

# 1.1 FusionSolar Residential Inverter



SUN2000-2/3/3.68/4/4.6/5/6KTL-L1  
(Single-phase inverter)

MPPT/Inputs: 2/2

Local commissioning:

- Built-in WLAN

Communication:

- Built-in WLAN (standard configuration)
- Smart Dongle-WLAN-FE (optional)
- Smart Dongle-4G (optional)

AFCI: Yes

Compatible optimizer: SUN2000-450W-P

Incompatible with SUN2000P-375W and SmartPSB2000L (to be compatible after spare part replacements in 2021)

SUN2000L-2-5KTL: EOM; replaced by SUN2000-2/3/3.68/4/4.6/5KTL-L1

SUN2000-6KTL-L1: Q3 2020



SUN2000-3/4/5/6/8/10KTL-M1  
(Three-phase inverter, Q3 2020)

MPPT/Inputs: 2/2

Local commissioning:

- Built-in WLAN

Communication:

- Smart Dongle-WLAN-FE (standard configuration)
- Smart Dongle-4G (optional)

AFCI: Yes

PID Recovery: Yes

Ripple Control Interface: Yes

Compatible optimizer: SUN2000-450W-P

Incompatible with SUN2000P-375W and SmartPSB2000L

SUN2000-3/4/5/6/8/10KTL-M0: replaced by SUN2000-3/4/5/6/8/10KTL-M1 (Q3 2020)

## 1.2 Optimizer and Smart Power Sensor



**Smart PV Optimizer  
SUN2000-450W-P**

- Communicates with inverters over the DC MBUS
- Supports maximum power point tracking (MPPT) control of PV modules
- Supports module-level monitoring
- The open-circuit impedance is 1 k $\Omega$  ( $\pm 10\%$ ) after the input cables are correctly connected
- Reduces the PV string cable voltage to the safety voltage (compliant with the NEC 2017 standard) when the inverter shuts down

Compatible with SUN2000-2-6KTL-L1 and SUN2000-3-10KTL-M1  
Incompatible with SUN2000P-375W and SmartPSB2000L



**Smart Power Sensor  
DDSU666-H (single-phase)  
DTSU666-H 250 A/50 mA (three-phase)**

- Connect to an inverter over RS485
- Bi-directional grid meter, which can collect statistics on the online power and purchased power
- Measure the input and output power for export limitation
- Current transformer included

## 1.3 Smart Dongle



### Smart Dongle-WLAN-FE

- Supports a maximum of 10 devices
- Provides a plug & play USB interface for connecting to inverters and management systems over WLAN or FE

Smart Dongle-WLAN: replaced by Smart Dongle-WLAN-FE



### Smart Dongle-4G

- Supports a maximum of 10 devices
- Provides a plug & play USB interface for connecting to inverters and management systems over 4G

# 1.4 Battery



Battery

LUNA2000-(5-30)-S0

Capacity: 5 kWh for a single module, supporting the cascading of two batteries with a maximum of 30 kWh capacity

DC/DC output power: 5 kW

DC/DC peak output power: 7 kW, 10s

5 kWh battery expansion module power: 2.5 kW

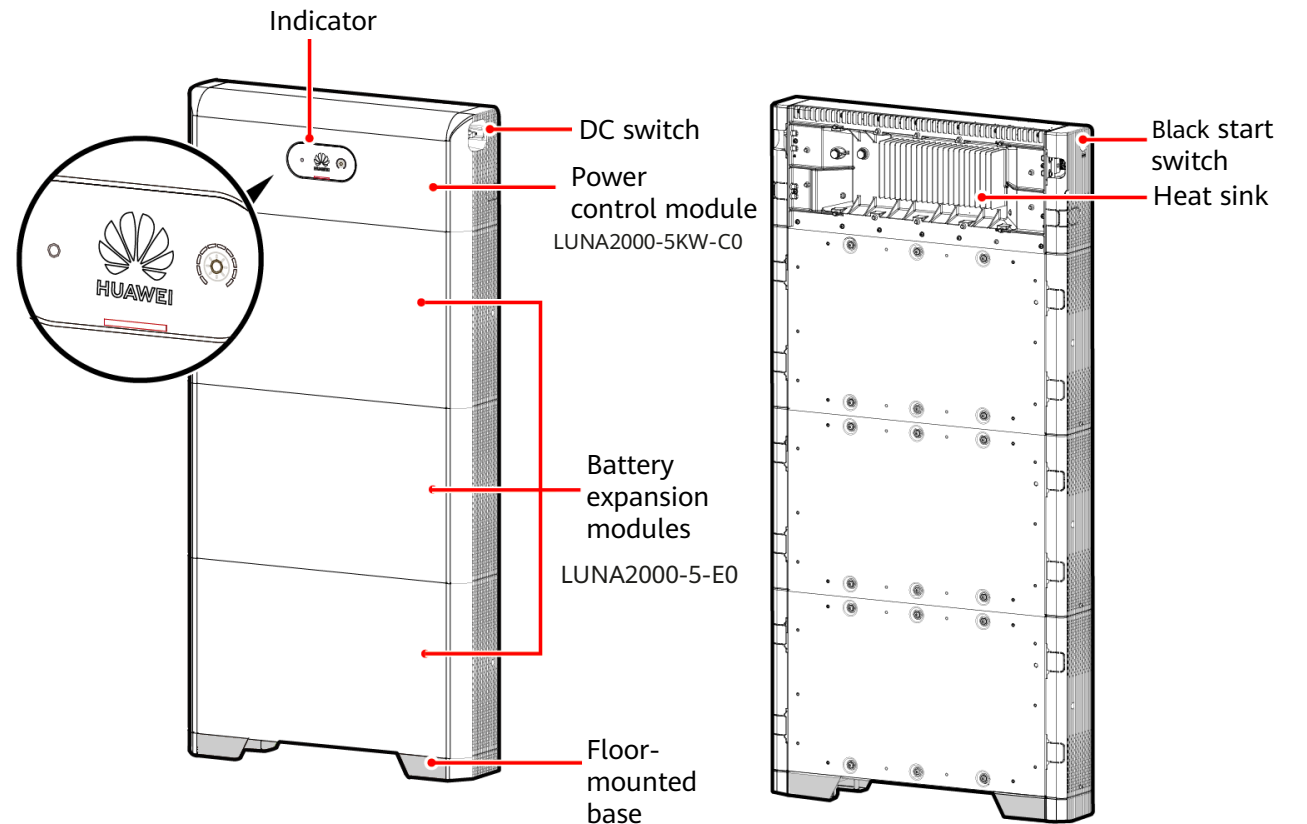
Cell type: LiFePO<sub>4</sub>

Supported inverter: SUN2000-(2KTL-6KTL)-L1/SUN2000-(3KTL-12KTL)-M1 (The 12KTL model is sold only in China.)

Hybrid use of old and new batteries: supported

Installation mode: floor- and support-mounted installation

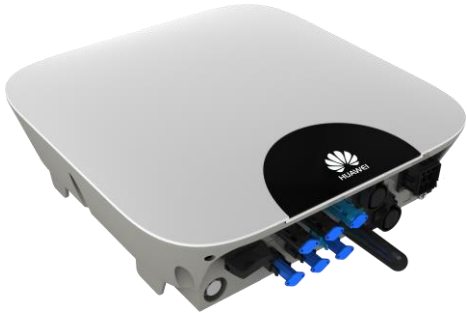
## Battery Appearance



IB01W00004

# 1.5 Version Evolution Single-phase inverter

SUN2000L-2-5KTL



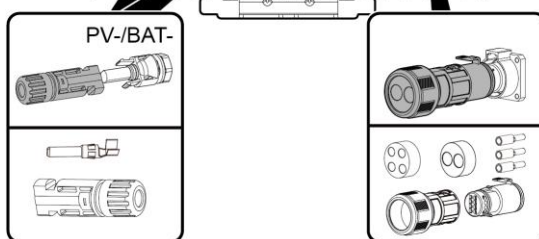
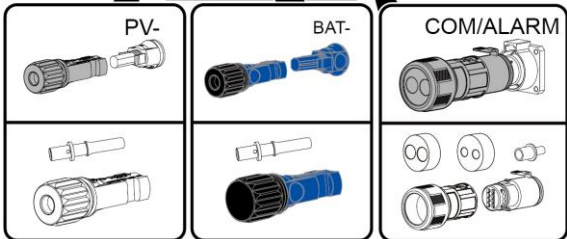
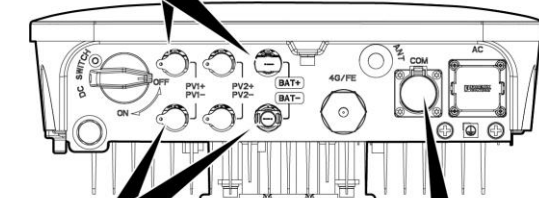
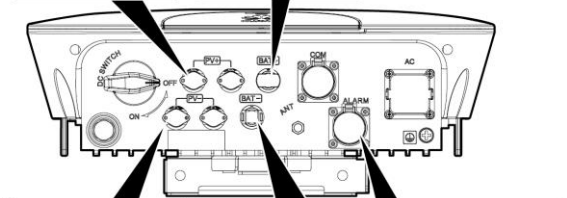
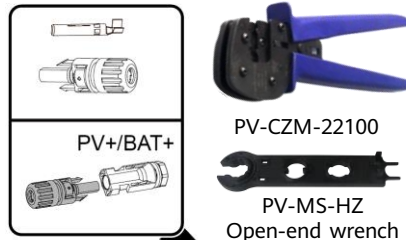
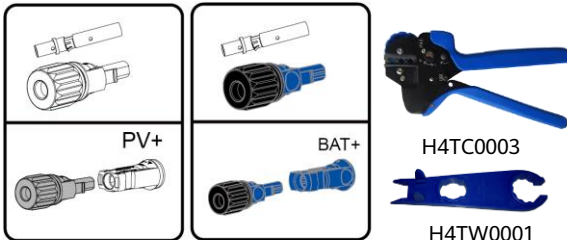
SUN2000-2-6KTL-L1



Amphenol HH4 (black)

Amphenol HH4 (blue)

Stäubli MC4



Key Feature	SUN2000L-2-5KTL	SUN2000-2-6KTL-L1
Battery expansion	LG Chem RESU7H/10H	<ul style="list-style-type: none"> <li>Huawei battery</li> <li>LG Chem RESU7H/10H</li> </ul>
Export limitation	Yes	Yes
Built-in WLAN	<ul style="list-style-type: none"> <li>Supports local commissioning</li> <li>Supports communication with a router</li> </ul>	<ul style="list-style-type: none"> <li>Supports local commissioning</li> <li>Supports communication with a router</li> </ul>
Smart Dongle	No	<ul style="list-style-type: none"> <li>Supports the Smart Dongle-WLAN-FE.</li> <li>Supports the Smart Dongle-4G.</li> </ul>
Audible and visual alarm port	Yes	No
Optimizer	Supports the SUN2000P-375W and SmartPSB2000L.	Supports the SUN2000-450W-P. (No safety box is required.)
AFCI	No	Yes
DRM0 (Australia AS4777)	No	Yes
Smart backup box	No	Yes
Inverter cascading	No	Three inverters can be cascaded.
Grid reverse charging	No	Yes
Insulation fault locating	No	Yes

Terminal	SUN2000L-2-5KTL	SUN2000-2-6KTL-L1
DC input terminal	Manufacturer: Amphenol DC male HH4CMD4TMS DC female HH4CFD4TMS	Manufacturer: Stäubli DC male PV-KST4/6II-UR DC female PV-KBT4/6II-UR
Battery terminal	Manufacturer: Amphenol DC male HH4PMC4TMS DC female HH4PFC4TMS	

# Optimizer

SUN2000P-375W



SUN2000-450W-P



Optimizer Model	Safety Box Model	Inverter Model
SUN2000P-375W	SmartPSB2000L	SUN2000L-2/3/3.68/4/4.6/5KTL
		SUN2000-2/3/4/5KTL-L0
SUN2000-450W-P	N/A	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1
		SUN2000-3/4/5/6/8/10KTL-M1
		SUN2000-8/10/12/15/17/20KTL-M2

Key Feature	SUN2000P-375W	SUN2000-450W-P
Output voltage before pairing with the inverter	There are output voltages by default.	The output voltage is 0 V by default.
Resistance checking	No	Yes. The output impedance is 1 kΩ (±10%).
Module-level monitoring	Yes	Yes
Module-level shutdown (Full configuration)	Yes	Yes
Rapid shutdown (Full configuration)	Yes	Yes
Long PV string design	No	Yes
Physical layout image recognition	No	Yes
Disconnection locating	No	Yes

# 1.6 Residential Accessory Packages

Product	Accessory BOM Number	Configuration Guidance
SUN2000-2/3/3.68/4/4.6/5/6KTL-L1	02233DXX	<b>Inverter Accessory Package</b> Configure 1 package for 50 inverters. Key components in the accessory package: 14191131: female PV connector, 3 PCS 14191133: male PV connector, 3 PCS 14190919: AC connector, 1 PCS 14210053-002: COM connector, 1 PCS
SUN2000-3/4/5/6/8/10KTL-M1	02232UEP	<b>Inverter Accessory Package</b> Configure no package for less than 100 inverters, 1 package for 100 to 500 inverters, and 2 packages for 500 to 1000 inverters, ... Key components in the accessory package: 14190937: female PV connector, 2 PCS 14190939: male PV connector, 2 PCS 14191312: AC connector, 1 PCS 14191328: DC female connector for battery, 1 PCS 14191330: DC male connector for battery, 1 PCS 14191315: COM connector, 1 PCS
SUN2000-450W-P	02232VBT	OPTIMIZERKIT-P, optimizer installation fittings, PV module frame mounting kit, 20 PCS per package
	02232SNB	Accessories, Accessories package, Installation Parts for Aluminium Extruded Sections, 21124521-001*10pcs

# 1.7 FusionSolar App, Management System, and SUN2000 App



FusionSolar

## FusionSolar App

- Supports inverter commissioning and plant registration on the management system
- Auto-detection of system devices
- Allows user to register a PV plant by scanning any device in the PV plant



## FusionSolar Smart PV Management System

- Unified address  
<https://intl.fusionsolar.huawei.com>
- Real-time energy monitoring
- Smart I-V Curve Diagnosis
- Demo site available for all customers



SUN2000



Scan the QR code to download the app (Android).

## SUN2000 App

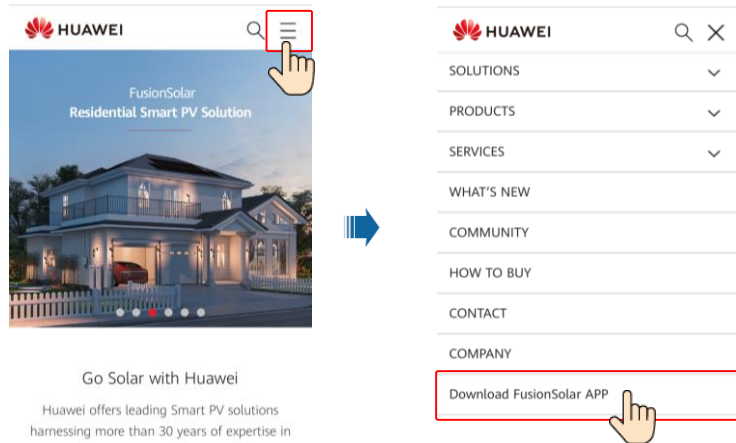
- Supports local commissioning
- Supports WLAN connection
- Download path: Huawei AppGallery and QR code (mobile phone browser);  
<https://appgallery.cloud.huawei.com/appdl/C10279542>
- The latest app version for Android is required for local commissioning. The app version for iOS is not updated and does not support local commissioning.
- Apply to regions where FusionSolar is not released or third-party management systems for device commissioning.



# Downloading the FusionSolar APP

Method 1: Search for **FusionSolar** in Huawei AppGallery to download and install the app.

Method 2: Access <https://solar.huawei.com> using the mobile phone browser and download the latest installation package.



<https://intl.fusionsolar.huawei.com>



Method 3: Scan the QR code to download and install the app.

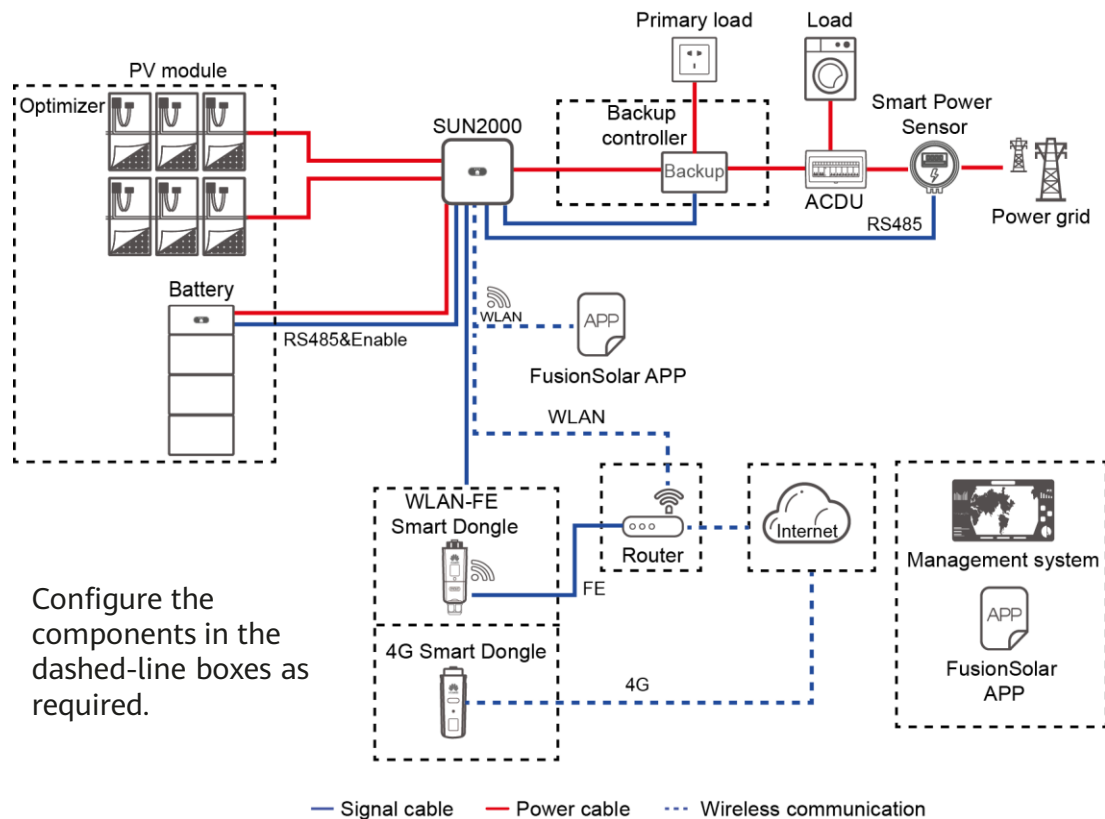


QR code link:  
<https://intl.fusionsolar.huawei.com/pvmswebsite/nologin/assets/build/index.html#/jumppage>

FusionSolar

# 1.8 Single-Phase Inverter Networking

Compatible Optimizer	Inverter	Smart Power Sensor	Battery	Number of Cascaded Inverters	Smart Backup Box	Communication	Management System	AFCI
SUN2000-450W-P	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1	<ul style="list-style-type: none"> <li>DDSU666-H (single-phase)</li> <li>DTSU666-H 250 A/50 mA (three-phase)</li> </ul>	<ul style="list-style-type: none"> <li>LG Chem RESU7H/10H</li> <li>HUAWEI LUNA2000-(5-30)-S0</li> </ul>	≤ 3 (including the host)	Yes	<ul style="list-style-type: none"> <li>Local commissioning: built-in WLAN of the inverter</li> <li>(Standard configuration) WLAN communication: built-in WLAN of the inverter</li> <li>(Optional) Ethernet communication: Smart Dongle-WLAN-FE</li> <li>(Optional) 4G communication: Smart Dongle-4G</li> </ul>	FusionSolar	Yes



### Optimizer (optional):

The optimizer for the SUN2000-450W-P is installed at the rear of PV modules. Supports the long PV string design. The maximum power of a single PV string is 5 kW.

### Commissioning:

- **Local commissioning:** The inverter communicates with the FusionSolar app over the built-in WLAN.
- **Remote management:**
  - Built-in WLAN of the inverter (standard configuration)
  - Smart Dongle-WLAN-FE (optional)
  - Smart Dongle-4G (optional)

Communicates with the FusionSolar smart PV management system to register and manage PV plants.

### Battery (optional):

- Huawei LUNA2000-(5-30)-S0
- LG Chem RESU7H/10H

High-voltage DC coupled battery supports plug-and-play after connecting to the inverter. The battery is connected to inverters over RS485 for management, and supports AC and DC bidirectional charging, fixed charging and discharging, maximum self-consumption, and time-sharing electricity price control.

### Backup controller (optional, not supported by the SUN2000L-2-5KTL):

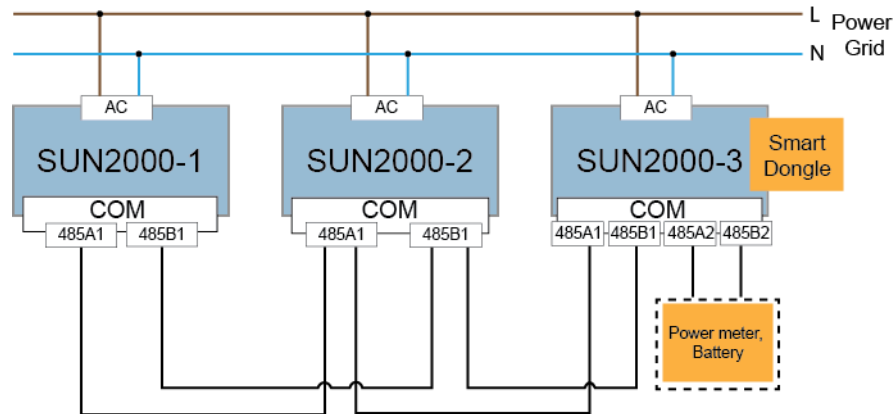
The inverter automatically supplies power to primary loads when the power grid fails.

### Smart Power Sensor (optional):

- DDSU666-H (single-phase)
- DTSU666-H 250 A/50 mA (three-phase)

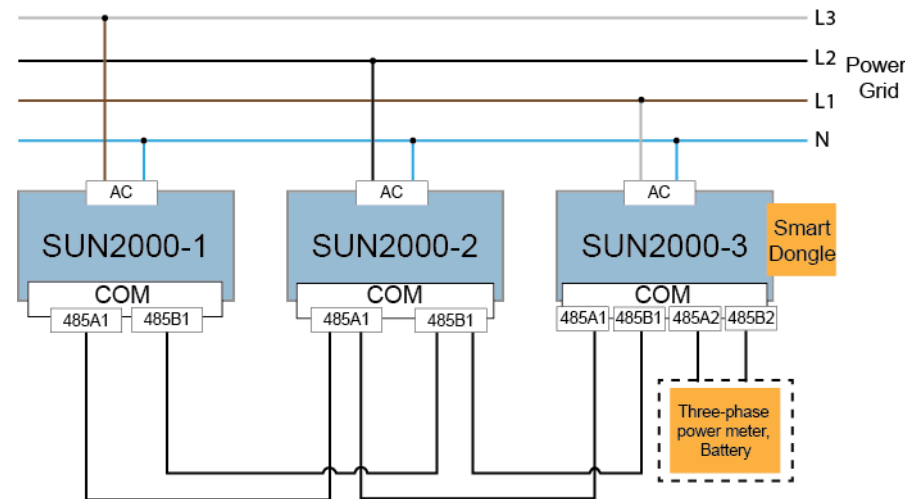
Connects to inverters over RS485 for output power management and export limitation.

## In-phase grid connection



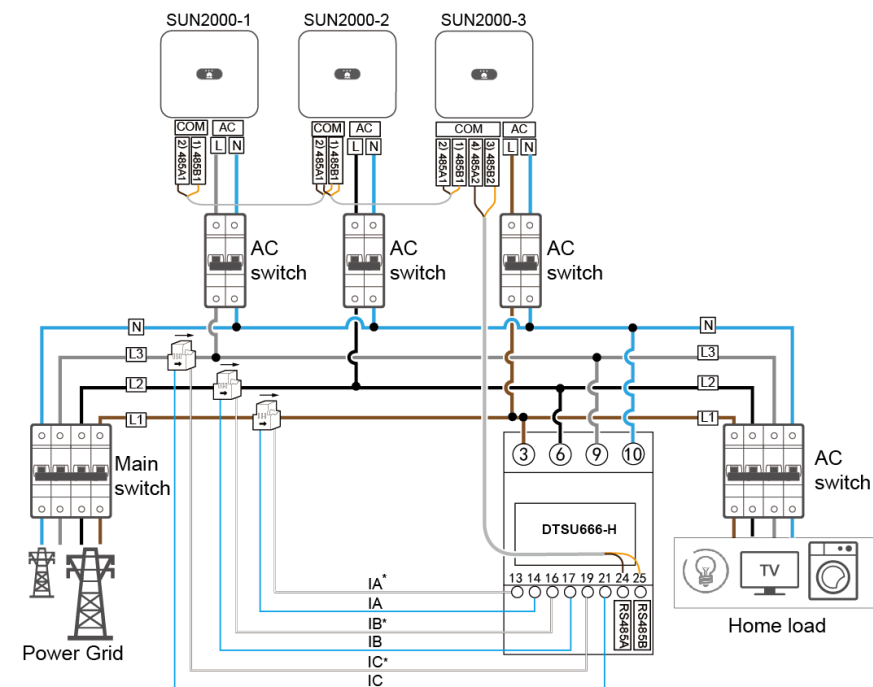
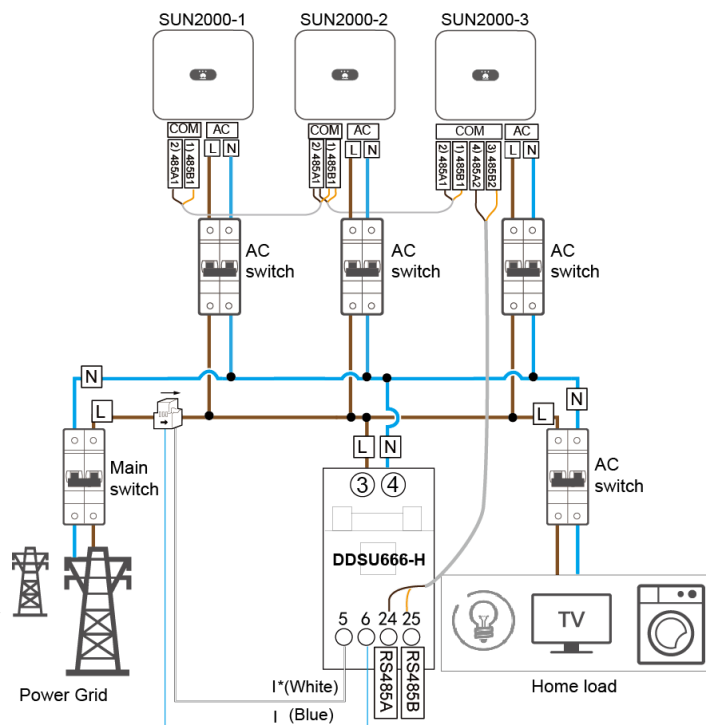
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## Balanced three-phase grid connection



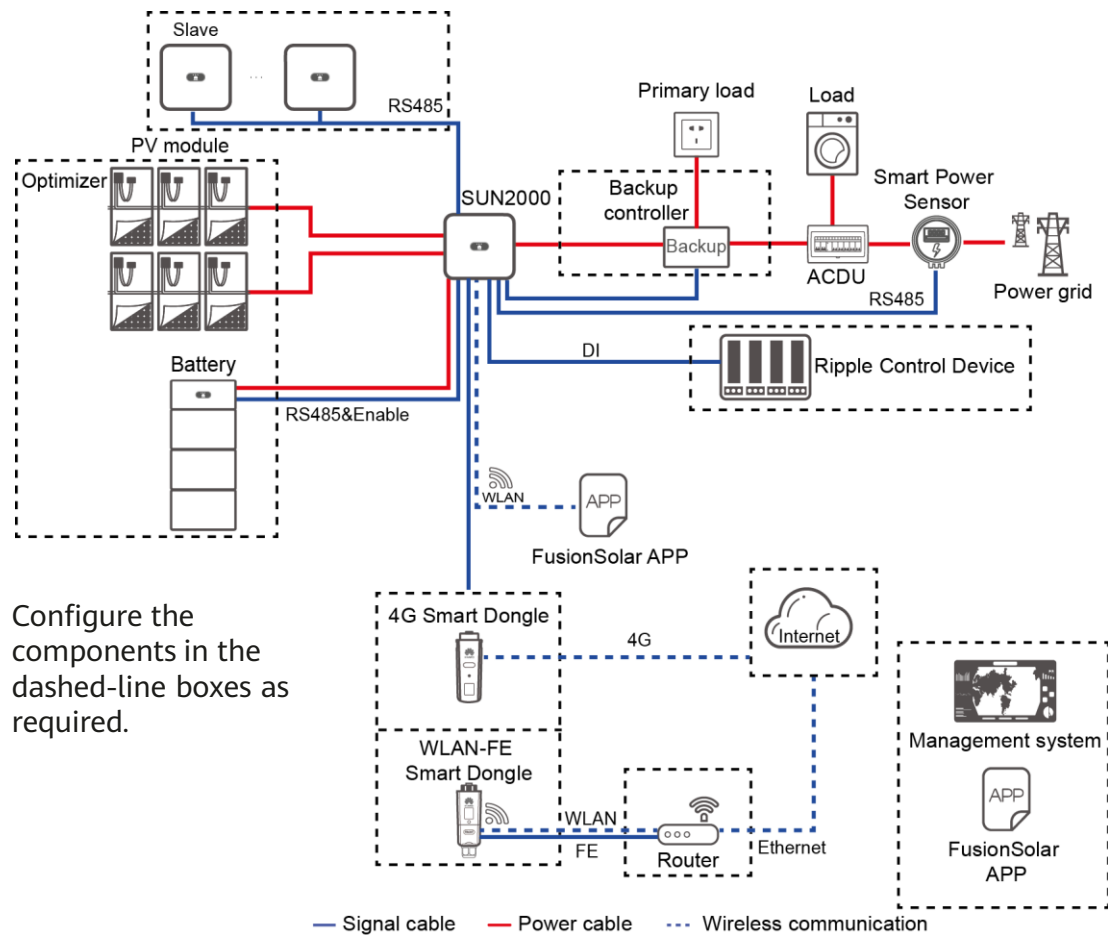
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- In cascading scenarios, the inverters are required to connect to the management system through a Smart Dongle.
- The grid meter and Smart Dongle must be connected to the same inverter.
- Only one LG battery is supported, and the LG battery must be connected to the inverter installed with the Smart Dongle.
- Supports grid-tied parameter synchronization for cascaded inverters. However, the optimizer and battery parameters need to be configured for each inverter separately.
- The DDSU666-H (single-phase) and DTSU666-H 250 A/50 mA (three-phase) connect to inverters over RS485 for output power management and power limiting.
  - ✓ For a single inverter, set **Closed-loop controller** to **Inverter**. The duration of export limitation is less than 2s.
  - ✓ For multiple inverters, **Closed-loop controller** can only be set to **SDongle**. The duration of export limitation is less than 5s.



# 1.9 Three-Phase Inverter Networking

Compatible Optimizer	Inverter	Smart Power Sensor	Battery	Number of Cascaded Inverters	Smart Backup Box	Communication	Management System	AFCI
SUN2000-450W-P	SUN2000-3/4/5/6/8/10-KTL-M1	DTSU666-H 250 A/50 mA (three-phase)	HUAWEI LUNA2000-(5-30)-S0	≤ 10 (including the host)	Yes	<ul style="list-style-type: none"> <li>Local commissioning: built-in WLAN of the inverter</li> <li>(Standard configuration) WLAN/Ethernet communication: Smart Dongle-WLAN-FE</li> <li>(Optional) 4G communication: Smart Dongle-4G</li> </ul>	FusionSolar	Yes



Configure the components in the dashed-line boxes as required.

### Optimizer (optional):

The SUN2000-450W-P optimizer is installed at the rear of PV modules. Supports the long PV string design. The maximum power of a single PV string is 10 kW.

### Commissioning:

- **Local commissioning:** The built-in WLAN of the inverter communicates with the FusionSolar app.
- **Remote management:**
  - Smart Dongle-WLAN-FE (standard configuration)
  - Smart Dongle-4G (optional)

Communicates with the FusionSolar smart PV management system to register and manage PV plants.

### Battery (optional):

- Huawei LUNA2000-(5-30)-S0

High-voltage DC coupled battery supports plug-and-play after connecting to the inverter. Batteries are connected to the inverter over RS485 for management.

Supports AC and DC bidirectional charging.

Supports fixed charging and discharging, maximum self-consumption, and time-sharing electricity price control.

### Backup controller (optional, not supported by the SUN2000-3-10KTL-M0):

Only supports single-phase load off-grid control.

The inverter automatically supplies power to primary loads when the power grid fails.

### Smart Power Sensor (optional):

DTSU666-H 250 A/50 mA (three-phase)

Connects to the inverter over RS485 for output power monitoring and power limiting.