

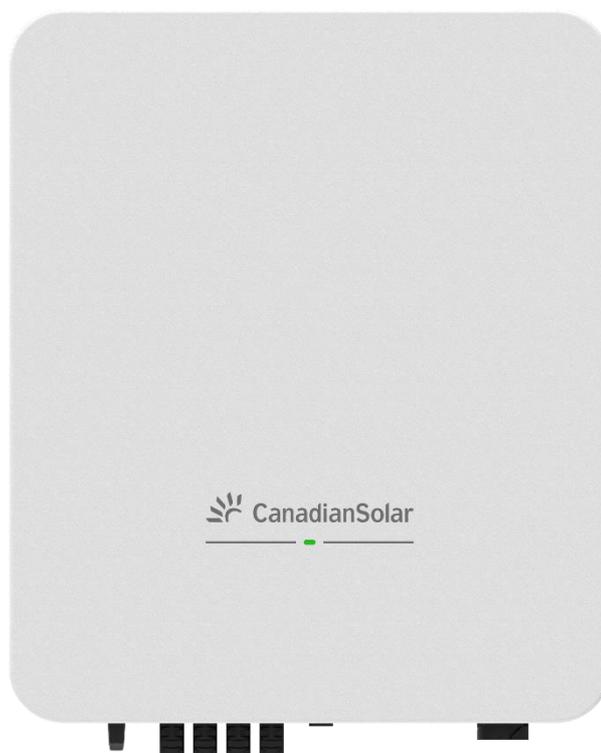
**CSI-15K-T4001A-E**

**CSI-17K-T4001A-E**

**CSI-20K-T4001A-E**

**CSI-23K-T4001A-E**

**CSI-25K-T4001A-E**



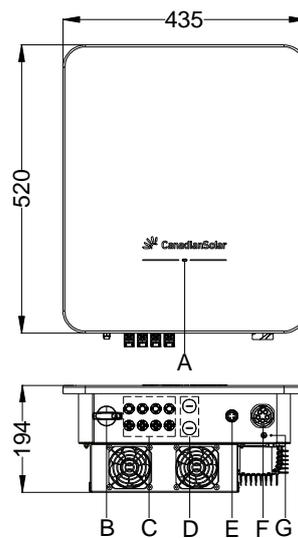
## **PV Inverter Quick Installation Guide**

(Part No: 91000517; Release Date: December, 2023)

## 1 About This Guide

- 1) This guide only applies to the following inverters: CSI-15K-T4001A-E, CSI-17K-T4001A-E, CSI-20K-T4001A-E, CSI-23K-T4001A-E, CSI-25K-T4001A-E.
- 2) This instruction only provides an overview of the installation of the above-mentioned inverters.
- 3) Due to product version upgrades or other reasons, this guidance will be updated irregularly. Under no circumstances can this guide replace the user manual and the safety instructions on the product.
- 4) Please read the user manual and related standard specifications carefully before performing any operation on this series of products. You can scan the QR code on the left side of the device or at the end of this guide to obtain an electronic copy of the manual.
- 5) All operations on this series of products must be completed by professional technicians. Professional and technical personnel must be specially trained, read the user manual, master the safety matters related to the operation, and be familiar with local standards and electrical system safety specifications.
- 6) Before installing the products, please check whether the products are complete, consistent with the order, and whether there is obvious damage. If there is any abnormality, please contact the local dealer or CSI Solar Co., Ltd.

## 2 Product Introduction



- |  |                                |
|--|--------------------------------|
| A. LED Indicator                       | E. Wireless Communication Port |
| B. DC Disconnect Switch                | F. AC Output Connectors        |
| C. PV Input Connectors                 | G. External Grounding Point    |
| D. Cable Communication Ports(Optional) |                                |

FIG 2-1 Product introduction (The picture is for reference only)

## 3 Installation

### 3.1 Installation Environment Requirements

- 1) Do not install the inverter on structures constructed of flammable, thermolabile, or explosive materials.
- 2) Ensure the inverter is out of children's reach.
- 3) The ambient temperature should be between -30°C~ 60°C.
- 4) The humidity of the installation location should be below 100% without condensation.

5) Do not install the inverter outdoors in salt, sulfur, or other corrosive areas.

The inverter would be corroded in salt (i.e. marine environments) area, and the corrosion may cause fire. In salt area refers to the region within 500 meters from the coast).

Please consult the CSI Solar Co., Ltd. technical support department on the use of inverters in special climates (i.e. salt, sulfur, or ammonia areas) which may affect the product warranty.

6) Prevent the inverter from direct exposure to sun, rain and snow.

7) The inverter should be well-ventilated. Ensure air circulation.

8) Never install the inverter in living areas. The inverter will generate noise during operation, affecting daily life.

9) Install at an appropriate height for ease of viewing LED indicators and operating switches.

10) Do not install the inverter in a small, closed cabinet where air cannot circulate freely.

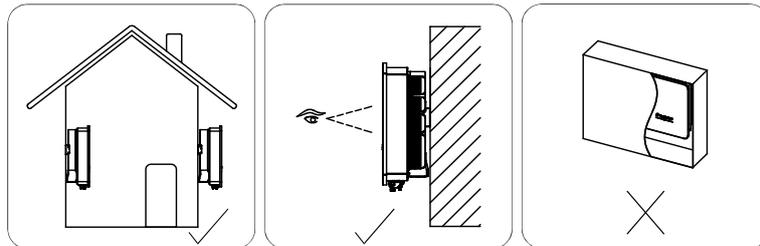


FIG 3-1 Installation site

### 3.2 Structural Requirements

The inverter(s) must be installed on a structure with a load-bearing capacity of >4 times the inverter weight.

### 3.3 Installation Angle Requirements

Installation Angle are shown below:

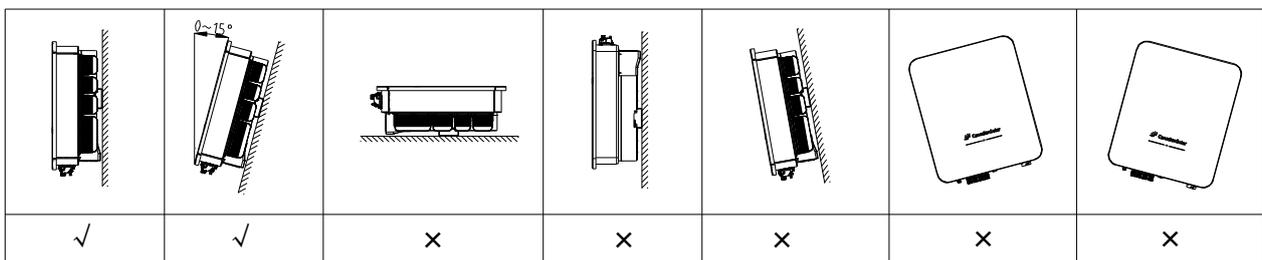


FIG 3-2 Installation angle

### 3.4 Installation Clearance Requirements

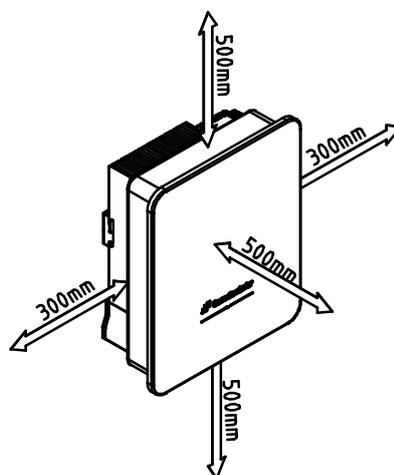


FIG 3-3 Single inverter installation clearance

### 3.5 Inverter Installation

- Step 1: Use the wall-mounting bracket as a template and mark the positions of the drill holes, then drill the 3 holes (Diameter = 11mm, Depth  $\geq$  55mm).
- Step 2: Knock expansion anchors into the corresponding three holes, and then secure the bracket by using screws.
- Step 3: Hang the inverter on wall-mounting bracket. Keep balance during the operation to prevent device damage from colliding with walls or obstacles.
- Step 4: Use one safety bolt to fix left side of inverter to ensure the inverter is fixed to the wall firmly.

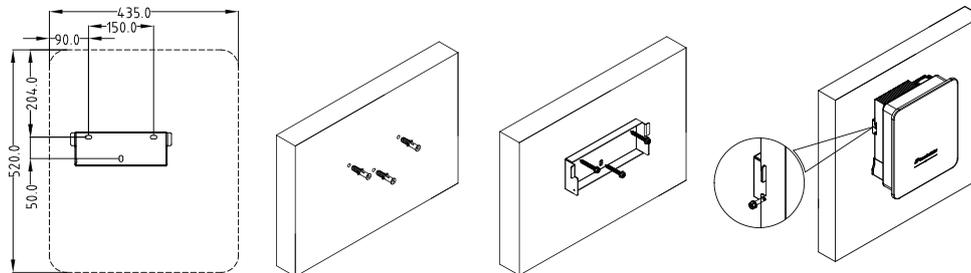


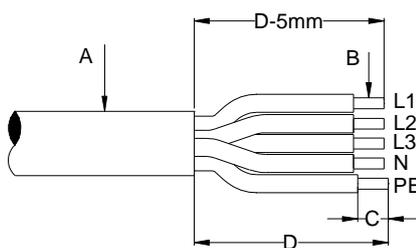
FIG 3-4 Inverter installation

## 4 Electrical Connection

 <b>DANGER</b>	<p>Electric shock!</p> <p>The PV array will generate lethal high voltage once exposed to sunlight.</p> <p>Before performing electrical operations, ensure that all cables are uncharged.</p> <p>Do not turn on the AC circuit breaker before the inverter is electrically connected.</p>
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### 4.1 AC Cable Connection

- Step 1: Strip the cable's jacket, and then adjust the relative length of core wires, to make the length of PE wire at least 5mm longer than N and phase ones.

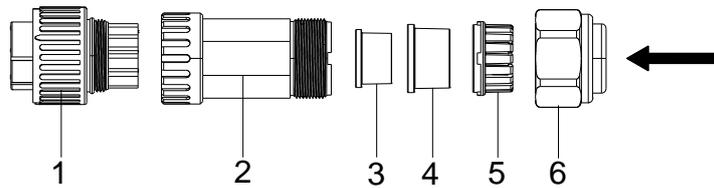


	Description	Specification
A	Cable Outer Diameter	15kW / 17 kW / 20 kW: 13-22mm 23 kW / 25 kW: 13~26mm
B	Cross Sectional Area of Copper Conductor	15kW / 17 kW / 20 kW : 5x4~16mm <sup>2</sup> (REC 6mm <sup>2</sup> ) 23 kW / 25 kW : 5x6~16mm <sup>2</sup> (REC 10mm <sup>2</sup> )
C	Stripping Length of Copper Conductor Insulation	12mm
D	Stripping Length of Cable Sheath	75mm
Note: The ground wire (PE) is at least 5mm longer than the phase line.		

FIG 4-1 AC cable stripping requirements

Step 2: Insert the conductor into the suitable ferrule and tighten them firmly, and then assemble all parts together.

NOTE: ferrule is not provided.



1.connector body; 2. sleeve; 3. sealing ring 2; 4. sealing ring 1; 5. claw; 6. pressing nut.

FIG 4-2 AC Connector

NOTE: Please select the appropriate sealing ring according to the actual cable outer diameter and the table below:

Model	Sealing Ring 1	Sealing Ring 1 + Sealing Ring 2
15kW / 17 kW / 20 kW	18-22mm	13-18mm
23 kW / 25 kW	18-26mm	13-18mm

Step 3: Insert the assembled plug into the AC socket on the inverter (please refer to the FIG 4-4). Tighten the connection by aligning the arrow on the plug with the circular hole on the socket.

NOTE: Please use the hex wrench provided with the inverter to tighten it.

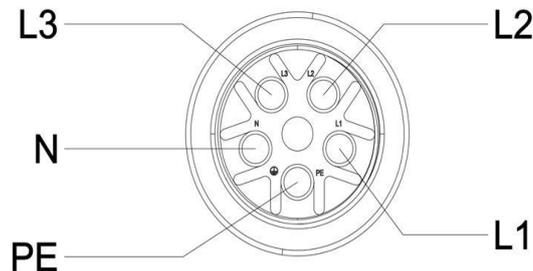


FIG 4-3 Internal structure of AC connector

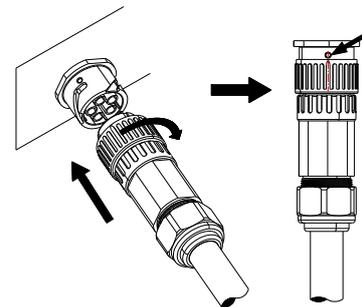


FIG 4-4 AC plug connection

## 4.2 Connecting the PE Cable

 <b>WARNING</b>	<p>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.</p> <p>Connect the additional grounding terminal to the protective grounding point before AC cable connection, PV cable connection, and communication cable connection.</p> <p>The ground connection of this additional grounding terminal cannot replace the connection of the PE terminal of the AC cable. Make sure those terminals are both grounded reliably.</p>
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### 4.2.1 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.

## 4.2.2 Connection Procedure

Step 1: According to the following figure, prepare additional grounding cable (recommended conductor cross-sectional area range: 4~6mm<sup>2</sup>). Wire stripping—>crimp terminal.

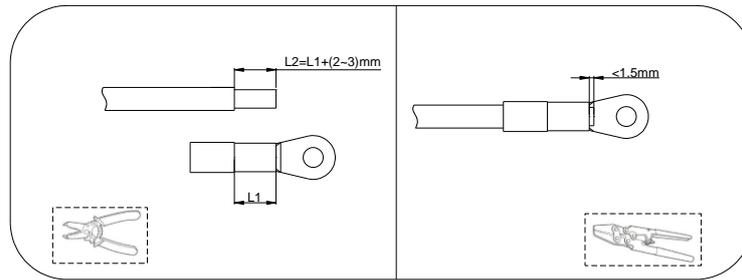


FIG 4-5 Making PE cable

Step 2: Fix the grounding cable on the inverter with the M4X10 screw in the attachment. Tool: PH2 screwdriver. Torque: 1.8N.m Shown as FIG 4-5.

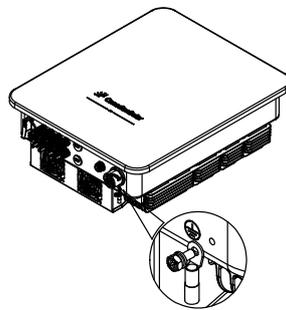


FIG 4-6 Install ground cables

NOTE: Additional ground terminals and screws are included in the accessories of the inverter.

## 4.3 DC Cable Connection

 <b>DANGER</b>	<p>Electric shock!</p> <p>The PV array will generate lethal high voltage once exposed to sunlight. Before performing electrical operations, ensure that all cables are uncharged. Do not turn on the AC circuit breaker before the inverter is electrically connected. Ensure that the DC switch of the inverter is set to OFF.</p>
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### 4.3.1 Connection Procedure

Step 1: Strip the insulation from each DC cable by 7mm.

Step 2: Assemble the cable ends with the crimping pliers

Step 3: Lead the cable through cable gland, and insert into the insulator until it snaps into place.

Gently pull the cable backward to ensure firm connection. Tighten the cable gland and the insulator (torque 2.5 N.m to 3 N.m).

Step 4: Check for polarity correctness.

The inverter will not function properly if any PV polarity is reversed.

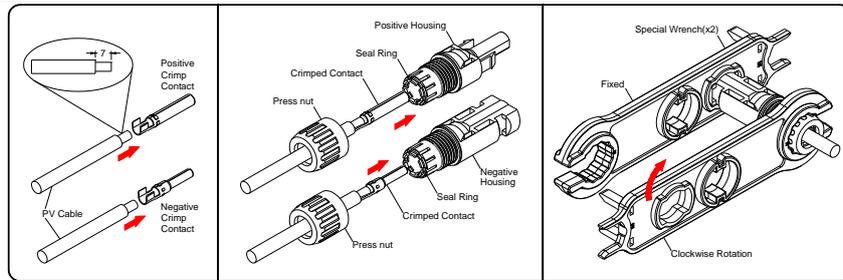


FIG 4-7 DC connector assembly

Step 5: Insert the completed DC connector into the corresponding DC connector input terminal of the inverter. Do not remove the sealing plug on the input end of the vacant DC connector on the inverter to ensure reliable protection. The connection steps are as follows:

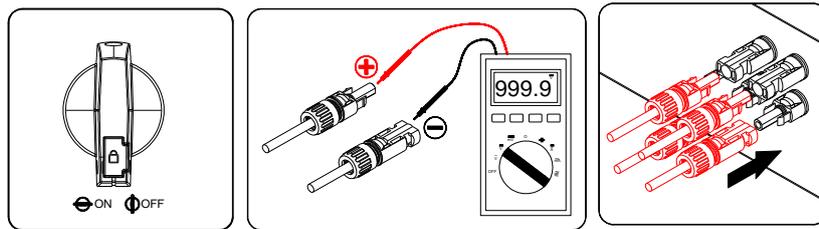


FIG 4-8 DC cables connection

 <b>NOTICE</b>	<p>If the DC input power cable is reversely connected and DC switches are set to ON, do not immediately turn off the DC switches or reconnect the positive and negative connectors. Otherwise, the device may be damaged. The caused device damage is not covered under any warranty. Wait until the solar irradiance declines at night and the PV string current reduces to below 0.5 A. Then, turn off the three DC switches, remove the positive and negative connectors, and rectify the connection of the DC input power cable.</p>
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## 4.4 Communication Cable Connection

This series of models provides standard wireless communication function and optional wired communication function.

### 4.4.1 RS485 communication cable connection (Optional)

Step 1: Prepare the Signal Cable. Remove the signal cable's jacket about 23mm, and then strip the wire insulation layer about 7mm, as per figure below.

Type	Core wire cross-sectional area	Outside diameter
Shielded type 2-core twisted pair	0.25-1mm <sup>2</sup> (24~18AWG)	4~5.5mm

FIG 4-9 Communication cable requirements

Step2: Insert the conductors into the corresponding pins of the plug, and then fix the conductors by screws firmly, as shown in FIG 4-10. Tool: Phillips screwdriver #1. Torque: 0.6~0.8N.m.

Step 3: Tighten the pressure nut, and then push the threaded sleeve into the plug, as per FIG.4-10.

Step 4: Finally insert the assembled connector into the RS485 receptacle (COM.-2) on the inverter, as per FIG.4-11.

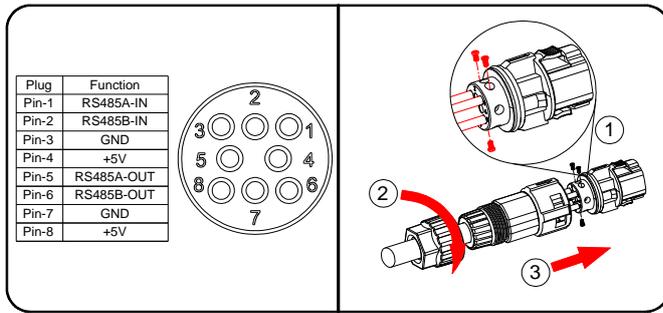


FIG 4-10 Assembling the Connector

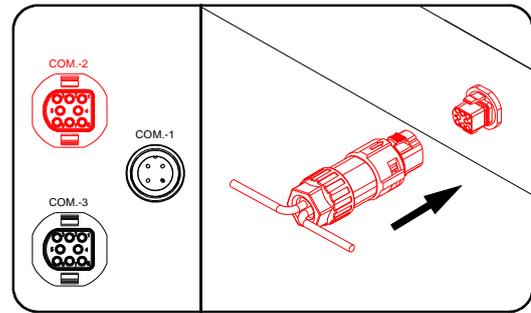


FIG 4-11 Insert the connector into the receptacle

#### 4.4.2 Multi-inverter communication system

In case of multiple inverters, select COM.-2 port to achieve communication connection in daisy chain form.

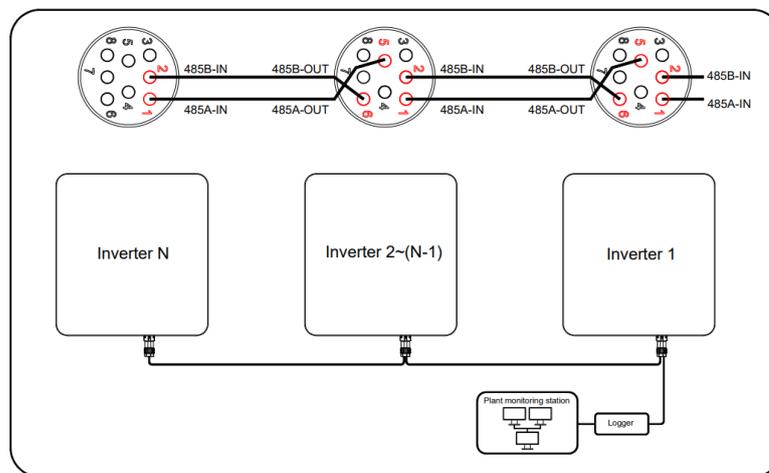


FIG 4-12 Multiple Communication Networks

#### 4.5 Dongle Connection

This product supports Dongle Connection. For more information about the data logger, please refer to the Smart Data Logger (WIFI) Quick Installation Guide.

#### 4.6 Smart Meter Connection (Optional)

The inverter has integrated export limitation functionality. To use this function, a smart meter must be installed. For installation and operation methods, please refer to the instructions in the smart meter package.

### 5 Commissioning Inverter

#### 5.1 Electrical Inspection

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

## 5.2 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.

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 CSI Smart Energy App. 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.

LED indicator	LED state	Definition
 PV connection indicator	Steady green	At least one PV string is properly connected, and the DC input voltage of the corresponding MPPT circuit is at least 200V.
	Off	The solar inverter is disconnected from all PV strings, or the DC input voltage of all MPPT circuits is less than 200V.
 Grid connection indicator	Steady green	The solar inverter is in grid-tied mode.
	Blinking green	The solar inverter is in self-test mode or wait mode.
	Off	The solar inverter is not in grid-tied mode.
 Communications/Maintenance indicator	Blinking green	The solar inverter receives communication data normally
	Off	The solar inverter has not received communication data for 10 seconds.
	Steady green	The solar inverter is in maintenance status
 Alarm indicator	Steady red	A major alarm is generated.
	Blinking red	A minor or warning alarm is generated.
	Off	No alarm

## 6 CSI Smart Energy App - Local Mode

### 6.1 APP Introduction

The CSI SmartEnergy APP can establish a communication connection to the dongle via the Bluetooth, thereby achieving local access to the inverter. Users can use the App to view basic information, alarms , set parameters, etc.

### 6.2 Download and Install the App

Method 1: Scan the following QR Code to download and install the App according to the prompt information.



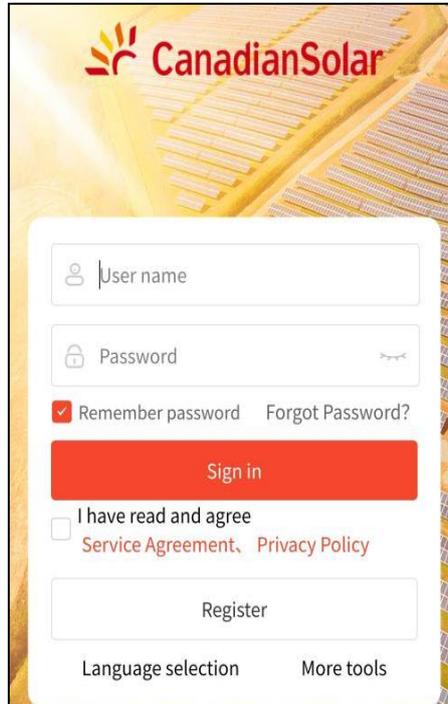
Method 2: For the monitoring and local APP information, please refer to documents published on our website at: <https://smartenergy.csisolar.com>

### 6.3 Use the Local Mode to Login the App

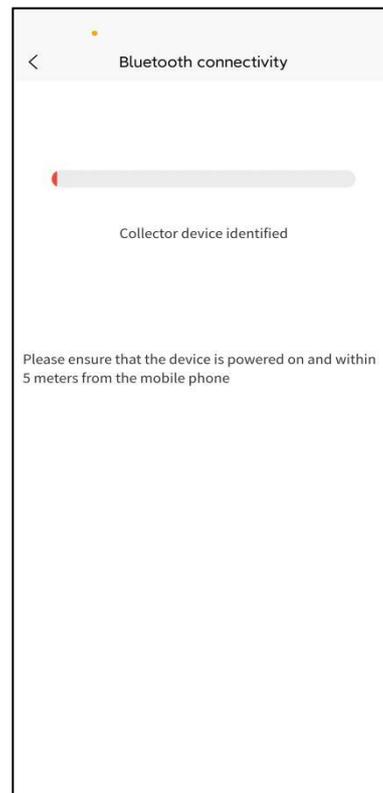
Notice: To use the local mode, the following conditions should be met:

- (1) The dongle is connected to the inverter and powered on.
- (2) The distance between the mobile phone and the dongle should be within 5m and there is no shelter.
- (3) Make sure the Bluetooth of your phone is turned ON.

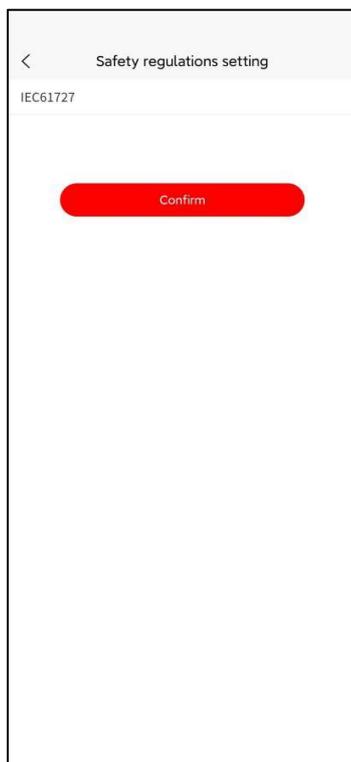
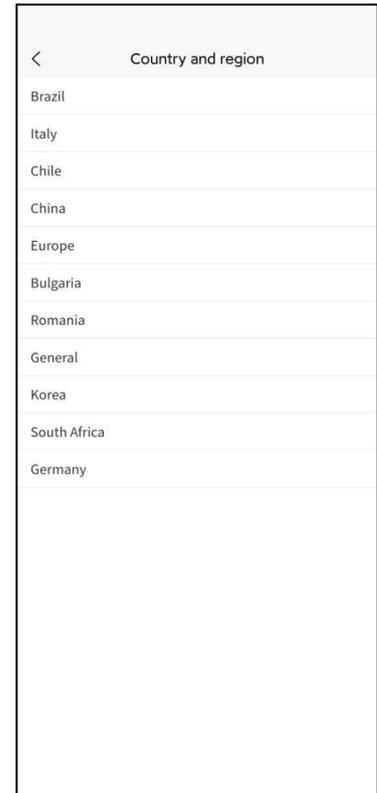
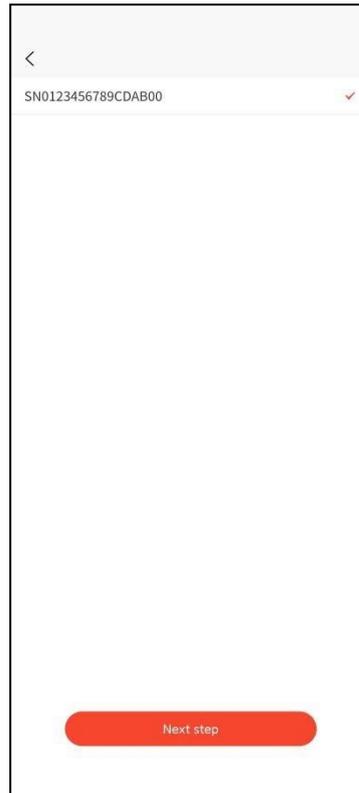
Step 1: Open the CSI SmartEnergy APP.



Step 2: Select " More tools"->" Local Access". Scan the QR code of the dongle, and the mobile phone will connect the dongle automatically.



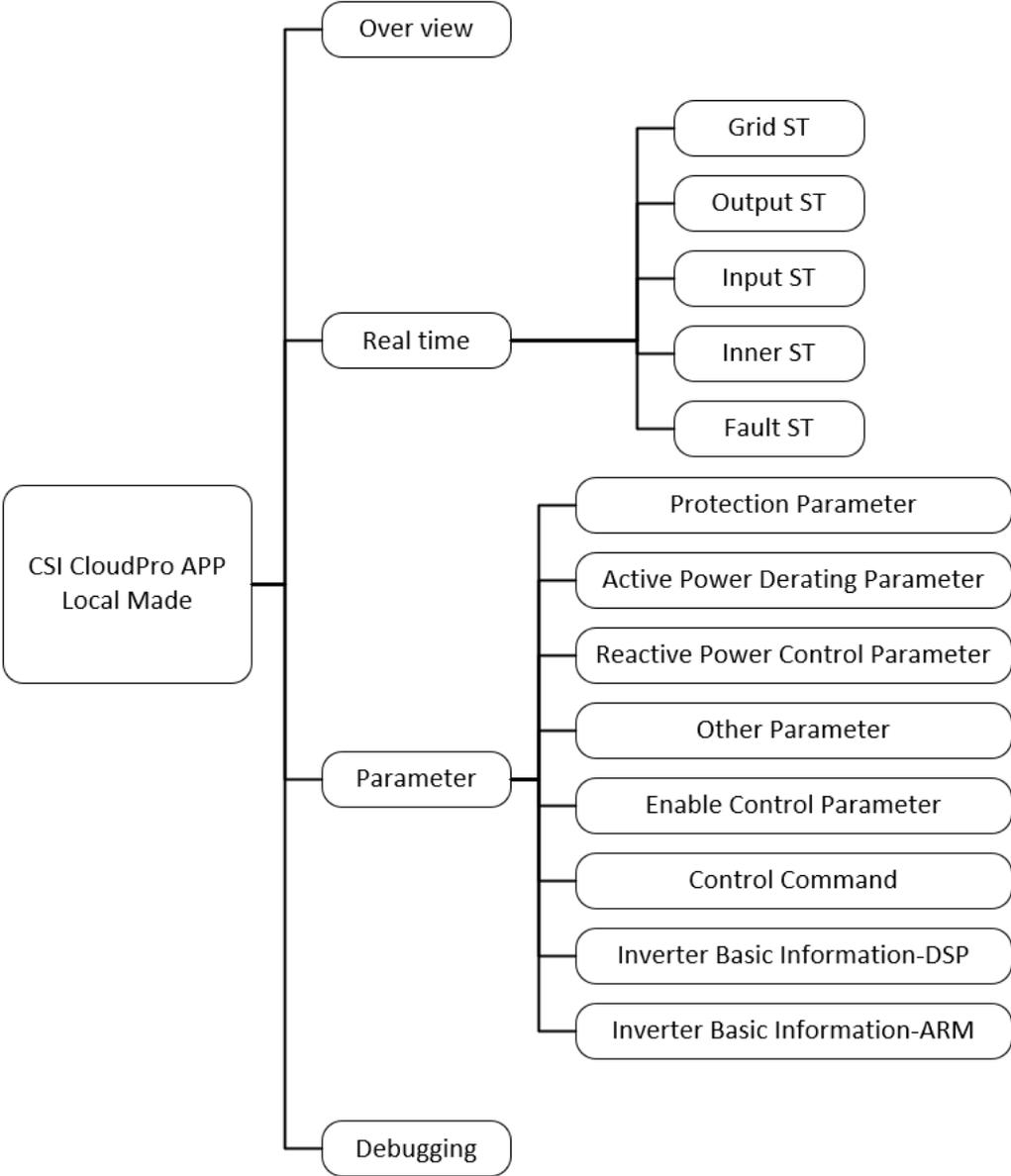
Step 3: If it is the first time to boot the inverter, you need to set the Grid Code as required on the boot page



**Notice**

Must select the correct grid code where the inverter is installed. If the grid code is not suitable, it may cause the inverter to report a fault error.  
 You can also set the grid code on the "Parameter" -> "Inverter Basic Information-DSP" -> "Grid Code" after setting on this page.

### 6.4 Function List



### 7 Obtaining User Manual

Please scan the QR code for more detailed information in user manual.

