1. The information in this document is subject to change without notice. Every effort has been made in the preparation of this document to ensure accuracy of the contents, but all statements, information, and recommendations in this document do not constitute a warranty of any kind, express or implied.


3. Only qualified and trained electrical technicians are allowed to operate the device. Operators should understand the components and functioning of a grid-tied PV power system, and they should be familiar with relevant local standards.

4. Before installing the device, check that deliverables are intact and complete against the packing list. If any damage is found or any component is missing, contact the dealer.

5. Use insulated tools when installing the device. For personal safety, wear insulation gloves and protective shoes.

6. When installing devices or connecting cables, use appropriate tools and take necessary protective measures to avoid damaging devices during operation.

7. Huawei shall not be liable for any consequence caused by violation of the storage, transportation, installation, and operation regulations specified in this document and the user manual.

---

# 1 Product Overview

## Front View

1. PV connection indicator
2. Grid-tied indicator
3. Communications indicator
4. Alarm/Maintenance indicator
5. Host panel
6. Maintenance compartment door

## Ports

1. DC switch (DC SWITCH)
2. Positive DC terminal (+)
3. Functional ground point
4. Waterproof cable connector (COM1)
5. Protective ground point
6. Waterproof cable connector (AC OUTPUT)
7. Waterproof cable connector (COM3)
8. Waterproof cable connector (COM2)
9. Waterproof cable connector (GND)
10. USB port (USB)
11. Negative DC terminal (–)
12. Ventilation valve

---

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2 System Installation

2.1 Determining the Installation Position

It is recommended that the inverter be installed vertically or with a back tilt of no more than 15 degrees for optimal heat dissipation conditions.

### Determining the Installation Mode

#### Installed on a Common Support

- **Vertical**
- **Back tilt** ≤ 15°
- **Upside down**
- **Front tilt**
- **Horizontal**

#### Installed on a Wall

- **Vertical**
- **Back tilt** ≤ 15°
- **Front tilt**
- **Horizontal**
- **Upside down**
2.3 Installing an Inverter

### Installed on a Common Support

1. Determine the hole positions on the support based on rear panel dimensions.

   ![Diagram showing hole positions on a support]

   - 240 mm (9.45 in.)
   - 226 mm (8.90 in.)

2. Drill holes.

   - Ø 14 mm (Ø 0.55 in.)

3. Secure the rear panel.

   ![Diagram showing secured rear panel]

   - M12 (3 PCS)
   - 45 N·m

4. Mount the inverter on the rear panel.

   ![Diagram showing inverter mounted on rear panel]
5. Tighten hexagon bolts.

6. (Optional) Install an anti-theft lock.

**NOTE**
The anti-theft lock is prepared by the customer.

### Installed on a Wall

1. Determine the positions for drilling holes on the wall according to the rear panel dimensions.

2. Drill holes and install expansion sleeves for expansion bolts.
3. Secure the rear panel.

4. Mount the inverter on the rear panel.

5. Tighten hexagon bolts.

6. (Optional) Install an anti-theft lock.

**NOTE**
The anti-theft lock is prepared by the customer.

**Installed on a Tilted Support**

1. Prepare a tilted support.

- **Top view**
  - 43 mm (1.69 in.)
  - 148 mm (5.83 in.)
  - 96 mm (3.78 in.)

- **Front view**
  - 340 mm (13.39 in.)

- **Side view**

**NOTE**

1. The hole dimensions of the bottom auxiliary tightening point in the top view are OB-13 mm x 8 mm (OB-0.51 in. x 0.31 in.).
2. The hole dimensions of the tightening point for the tilted support mounting kit in the front view are OB-32 mm x 12 mm (OB-1.26 in. x 0.47 in.).
3. The auxiliary tightening point is 5 mm (0.20 in.) away from the lower tightening point for the tilted support mounting kit.
2. Secure the tilted support mounting kit to the inverter.

3. Secure the inverter to the tilted support.

4. (Optional) Secure the auxiliary screws to the inverter.

5. (Optional) Install an anti-theft lock.

### 3 Electrical Connection

**NOTICE**
Electrical connections must meet local installation regulatory requirements.

#### 3.1 Installing Ground Cables

1. Remove the two screws from the maintenance compartment door using a hex key and set them aside.

**WARNING**
1. Do not leave unused screws in the chassis.
2. Do not open the host panel of the inverter.
3. Before opening the maintenance compartment door, turn off the downstream AC output circuit breaker and DC switch on the inverter.

**NOTE**
The hex key is stored in the fitting bag bound to the chassis base.
2. Open the maintenance compartment door and adjust the support bar.

3. Remove the AC terminal cover and set it aside.

4. Install ground cables.

<table>
<thead>
<tr>
<th>Ground Point</th>
<th>Meaning</th>
<th>Ground Point Screw Model</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PV side ground points</td>
<td>M4</td>
<td>Connect either of the two ground points for PV side grounding.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>M6</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Protection ground points</td>
<td>M6</td>
<td>Connect either of the two ground points for protective grounding.</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NOTE
1. Select ground points for PV side grounding and protective grounding based on the principle of easy operation.
2. It is recommended that 8 AWG outdoor copper-core cables be used as ground cables. Ground cables must be securely connected.
3. It is recommended that ground cables of the inverter be connected to the near end.
4. To prevent corrosion, apply silica gel or paint to the PE terminal after connecting the ground cables.

<table>
<thead>
<tr>
<th>Ground Point</th>
<th>OT Terminal</th>
<th>Tightening Torque</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>M4</td>
<td>1.2 N·m</td>
</tr>
<tr>
<td>4</td>
<td>M6</td>
<td>5 N·m</td>
</tr>
</tbody>
</table>

3.2 Installing AC Output Power Cables

<table>
<thead>
<tr>
<th>Cable Type</th>
<th>Cable Quantity</th>
<th>Recommended Cable Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>A single cable</td>
<td>Four (L1, L2, L3, and N) or three (L1, L2, and L3)</td>
<td>4 AWG</td>
</tr>
</tbody>
</table>

NOTE
1. The SUN2000-25KTL/30KTL-US (SUN2000 for short) supports three-phase, four-wire (L1, L2, L3, and N) and three-phase, three-wire (L1, L2, and L3) output modes. Use a connection mode according to the local and national regulations and installation specifications.
2. Use copper cables that can withstand 90°C (194°F) or 105°C (221°F).
3. It is recommended that the AC output cable be routed through a pipe for protection.
4. The table lists only the recommended cable specifications. For more information about cable specifications, see the SUN2000-(25KTL, 30KTL)-US User Manual.

1. Remove the waterproof cable connector from AC OUTPUT.
2. Route the AC output power cable through the prepared cable routing pipe.
3. Route the AC output power cable and the cable routing pipe through the AC OUTPUT hole at the inverter bottom.
4. Prepare AC output power cables. Use hydraulic pliers to crimp the conductor part of the OT terminal and cover the crimping area with heat shrink tubing or PVC insulation tape.

NOTE
1. The OT terminal type is M6.
2. If heat shrink tubing is used, put it through the power cable and then crimp the OT terminal.
5. Connect the SUN2000 AC output power cables to the AC terminal block one by one.

### Three-phase, four-wire output

- Three-phase, four-wire output
- Three-phase, three-wire output

5. Connect the SUN2000 AC output power cables to the AC terminal block one by one.

### Installing DC Input Power Cables

#### Optional DC input terminals

<table>
<thead>
<tr>
<th>Number of Inputs</th>
<th>SUN2000-25KTL/30KTL-US</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Connects to any one route</td>
</tr>
<tr>
<td>2</td>
<td>Connects to routes 1 and 3</td>
</tr>
<tr>
<td>3</td>
<td>Connects to routes 1, 3, and 5</td>
</tr>
<tr>
<td>4</td>
<td>Connects to routes 1, 2, 3, and 5</td>
</tr>
<tr>
<td>5</td>
<td>Connects to routes 1, 2, 3, 4, and 5</td>
</tr>
<tr>
<td>6</td>
<td>Connects to routes 1, 2, 3, 4, 5, and 6</td>
</tr>
</tbody>
</table>

### Positive and negative metal terminals

- Positive metal terminal (female)
- Negative metal terminal (male)

### NOTICE

1. The AC output power cable must be secured to a torque that does not exceed 6 N·m. Otherwise, the AC terminal block may be damaged.
2. Ensure that the AC output power cable is securely connected. Otherwise, the inverter may fail to run or the terminal block may be damaged after the inverter operates.
1. Before connecting DC input power cables, mark the polarities on the cables to ensure that the cables are connected correctly. If the cables are connected incorrectly, the device may be damaged.

2. Insert the crimped metal terminals of the positive and negative power cables into the appropriate positive and negative connectors. Then pull back the DC input power cables to ensure that they are connected securely.

3. Connect the positive and negative connectors to the appropriate positive and negative DC input terminals. Then pull DC input power cables to ensure that they are connected securely.

4. If the DC input power cables are reversely connected and the DC switch is ON, do not turn off the DC switch immediately. Otherwise, the inverter may be damaged. Wait until the PV string voltage reduces to the safety range. Then, turn off the DC switch, remove the positive and negative connectors, and rectify the connection.

5. The damage caused by reverse connection of the DC input power cable is beyond the warranty scope.

**WARNING**

- Ensure that the PV module output is well insulated to ground.
- Before inserting the positive and negative connectors respectively into the positive and negative DC input terminals of the inverter, check that the DC voltage does not exceed 1000 V using a multimeter. Otherwise, the inverter will be damaged.

**NOTICE**

1. Before connecting DC input power cables, mark the polarities on the cables to ensure that the cables are connected correctly. If the cables are connected incorrectly, the device may be damaged.

2. Insert the crimped metal terminals of the positive and negative power cables into the appropriate positive and negative connectors. Then pull back the DC input power cables to ensure that they are connected securely.

3. Connect the positive and negative connectors to the appropriate positive and negative DC input terminals. Then pull DC input power cables to ensure that they are connected securely.

4. If the DC input power cables are reversely connected and the DC switch is ON, do not turn off the DC switch immediately. Otherwise, the inverter may be damaged. Wait until the PV string voltage reduces to the safety range. Then, turn off the DC switch, remove the positive and negative connectors, and rectify the connection.

5. The damage caused by reverse connection of the DC input power cable is beyond the warranty scope.
### 3.4 Selecting a Communication Mode

<table>
<thead>
<tr>
<th>Model</th>
<th>Communication Mode</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RS485 Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PLC Communication</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SUN2000-25KTL/30KTL-US (with PLC)</td>
<td>Supported</td>
<td>Supported</td>
</tr>
<tr>
<td>SUN2000-25KTL/30KTL-US (without PLC)</td>
<td>Supported</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

### 3.5 Installing RS485 Communications Cables

**NOTICE**

When routing communications cables, ensure that communications cables are separated from power cables and away from interfering source to prevent communication from being affected.

**NOTE**

1. If RS485 is used, connect the RS485 communications cable. If PLC is used, do not connect the communications cable.
2. The RS485 communications cable can connect to either a terminal block or an RJ45 network port. Use one connection mode in practice. Connecting to the terminal block is recommended.
3. If the RS485 communications cable is required, you are advised to route the RS485 communications cable through a pipe. Before connecting cables, remove the corresponding waterproof cable connectors.

**Method 1: Connecting to the Terminal Block (Recommended)**

The DJYP2VP2-22 2 x 2 x 1 cable or a communications cable with a wire sectional area of 1 mm² (0.00155 in.²) and external diameter of 14–18 mm (0.55–0.71 in.) is recommended.

1. Peel off the RS485 communications cables.
2. Connect the RS485 communications cables.

3. Bind the RS485 communications cables.

**NOTICE**

1. Route the communications cables through the COM1 and COM2 holes at the bottom of the inverter.
2. Connect the input end to terminals 5 and 7 on the terminal block, and connect the output end to terminals 6 and 8 on the terminal block. Connect the shield layer to the ground point.
3. The OT terminal used for connecting to the shield layer is in the type of M4.
4. If multiple inverters are connected over communications cables, ensure that RS485A and RS485B of the previous inverter connect to RS485A and RS485B of the following inverter, respectively.

4. Secure the cable routing pipe.

**Method 2: Connecting to RJ45 Ports**

You are advised to use a CAT 5E outdoor shielded network cable with a diameter less than 9 mm (0.35 in.) and internal resistance no greater than 1.5 ohms/10 m (1.5 ohms/393.70 in.).

1. Prepare an RS485 connector.

<table>
<thead>
<tr>
<th>No.</th>
<th>Color</th>
<th>Pin Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White-and-orange</td>
<td>RS485A, RS485 differential signal +</td>
</tr>
<tr>
<td>2</td>
<td>Orange</td>
<td>RS485B, RS485 differential signal –</td>
</tr>
<tr>
<td>3</td>
<td>White-and-green</td>
<td>NC</td>
</tr>
<tr>
<td>4</td>
<td>Blue</td>
<td>RS485A, RS485 differential signal +</td>
</tr>
<tr>
<td>5</td>
<td>White-and-blue</td>
<td>RS485B, RS485 differential signal –</td>
</tr>
<tr>
<td>6</td>
<td>Green</td>
<td>NC</td>
</tr>
<tr>
<td>7</td>
<td>White-and-brown</td>
<td>NC</td>
</tr>
<tr>
<td>8</td>
<td>Brown</td>
<td>NC</td>
</tr>
</tbody>
</table>
2. Connect the RS485 communications cables.

3. Bind the RS485 communications cables.

4. Secure the cable routing pipe.

**NOTICE**

1. Route the network cables into the COM1 hole at the bottom of the inverter.
2. Insert the connectors into the RS485 IN and RS485 OUT ports in the maintenance compartment of the inverter.
3. Block unused waterproof cable connectors with waterproof plugs.

### 4 Installation Verification

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The SUN2000 is installed correctly and securely.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>2. All circuit breakers are switched to OFF.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>3. Cables connected are not damaged.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>4. Ground cables are connected correctly and securely, with no open circuit or short-circuit.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>5. AC output power cables are connected correctly and securely, with no open circuit or short-circuit.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>6. The DC input voltage is not higher than 1000 V and meets the local voltage range requirements.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>7. DC input power cables are connected correctly and securely, with no open circuit or short-circuit.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>8. RS485 communications cables are connected correctly and securely.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>9. Idle DC input terminals are sealed.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>10. Idle USB ports are plugged with covers.</td>
<td>Yes ☐ No ☐</td>
</tr>
<tr>
<td>11. Idle waterproof cable connectors are plugged and the locking caps are tightened.</td>
<td>Yes ☐ No ☐</td>
</tr>
</tbody>
</table>

**NOTICE**

After the verification, reinstall the AC terminal cover, adjust the support bar, and close the maintenance compartment door. Then, tighten the two screws on the door to a torque of 4 N·m. Check that the maintenance compartment door is locked.
5 System Power-on

⚠️ NOTICE
Before switching on the AC circuit breaker between the inverter and the power grid, use a multimeter to check that the AC voltage is within the specified range.

1. Switch on the AC circuit breaker between the inverter and the power grid.
2. Press DC SWITCH at the bottom of the inverter and rotate it to the ON position.

⚠️ NOTICE
If the DC input power cables are reversely connected and the DC switch is ON, do not turn off the DC switch immediately. Otherwise, the inverter may be damaged. Wait until the PV string voltage reduces to the safety range. Then, turn off the DC switch, remove the positive and negative connectors, and rectify the connection.

3. (Optional) Measure the temperatures at the joints between the DC terminals and the connectors using a thermometer.
4. Observe the LED indicators to check the inverter operating status.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Status</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="PV connection indicator" /></td>
<td>Steady green</td>
<td>At least one PV string is properly connected, and the DC input voltage of the corresponding MPPT circuit is higher than or equal to 200 V.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>The inverter disconnects from all PV strings, or the DC input voltage of each MPPT circuit is less than 200 V.</td>
</tr>
<tr>
<td><img src="image" alt="Grid-tie indicator" /></td>
<td>Steady green</td>
<td>The inverter is grid-tied.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>The inverter is not grid-tied.</td>
</tr>
<tr>
<td><img src="image" alt="Communication indicator" /></td>
<td>Blinking green (on for 0.5s and off for 0.5s)</td>
<td>The inverter receives data over RS485/PLC communication.</td>
</tr>
<tr>
<td></td>
<td>Off</td>
<td>The inverter has not received data over RS485/PLC communication for 10 seconds.</td>
</tr>
<tr>
<td><img src="image" alt="Alarm/Maintenance indicator" /></td>
<td>Blinking red slowly (on for 1s and then off for 4s)</td>
<td>The inverter has generated a warning.</td>
</tr>
<tr>
<td></td>
<td>Blinking red fast (on for 0.5s and then off for 0.5s)</td>
<td>The inverter has generated a minor alarm.</td>
</tr>
<tr>
<td></td>
<td>Steady red</td>
<td>The inverter has generated a major alarm.</td>
</tr>
<tr>
<td><img src="image" alt="Local maintenance state" /></td>
<td>Blinking green slowly (on for 1s and then off for 1s)</td>
<td>Local maintenance is in progress.</td>
</tr>
<tr>
<td></td>
<td>Blinking green fast (on for 0.125s and off for 0.125s)</td>
<td>Local maintenance has failed.</td>
</tr>
<tr>
<td></td>
<td>Steady green</td>
<td>Local maintenance is successful.</td>
</tr>
</tbody>
</table>
1. The SUN2000 application is a mobile app that enables the SUN2000 to communicate with the SUN2000 monitoring system to query alarms, configure parameters, and perform routine maintenance. The mobile app is a convenient platform for monitoring and maintenance. The mobile application name is **SUN2000**.

2. At present, the SUN2000 can connect to the app only over a USB data cable.

3. Mobile operating system: Android 4.0 or later.


5. The SUN2000 communicates with its mobile application through a USB cable connected over the USB port.

6. This document uses the WebUIs of SUN2000APP V200R001C00 as an example.

---

**Data Cable Connection**

1. **Inverter**
2. **USB data cable**
3. **Mobile phone**

**Login screen**

- **Select Connection Mode**
  - Bluetooth connection
  - USB connection

**Connect the USB data cable**

**Switch between users**

- **Select User**
  - Common User
  - Advanced User
  - Special User
1. Tap  to return to the login screen.
2. Inverter grid connection setup requires no parameter setting by default. The parameters can be adjusted based on site requirements. For parameter settings, see the *SUN2000 APP User Manual*.

---

**NOTICE**

1. The password is the password used for logging in to the SUN2000 to which the app is connected. This password is used only when the SUN2000 is connected to the app.
2. The initial password for **Common User**, **Advanced User**, and **Special User** is **00000a**. Use the initial password to log in to the inverter for the first time and change the password immediately to ensure account security.
3. During the login, if an incorrect password is entered for five consecutive times (the interval between two consecutive invalid password entries is less than 2 minutes), the account will be locked for 10 minutes.
7 FAQ

7.1 Why the DC Switch Is Designed with a Hole?

The DC switch is designed with a hole for safety purposes. When maintenance needs to be performed on the inverter, the DC switch must be turned off. To prevent misoperations of turning on the DC switch, the switch must be locked. The design with a hole enables the DC switch to be locked.

7.2 What Is the Purpose of Measuring the Temperatures at the Joints Between DC terminals and Connectors Using a Point-Test Thermometer?

After the inverter has been running for a period, use a point-test thermometer to measure the temperatures at the joints between DC terminals and connectors to check that the DC terminals are in good contact.

Appendix: Power Grid Code Mapping Table

<table>
<thead>
<tr>
<th>No.</th>
<th>Power Grid Standard Code</th>
<th>Country and Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IEEE 1547-MV480</td>
<td>US medium-voltage power grid</td>
</tr>
<tr>
<td>2</td>
<td>IEEE 1547a-MV480</td>
<td>2016 US medium-voltage power grid</td>
</tr>
<tr>
<td>3</td>
<td>PRC_024_ERCOT-MV480</td>
<td>Texas medium-voltage power grid</td>
</tr>
<tr>
<td>4</td>
<td>PRC_024_Eastern-MV480</td>
<td>Eastern US medium-voltage power grid</td>
</tr>
<tr>
<td>5</td>
<td>PRC_024_Western-MV480</td>
<td>Western US medium-voltage power grid</td>
</tr>
<tr>
<td>6</td>
<td>PRC_024_Quebec-MV480</td>
<td>Quebec medium-voltage power grid</td>
</tr>
<tr>
<td>7</td>
<td>ELEC RULE NO.21-MV480</td>
<td>California medium-voltage power grid</td>
</tr>
<tr>
<td>8</td>
<td>HECO-MV480</td>
<td>Hawaii medium-voltage power grid</td>
</tr>
</tbody>
</table>

NOTE
The grid codes are subject to change and are for your reference only.
Scan here for technical support (carrier):

Apple Store

Google Play

Huawei App Store

Scan here for more documents:

Support

WeChat

You can also log in to Huawei technical support website:
http://support.huawei.com