the input figure is between 50.2 and 55. This parameter is changed by grid standards.

#### 7.4.4.7 Active power

#### Interface

#### Explanation

Explanation

-- ACTIVE POWER --→1:PERCENT SET 2:VALUE SET Press UP/DOWN to move corresponding options, and enter the selected menu by pressing ENTER button; press ESC button to return back working interface (refer to 7.4.4)

#### 7.4.4.7.1 Power limit

Interface

----POWER LIMIT----

INPUT: 100 %

Press UP/DOWN to inc

Press UP/DOWN to increase or decrease the input figure, confirm input and enter into interface of Active power (refer to 7.4.4.7) by pressing ENTER button; press ESC to cancel input and return back Active power (refer to 7.4.4.7), the input figure is between 0 and 100.

#### 7.4.4.7.2 Power Value

#### Interface

#### Explanation

-- POWER VALUE --INPUT:055KW Press UP/DOWN to increase or decrease the input figure, confirm input and enter into interface of Active power (refer to 7.4.4.7) by pressing ENTER button; press ESC to cancel input and return back Active power (refer to 7.4.4.7), the input figure is between 0and Pmax.(Pmax:30K-33,50K-55,60K-66)

#### 7.4.4.8 Reactive power

#### Interface

#### Explanation

-- RE-POWER SET --→1:RE-POWER CTL 2:POWER FACTOR 3:PERCENT SET Press UP/DOWN to move corresponding options, and enter the selected menu by pressing ENTER button; press ESC button to return back working interface (refer to 7.4.4)

#### 7.4.4.8.1 RE-POWER CTL

#### Interface

#### Explanation

--RE-POWER CTL--→1:POWER FACTOR 2:REACT POWER 3:QV WAVE Press UP/DOWN button to move corresponding options. And confirm selected option and return back the Reactive power by pressing ENTER button (refer to 7.4.4.8), press ESC button to cancel choice and return back Reactive power (refer to 7.4.4.8);

#### 7.4.4.8.2 Power factor

#### Interface

#### Explanation

--POWER FACTOR--INPUT:0.000 Press UP/DOWN to increase or decrease the input figure, confirm input and return back Reactive power (refer to 7.4.4.8) by pressing ENTER button, press ESC button to cancel input and return back Reactive power (refer to 7.4.4.8); the input numerical value is between 0 and 1.2.

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#### 7.4.7 485 protocol

## Interface

#### Explanation

----SELECT----→1: FACTORY 2:MODBUS Press UP/DOWN button to move corresponding options. And confirm selected option and return back the setup interface by pressing ENTER button (refer to 7.4), press ESC button to cancel choice and return back setup interface (refer to 7.4);

#### 7.4.8 Display languageer frequency derating

#### Interface

#### Explanation

---Display language---→1:中文 2:ENGLISH 3:DEUTSCH Press UP/DOWN button to move corresponding options. And confirm selected option and enter into the setup interface (refer to 7.4) by pressing ENTER button, press ESC button to cancel choice and return back setup interface (refer to 7.4).

#### 7.4.9 LCD backlight

#### Interface

#### Explanation

---LIGHT TIME---INPUT: <u>20</u> UNIT: SEC Press UP/DOWN to increase or decrease the input figure, confirm input and return back setup interface (refer to 7.4) by pressing ENTER button, press ESC button to cancel input and return back setup interface (refer to 7.4); the input numerical value is between 20 and 120.

#### 7.4.10 Date/time

#### Interface

#### Explanation

-----DATE/TIME-----DATE:2000-01-01 TIME: 02:43:03 WEEK: 6 Press UP/DOWN to increase or decrease the input figure; press ENTER button to move the cursor backwards, confirm input and return back setup interface (refer to 7.4); and move the cursor frontward and return back setup interface (refer to 7.4)by pressing ESC button.

#### 7.4.11 History clearing

## Interface

#### Explanation

--- DEL REC---→1: CANCEL 2: CONFIRM Clear all records in inquiry/record menu (refer to). Press UP/DOWN button to move corresponding options, and confirm the selected option and enter into setup interface (refer to 7.4) by pressing ENTER; press ESC button to cancel option and return back setup interface (refer to 7.4).

## 7.4.12 Password setting Interface

### ----- PASSWORD -----OLD: XXXXX NEW: XXXXX CONFIRM: XXXXX

## This interface will be used to alter password when entering into the setup interface (refer to 7.4). Press UP/DOWN to increase or decrease the input figure, press

DOWN to increase or decrease the input figure, press ENTER button to move the cursor backwards, confirm input and return back setup interface (refer to 7.4); and move the cursor frontward and return back setup interface (refer to 7.4) by pressing ESC button.

#### 7.4.13 Maintenance

## Interface Explanation -----PASSWORD----INPUT:XXXXX This interface will be used for factory testing, and be protected by password.

Explanation

#### 7.4.14 Factory reset

# Interface Explanation This interface will be used to reset inverter parameter to default. Press UP/DOWN button to move corresponding options, and confirm the selected option and enter into setup interface (refer to 7.4) by pressing ENTER; press ESC button to cancel option and return back setup interface (refer to 7.4).

#### 7.4.15 Array detection

| Interface  | Explanation   |
|--|---|
| - ARRAY DETECT -<br>→1:DETECT ENB<br>2:THRESHOLD | Press UP/DOWN button to move corresponding options and confirm the selected option and enter into setup interface (refer to 7.4) by pressing ENTER; press ESC button to cancel option and return back setup interface (refer to 7.4). |
|  |   |

#### 7.4.15.1 ARRAY

| Interface                       | Explanation  |  |
|---------------------------------|--|--|
| ARRAY<br>1:ENABLE<br>→2:DISABLE | Press UP/DOWN button to move corresponding options. And confirm selected option and return back Array detection by pressing ENTER button (refer to 7.4.15), press ESC button to cancel choice and return back Array detection (refer to 7.4.15); |  |

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#### **7.4.15.2 THRESHOLD**

# Press UP/DOWN to increase or decrease the input figure, confirm input and return back Array detection (refer to 7.4.15) by pressing ENTER button, press ESC button to cancel input and return back Array detection (refer to 7.4.15); the input numerical value is between 5 and 25.

#### 7.5 Inquiry

# Interface Explanation Press UP/DOWN button to move the corresponding option, enter into the selected menu by pressing ENTER button; and return back the user interface (refer to 7.3) by pressing ESC button, there are 5 options in total, including INV MODEL, MODEL NO, FIRMWARE, 4: RECORD Explanation Press UP/DOWN button to move the corresponding option, enter into the selected menu by pressing ENTER button; and return back the user interface (refer to 7.3) by pressing ESC button, there are 5 options in total, including INV MODEL, MODEL NO, FIRMWARE, RECORD And ERROR EVENT.

#### 7.5.1 INV MODEL

| Interface         | Explanation   |
|-------------------|---|
| INVERTER<br>XXXXX | This interface displays product Model. of the inverter. UP/DOWN button is invalid, ENTER button is invalid; and press ESC button to return back the inquiry interface (refer to 7.5). |

#### 7.5.2 MODEL SN

| Interface       | Explanation   |
|-----------------|---|
| INVERTER<br>SN: | This interface displays product series No. of the inverter. UP/DOWN button is invalid, ENTER button is invalid; and press ESC button to return back the inquiry interface (refer to 7.5). |

#### 7.5.3 Firmware

| Interface                        | Explanation  |
|----------------------------------|--|
| FIRMWARE<br>ARM VER:<br>DSP VER: | This interface displays edition No. of firmware such as ARM and DSP in inverter. UP/DOWN button is invalid, ENTER button is invalid; and press ESC button to return back the inquiry interface (refer to 7.5). |

#### 7.5.4 RECORD

| Interface   | Explanation   |  |
|---|---|--|
| REC( 35)<br>1:F01-1<br>DATE: 2011-10-21<br>TIME: 16:35:26 | This interface displays record and its occurring time, including two types of fault and warning alarm, its content will be described in codes, with total number of 500 at utmost, after exceeding this extent, the one with earliest time will be covered. Press UP/DOWN button to look over record backwards or frontward, and press ENTER to enter into explanation interface for corresponding record content, as shown in the following Figure. Press ESC to return back inquiry interface (refer to 7.5). |  |
| DETAIL<br>Grid voltage High                               | This interface will be used to reset inverter parameter to default.  Press UP/DOWN button to move corresponding options, and confirm the selected option and enter into setup interface (refer to 7.4) by pressing ENTER; press ESC button to cancel option and return back setup interface (refer to 7.4).   |  |
| VALUE<br>285V   | This interface is used for displaying the corresponding specific numerical value when the code generates. For example, producing error code for high voltage value of commercial power, and we can refer to the voltage value of c at that that in this interface. Some codes correspond no numerical values, and then these interfaces are blank. UP/DOWN button is invalid, and ENTER is also invalid; press ESC button to return back the last interface.  |  |

#### 7.5.5 ERROR EVENT

| LIKKOK LVLIVI   |   |
|---|---|
| Interface   | Explanation   |
| EVE( 20)<br>1:F01-1<br>Date: 2011-10-21<br>Time: 16:35:26 | Press UP/DOWN button to look over record backwards or frontward, and press ENTER to enter into explanation interface for corresponding record content, as shown in the following Figure. Press ESC to return back inquiry interface (refer to 7.5). |
| EVE(1)<br>+BUS: 350.0V<br>-BUS: 350.0V<br>RADIATOR: 50°C  | Press UP/DOWN button to look over record backwards or frontward, press ESC button to return back the last interface.  |

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--EVE(1)--RS: 0.00Hz ST: 0.00Hz TR: 0.00Hz

Press UP/DOWN button to look over record backwards or frontward, press ESC button to return back the last interface.

--EVE(1)--RS: 0.00V ST: 0.00V TR: 0.00V

Press UP/DOWN button to look over record backwards or frontward, press ESC button to return back the last interface.

#### 7.6 Statistics

## Interface Explanation This interface is used to select various options for statistics. UP/DOWN button is used to move corresponding options, press ENTER button to enter the selected menu; and press ESC to return back the user interface (refer to7.3), there are 8 options, including time, networking number, total, that day, that week, that month, that year, power peak.

#### 7.6.1 Time statistics

| Interface                                 | Explanation  |
|---|--|
| TIME<br>RUN: 86<br>GRID: 56<br>UNIT: HOUR | This interface displays operational time and generating duration of the inverter. UP/DOWN button is invalid, and ENTER is also invalid; press ESC button to return back statistics interface (refer to 7.6). |

#### 7.6.2 Times of paralleling in

| Interface                 | Explanation   |
|---------------------------|---|
| CONNE.TIMES—<br>TIMES: 45 | This interface displays times of paralleling in for the inverter. UP/ DOWN button is invalid, and ENTER is also invalid; press ESC button to return back statistics interface (refer to 7.6). |

#### 7.6.3 Power peak

| Interface   | Explanation   |
|---|---|
| PEAK POWER<br>HISTORY:10645<br>TODAY: 9600<br>UNIT: W | This interface displays history power peak and today power peak of the inverter. UP/DOWN button is invalid, and ENTER is also invalid; press ESC button to return back statistics interface (refer to 7.6). |

#### 7.6.4 Generated energy of that day

## Interface Explanation This interface displays generated energy of that day. UP/DOWN button is invalid, and ENTER is also invalid; press ESC button to return back statistics interface (refer to 7.6).

#### 7.6.5 Generated energy of that week

| Interface                       | Explanation  |
|---------------------------------|--|
| E-WEEK<br>NUM: 700<br>UNIT: KWH | This interface displays generated energy of that day. UP/DOWN button is invalid, and ENTER is also invalid; press ESC button to return back statistics interface (refer to 7.6). |

#### 7.6.6 Generated energy of that month

| Interface                         | Explanation  |
|-----------------------------------|--|
| E-MONTH<br>NUM: 3000<br>UNIT: KWH | This interface displays generated energy of that month. UP/DOWN button is invalid, and ENTER is also invalid; press ESC button to return back statistics interface (refer to 7.6). |

Explanation

#### 7.6.7 Generated energy of that year

Interface

| E-YEAR NUM: 30000 UNIT: KWH  7.6.8 Gross generation | This interface displays generated energy of that year. UP/DOWN button is invalid, and ENTER is also invalid; press ESC button to return back statistics interface (refer to 7.6).    |
|---|--|
| Interface   | Explanation  |
| E-TOTAL<br>NUM: 100000<br>UNIT: KWH                 | This interface displays gross generation of the inverter. UP/DOWN button is invalid, and ENTER is also invalid; press ESC button to return back statistics interface (refer to 7.6). |

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## 8 System Decommissioning

#### 8.1 Disconnecting the Inverter

step 1 For maintenance or other service work, the inverter must be switched off.

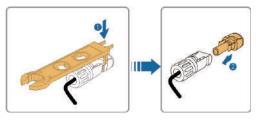
Proceed as follows to disconnect the inverter from the AC and DC power sources. Lethal voltages or damage to the inverter will follow if otherwise.

step 2 Rotate the DC switch to the "OFF" position for disconnecting all of the PV string inputs.



Skip performing step 2 when the actual device is not equipped with DC switches.

- step 3 Wait about 5 minutes until the capacitors inside the inverter completely discharge.
- step 4 Ensure that the DC cable is current-free via a current clamp.
- step 5 Insert a MC4 wrench into the notch and press the wrench with an appropriate force to remove the DC connector.



- step 6 Remove the AC junction box panel, ensure that the AC wiring terminals are voltage-free via a multimeter, and remove the AC wires.
- step 7 Install the MC4 waterproof plugs and AC junction box panel.



For further disconnection and reconnection instructions, please visit the webpage of respective component manufacturer.

- - End

#### 8.2 Dismantling the Inverter

#### **▲** CAUTION

Risk of burn injuries and electric shock!

- Do not touch any inner live parts until at least 5 minutes after disconnecting the inverter from the utility grid and the PV input.
- step 1 Refer to "5 Electrical Connection" for the inverter disconnection of all cables in reverse steps.
- step 2 Dismantle the inverter referring to "4 Mechanical Mounting"in reverse steps.
- step 3 If necessary, remove the wall-mounting bracket from the wall.
- step 4 If the inverter will be reinstalled in the future, please refer to "3.4 Inverter Storage"for a proper conservation.
  - --End

#### 8.3 Disposal of the Inverter

Users take the responsibility for the disposal of the inverter.

#### NOTICE

Some parts and devices of the inverter, such as the capacitors, may cause environmental pollution.

Do not dispose of the product together with household waste but in accordance with the disposal regulations for electronic waste applicable at the installation

## 9 Troubleshooting and Maintenance

#### 9.1 Error and alarm

Error and alarm information of photovoltaic grid-connected inverter is shown in the following table: ( the error and alarm information can be viewed from the buetooth App )

Table 9.1 Error message prompt

|   | System | faulty display  |
|---|--------|---|
| AC Voltage Low                              | F00-1  | AC Voltage is too low.  |
| AC Voltage High                             | F01-1  | AC Voltage is too high.   |
| AC Frequency Low                            | F02-1  | AC frequency is too low.  |
| AC Frequency High                           | F03-1  | AC frequency is too high.   |
| Bus Voltage Low                             | F04-1  | Bus voltage is too low.   |
| Bus Voltage High                            | F05-1  | Bus voltage is too high.  |
| Bus Voltage Abnormal                        | F06-1  | Positive voltage or negative voltage is too high or too low on bus. |
| Insulation Impedance Low                    | F07-1  | PV arrays Insulation impedance is too low.                          |
| Input current high                          | F08-1  | PV Input current is too high.                                       |
| Hardware Current High                       | F09-1  | Inverter current is too high.                                       |
| Inverter Current High                       | F10-1  | Inverter current is too high.                                       |
| Inverter DC Current High                    | F11-1  | Inverter DC current is too high.                                    |
| Ambient Temperature High                    | F12-1  | Ambient emperature is too high.                                     |
| Heatsink Temperature High                   | F13-1  | Heatsink temperature is too high.                                   |
| AC Relay Abnormal                           | F14-1  | AC relay is abnormal.   |
| PV Input Voltage Low                        | F15-1  | One of PV input is idle wheninverter is set on parallel mode.       |
| Remote OFF                                  | F16-1  | Status of inverter is on remote off.                                |
| SPI Communication Fault                     | F18-1  | Communication fault on control                                      |
| Reserved                                    | F19-1  | Reserved  |
| Leakage Current High                        | F20-1  | Leakage current is too high.  |
| Self-Checking Failure Of<br>Leakage Current | F21-1  | Self -checking Failure of Leakage Current.                          |
| Consistency Voltage<br>Fault                | F22-1  | Inconsistent voltage between primary CPU and secondary CPU.         |
| Consistency Frequency Fault                 | F23-1  | Inconsistent frequency between primary CPU and secondary CPU.       |
| Loss of auxiliary power supply              | F25-1  | Auxiliary power loss, machine protection                            |
| IGBT Fault                                  | F26-1  | IGBT Fault,machine protection                                       |
| DSP Communication Lost                      | F32-1  | DSP communication faulty on   |

Table 9.2 Alarm information

| Alarm information         | Alarm code | Alarm analysis  |
|---------------------------|------------|---|
| Low speed of fan group 1  | W00-1      | Machine alarm due to low speed of fan group 1   |
| Low speed of fan group 2  | W01-1      | Machine alarm due to low speed of fan group 2   |
| Low speed of fan group 3  | W02-1      | Machine alarm due to low speed of fan group 3   |
| Zero power                | W03-1      | Machine zero power alarm is normal when light is weak and power is very small, which is not machine |
| Clock alarm               | W16-1      | Clock chip failure  |
| Lightning protector alarm | W21-1      | Machine alarm due to triggering action of lightning protector                                       |

#### 9.1.1 Inverter system error type analysis and solution

Table 9.3 Analysis of system error types and solutions

|                                       | Problem list and solution  |  |  |  |
|---------------------------------------|--|--|--|--|
|                                       | Error message  | Solution   |  |  |
| System<br>error of<br>failure<br>type | Error of low and<br>high city power<br>voltage;<br>error of low and<br>high city power<br>frequency<br>(F00-F03-1) | <ol> <li>Confirm whether the safety standards selected for the machine are in compliance with local grid requirements.</li> <li>Inspect whether the AC output terminal is connected reliably and measure whether the voltage is normal with a multimeter.</li> <li>Disconnect the PV input, restart the machine, and see if the machine can return to normal.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol> |  |  |
|                                       | Error of low and<br>high bus-bar<br>voltage (F04-<br>F05-1)  | <ul> <li>①. Inspect whether the input mode is correct.</li> <li>②. Disconnect the PV input, restart the machine, and see if the machine can return to normal.</li> <li>③. If fault is not eliminated, contact the distributor.</li> </ul>  |  |  |
|                                       | Imbalanced<br>bus-bar<br>voltage<br>(F06-1)  | <ol> <li>Inspect whether the input mode is correct.</li> <li>Confirm the bus-bar voltage imbalance through the LCD display panel. Restart the machine several times every few minutes to see if the machine can return to normal.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol>   |  |  |
|                                       | Error of<br>insulation<br>resistance<br>(F07-1)  | ①. Disconnect the PV input, restart the machine, and see if the machine can return to normal. ②. Inspect whether the resistance of PV+ and PV- to earth is over $500 \text{K}\Omega$ . ③. If it is less than $500 \text{K}\Omega$ , please contact local inverter distributor for solution, or contact battery board supplier for treatment.   |  |  |

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|                                       | Problem list and solution  |  |  |  |
|---------------------------------------|--|--|--|--|
|                                       | Error message  | Solution   |  |  |
| System<br>error of<br>failure<br>type | Error of high input current (F08-1)                              | <ol> <li>Inspect whether the input mode is correct.</li> <li>Disconnect the PV input, restart the machine, and see if the machine can return to normal.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol>   |  |  |
|                                       | Error of high<br>hardware<br>inversion current<br>(F09-1)        | <ol> <li>Inspect whether the input mode is correct.</li> <li>Disconnect the PV input, restart the machine several minutes later, and see if the machine can return to normal.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol>   |  |  |
|                                       | Error of high<br>inversion<br>current<br>(F10-1)                 | <ol> <li>Inspect whether the input mode is correct.</li> <li>Disconnect the PV input, restart the machine several minutes later, and see if the machine can return to normal.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol>   |  |  |
|                                       | Error of high<br>AC amount of<br>inversion<br>current<br>(F11-1) | ①. Disconnect the PV input, restart the machine several minutes later, and see if the machine can return to normal. ②. If fault is not eliminated, contact the distributor.  |  |  |
|                                       | Error of high<br>ambient<br>temperature<br>(F12-1)               | <ol> <li>Disconnect the PV input, restart the machine several minutes later until the machine is cooled, and see if the machine can return to normal.</li> <li>Inspect whether the ambient temperature exceeds the normal operating temperature range of the machine.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol> |  |  |
|                                       | Error of high<br>radiator<br>temperature<br>(F13-1)              | <ol> <li>Disconnect the PV input, restart the machine several minutes later until the machine is cooled, and see if the machine can return to normal.</li> <li>Inspect whether the ambient temperature exceeds the normal operating temperature range of the machine.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol> |  |  |
|                                       | Abnormal<br>AC relay<br>(F14-1)                                  | <ol> <li>Disconnect the PV input, restart the machine, and see if the<br/>machine can return to normal.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol>   |  |  |
|                                       | Error of low<br>input voltage<br>(F15-1)                         | <ol> <li>Inspect whether the PV input wiring mode is correct. In parallel mode of the machine, one line of PV is not connected, and machine error is reported.</li> <li>Disconnect the PV input, restart the machine, and see if the machine can return to normal.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol>    |  |  |

|                                       | Problem list and solution  |  |
|---------------------------------------|--|--|
|                                       | Error message  | Solution   |
|                                       | Remote<br>shutdown<br>(F16-1)  | The machine is in remote shutdown state. The remote starting and shutdown can be realized with monitoring software.  |
|                                       | SPI1<br>communication<br>fault (F18-1)                                   | Disconnect the PV input, restart the machine, and see if the machine can return to normal.     If fault is not eliminated, contact the distributor.                                |
|                                       | SPI2<br>communication<br>fault (F19-1)                                   | <ul> <li>①. Disconnect the PV input, restart the machine, and see if the machine can return to normal.</li> <li>②. If fault is not eliminated, contact the distributor.</li> </ul> |
| System<br>error of<br>failure<br>cype | Error of high<br>leakage<br>current (F20-1)                              | Disconnect the PV input, restart the machine, and see if the machine can return to normal.     If fault is not eliminated, contact the distributor.                                |
|                                       | Error of self-<br>detection failure<br>for leakage<br>current<br>(F21-1) | Disconnect the PV input, restart the machine, and see if the machine can return to normal.     If fault is not eliminated, contact the distributor.                                |
|                                       | Voltage<br>consistency<br>error (F22-1)                                  | <ol> <li>Disconnect the PV input, restart the machine, and see if the machine can return to normal.</li> <li>If fault is not eliminated, contact the distributor.</li> </ol>       |
|                                       | Frequency<br>consistency<br>error (F23-1)                                | <ul> <li>①. Disconnect the PV input, restart the machine, and see if the machine can return to normal.</li> <li>②. If fault is not eliminated, contact the distributor.</li> </ul> |
|                                       | Loss of<br>auxiliary<br>power supply<br>(F25-1)                          | Disconnect the PV input, restart the machine, and see if the machine can return to normal.     If fault is not eliminated, contact the distributor.                                |
|                                       | IGBT Fault<br>(F26-1)  | Disconnect the PV input, restart the machine, and see if the machine can return to normal.     If fault is not eliminated, contact the distributor.                                |
|                                       | Error of DSP<br>communication<br>loss<br>(F32-1)                         | Disconnect the PV input, restart the machine, and see if the machine can return to normal.     If fault is not eliminated, contact the distributor.                                |

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#### 9.2 Maintenance

#### **A** DANGER

Risk of inverter damage or personal injury due to incorrect service!

 Always keep in mind that the inverter is powered by dual sources: PV strings and utility grid.

Before any service work, observe the following procedure.

- Disconnect the AC circuit breaker and then set the DC load-break switch of the inverter to OFF:
- Wait at least 10 minutes for inner capacitors to discharge completely;
- · Verify that there is no voltage or current before pulling any connector.

#### **A** CAUTION

Keep non-related persons away!

A temporary warning sign or barrier must be posted to keep non-related persons away while performing electrical connection and service work.

#### NOTICE

Restart the inverter only after removing the fault that impairs safety performance.

As the inverter contains no component parts that can be maintained, never arbitrarily replace any internal components.

For any maintenance need, please contact Company. Otherwise, Company shall not be held liable for any damage caused.

#### 9.2.1 Routine Maintenance

| Item                     | Method  | Period   |  |
|--------------------------|---|--|--|
| System clean             | Check the temperature and dust of the inverter. Clean the inverter enclosure if necessary.  Check if the air inlet and outlet are normal. Clean the air inlet and outlet, if necessary. | Six months to a year<br>(- depend on the dust<br>contents in air.) |  |
| Fans                     | Check whether there is fan warning using APP. Check whether there is any abnormal noise when the fan is turning.Clean or replace the fans if necessary (see the following section).     | Once a year  |  |
| Cable entry              | Check whether the cable entry is insufficiently sealed or the gap is excessively large, and reseal the entry when necessary.  | Once a year  |  |
| Electrical<br>Connection | Check whether all cable are firmly in place. Check whether a cable is damaged, especially the part contacting the metal enclosure.  | Six months to a year   |  |

#### 9.2.2 Maintenance Instruction

#### **Cleaning Air Inlet and Outlet**

A huge amount of heat is generated in the process of running the inverter. The inverter adopts a controlled forced-air cooling method.

In order to maintain good ventilation, please check to make sure the air inlet and outlet are not blocked.

Clean the air inlet and outlet with soft brush or vacuum cleaner if necessary.

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#### Fan Maintenance

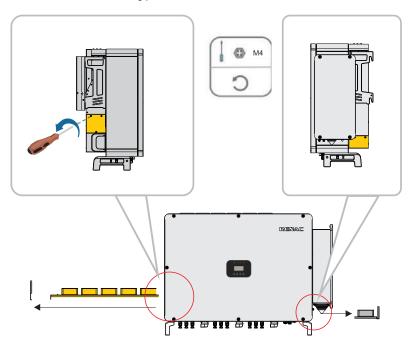
#### **A** DANGER

- Stop the inverter and disconnect it from all power supplies before maintenance.
- Lethal voltage still exists in the inverter. Please wait for at least 5 minutes and then perform maintenance work.
- · Only qualified electricians can maintain the fans.

Fans inside the inverter are used to cool the inverter during operation. If the fans do not operate normally, the inverter may not be cooled down and inverter efficiency may decrease. Therefore, it is necessary to clean the dirty fans and replace the broken fans in time.

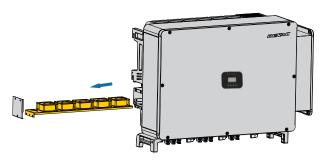
The operation procedure is as follows:

- step 1 Stop the inverter (see 8.1 Disconnecting the Inverter).
- step 2 Loosen the screw on the sealing plate of the fan module.



step 3 Press the hump of the latch hook, unplug the cable connection joint outwards.

step 4 Pull out the fan module, clean the fans with soft brush or vacuum cleaner, and replace them when necessary.



step 5 Follow the steps above to remove the fan on the other side of the inverter.

step 6 Reinstall the fan back to the inverter in reverse order and restart the inverter.

--End

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## 10 Appendix

### 10.1 Technical Date

| Parameters                          | 75KL                       | 75K                  |  |
|-------------------------------------|----------------------------|----------------------|--|
| Input(DC)                           |                            |                      |  |
| Max. DC voltage                     | 800V                       | 1100V                |  |
| MPPT voltage range                  | 200~800Vdc                 | 200~1000Vdc          |  |
| MPPT voltage range at full load     | 360~650Vdc                 | 550~850Vdc           |  |
| Nominal input voltage               | 370V                       | 650V                 |  |
| Start DC voltage                    | 200V                       |                      |  |
| Number of strings input             | 18                         | 16                   |  |
| Number of MPPT                      | 9                          | 8                    |  |
| Strings per MPPT                    | 2                          | 2                    |  |
| Max. input current per MPPT         | 45A                        | 40A@550V<br>45A@600V |  |
| Max. short-circuit current per MPPT | 60A                        |                      |  |
| PV Backfeed Current                 | 0Adc                       |                      |  |
| Output(AC)                          |                            |                      |  |
| Nominal AC output power             | 75kW                       |                      |  |
| Max. AC output power                | 75kW                       |                      |  |
| Nominal AC voltage                  | 127/220Vac                 | 220/380Vac           |  |
| Three-phase system mode             | 3W+PE/3W+N+PE              |                      |  |
| AC grid frequency range             | 50/60 Hz(±5Hz)(adjustable) |                      |  |
| Rated output current                | 196.9A                     | 113.7A               |  |
| Max. output current                 | 196.9A                     | 113.7A               |  |
| Max. output fault current:          | 392A                       |                      |  |
| Inrush Current:                     | 20kA                       |                      |  |
| Power factor ( cos φ )              | 0.8 leading ~ 0.8 lagging  |                      |  |
| THDi                                | <3%                        |                      |  |

| Efficiency                  |   |             |  |
|-----------------------------|---|-------------|--|
| Max. efficiency             | 98.7%   |             |  |
| Euro efficiency             | 98.3%   |             |  |
| Protection devices          |   |             |  |
| DC switch                   | Integrated  |             |  |
| Anti-islanding protection   | Integrated  |             |  |
| Output over current         | Integrated  |             |  |
| DC anti reverse connection  | Integ   | grated      |  |
| String Current Monitoring   | Integrated  |             |  |
| DC surge protection         | Integrate   | d(Type II ) |  |
| AC surge protection         | Integrated(Type II )  |             |  |
| AFCI Protection             | Optional  |             |  |
| PID recover                 | Optional  |             |  |
| Physical                    |   |             |  |
| Dimensions (W * H * D)mm    | 965 x 700x355   |             |  |
| Weight(kg)                  | 85 84   |             |  |
| Operating temperature range | -30°C~ 60°C   |             |  |
| Cooling type                | Fa  | an          |  |
| Max. operation altitude     | ≤4000m  |             |  |
| Protection rating           | IP66  |             |  |
| Humidity                    | 0~10  | ~100%       |  |
| Input terminal              | Amphenol  |             |  |
| Topology                    | Transformerless   |             |  |
| Pollution degree            | External:PD3 Internal:PD2                                     |             |  |
| Protective class            | 1   |             |  |
| Overvoltage category        | II(PV); III(Mains)  |             |  |
| Certification & Standard    |   |             |  |
| Standard                    | EN/IEC 62109-1/2;IEC61727;IEC62116;<br>EN 50549;VDE-AR-N-4110 |             |  |

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#### **10.2 Quality Assurance**

When product faults occur during the warranty period, Company or his partner will provide free service or replace the product with a new one.

#### Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible.

Otherwise, Company has the right to refuse to honor the quality guarantee.

#### Conditions

- · After replacement, unqualified products shall be processed by Company.
- The customer shall give Company or his partner a reasonable period to repair the faulty device.

#### **Exclusion of Liability**

In the following circumstances, Company has the right to refuse to honor the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh environment, as described in this manual.
- The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel not from Company or his authorized partner.
- The fault or damage is caused by the use of non-standard or non-Company

#### Components or software.

- The installation and use range are beyond stipulations of relevant international standards.
- The damage is caused by unexpected natural factors.

For faulty products in any of above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of Company.