

1.1 FusionSolar Commercial & Industrial Inverters up to 100KTL



SUN2000-12/15/17/20KTL-M0/M2
(Three-phase inverter)

MPPT/Inputs: 2/4

Local commissioning:

- Built-in WLAN

Communication:

- Smart Dongle-WLAN-FE (optional)
- Smart Dongle-4G (optional)
- SmartLogger3000A (optional)

AFCI: Yes

PID Recovery: Yes (SUN2000-12/15/17/20KTL-M2)

Optimizer Adaptation : Yes (SUN2000-12/15/17/20KTL-M2)

DI Control Interface: Yes



SUN2000-29.9/30/36/40KTL-M3
(Three-phase inverter)

MPPT/Inputs: 4/8

Local commissioning:

- Built-in WLAN

Communication:

- Smart Dongle-WLAN-FE (optional)
- Smart Dongle-4G (optional)
- SmartLogger3000A (optional)

AFCI: Yes

PID Recovery: Yes

Optimizer Adaptation : Yes

DI Control Interface: Yes



SUN2000-50/60KTL-M0
(Three-phase inverter)

MPPT/Inputs: 6/12

Local commissioning:

- USB WLAN adapter

Communication:

- SmartLogger3000A (RS485/AC MBUS)
- Smart Dongle-4G (optional)



SUN2000-100KTL-M1
(Three-phase inverter)

MPPT/Inputs: 10/20

Local commissioning:

- USB WLAN adapter

Communication:

- SmartLogger3000A (RS485/AC MBUS)
- Smart Dongle-4G (optional)

AFCI: available for some BOM numbers only (AFCI model)

PID Recovery: available for some BOM numbers only (AFCI model)

1.2 Communication Modules



Smart Dongle-WLAN-FE

- Supports a maximum of **10** devices
- Provides a plug & play USB interface for connecting to inverters for monitoring through WLAN or Fast Ethernet

Compatible with SUN2000-12-20KTL-M0/M2, 29.9/30/36/40KTL-M3 inverters

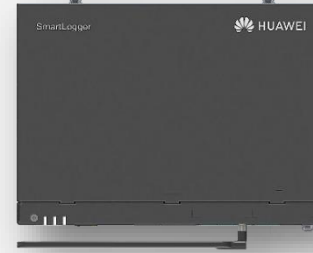
Smart Dongle-WLAN: **supports communication with a maximum of one device**, replaced by Smart Dongle-WLAN-FE



Smart Dongle-4G

- Supports a maximum of **10** devices
- Provides a plug & play USB interface for connecting to inverters for monitoring through 4G

Compatible with SUN2000-12-20KTL-M0/M2, 29.9/30/36/40KTL-M3, 50/60KTL-M0, 100KTL-M1 inverters



SmartLogger3000A

- Supports a maximum of **80** inverters
- Communication with inverters:
 - ✓ RS485
 - ✓ AC MBUS (isolation transformer)
- Communication with the cloud:
 - ✓ Ethernet
 - ✓ 4G via built-in 4G module
- Local commissioning:
 - ✓ WebUI via Ethernet
 - ✓ App via built-in WLAN
- Power reduction interface for inverter power control
- Digital & Analog IO for EMI integration

SmartLogger1000A: **EOM**; replaced by SmartLogger3000A



USB-Adapter2000-C

- WLAN adapter
- USB port connected to inverter for local commissioning only
- App connected via WLAN

Compatible with SUN2000-29.9KTL, 33KTL-A, 36KTL, 50/60KTL-M0, 100KTL-M1 inverters

Bluetooth adapter (USB-Adapter2000-B): **EOM**; replaced by WLAN adapter

Optimizer

SUN2000-450W-P



Optimizer Model	Safety Box Model	Inverter Model
SUN2000-450W-P	N/A	SUN2000-12/15/17/20KTL-M2
		SUN2000-29.9/30/36/40KTL-M3

Key Feature	SUN2000-450W-P
Output voltage before pairing with the inverter	The output voltage is 0 V by default.
Resistance checking	Yes. The output impedance is 1 k Ω ($\pm 10\%$).
Module-level monitoring	Yes
Module-level shutdown (Full configuration)	Yes
Rapid shutdown (Full configuration)	Yes
Long PV string design	Yes
Physical layout image recognition	Yes
Disconnection locating	Yes

1.3 Power Meters



**Smart Power Sensor
DTSU666-H 250 A/50 mA (Three-Phase)**

- Connects to an inverter over RS485
- Class 1 high accuracy meter readings for production/consumption monitoring
- Import/Export of meter readings for export limitation functionality
- Current transformer included

Compatible with SUN2000-12-20KTL-M0/M2, 29.9/30/36/40KTL-M3, 50/60KTL-M0, 100KTL-M1 inverters



Third-Party Smart Power Meters

- Compatible power meters for SUN2000 in Appendix 1
- Compatible power meters for SmartLogger3000A in Appendix 2

1.4 Version Evolution

SUN2000-12-20KTL-M0



SUN2000-12-20KTL-M2



Amphenol HH4 (black)

Amphenol HH4 (blue)

Staubli MC4



H4TC0003



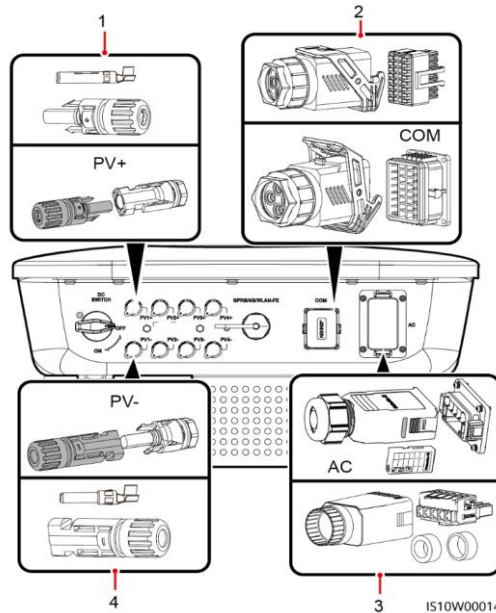
PV-CZM-22100



H4TW0001



PV-MS-HZ



Key Feature	SUN2000-8-20KTL-M0	SUN2000-8-20KTL-M2
Export limitation	Yes	Yes
Built-in WLAN	<ul style="list-style-type: none"> Supports local commissioning Supports communication with a router 	<ul style="list-style-type: none"> Supports local commissioning Supports communication with a router
Smart Dongle	<ul style="list-style-type: none"> Supports the Smart Dongle-WLAN-FE. Supports the Smart Dongle-4G. 	<ul style="list-style-type: none"> Supports the Smart Dongle-WLAN-FE. Supports the Smart Dongle-4G.
Inverter cascading	10 (Dongle); 80 (Smartlogger3000A)	10 (Dongle); 80 (Smartlogger3000A)
Optimizer	No	Supports the SUN2000-450W-P. (No safety box is required.)
AFCI	Yes	Yes
AFCI arc positioning	No	Yes
DRM0 (Australia AS4777)	Yes	Yes
DC switch locking (Australia AS4777)	No	Yes
Insulation fault locating	No	Yes
Night auxiliary source	No	Yes
PID Recovery	No	Yes

Terminal	SUN2000-8-20KTL-M0	SUN2000-8-20KTL-M2
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

1.4 Version Evolution

SUN2000-29.9KTL, 30kTL-A, 36KTL



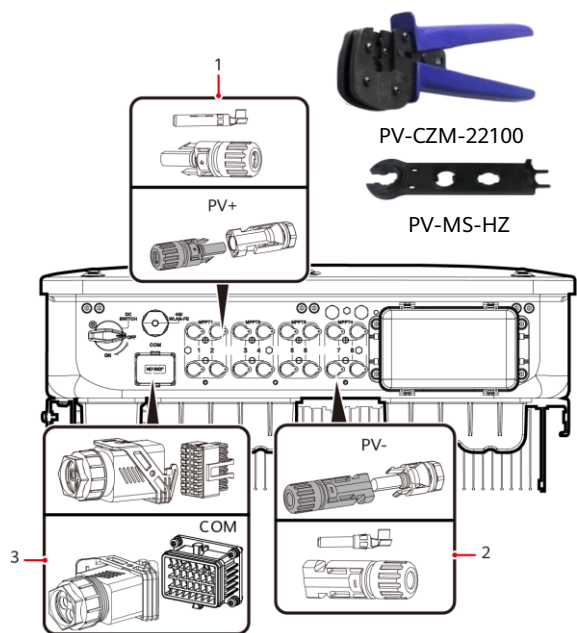
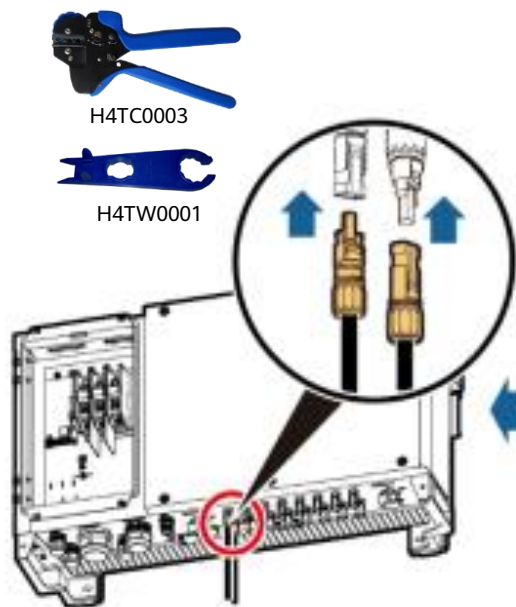
SUN2000-29.9KTL, 30KTL, 36KTL, 40KTL-M3



Amphenol HH4 (black)

Amphenol HH4 (blue)

Staubli MC4



Key Feature	SUN2000-29.9KTL, 30kTL-A, 36KTL	SUN2000-29.9KTL, 30KTL, 36KTL, 40KTL-M3
Built-in WLAN	No	• Supports local commissioning
Smart Dongle	No	• Supports the Smart Dongle-WLAN-FE. • Supports the Smart Dongle-4G
Inverter cascading	80 (Smartlogger3000A)	10 (Dongle); 80 (Smartlogger3000A)
Optimizer	No	Supports the SUN2000-450W-P.
AFCI	Yes (Only 36KTL)	Yes
AFCI arc positioning	No	Yes
DRM0 (Australia AS4777)	Yes	Yes
DC switch locking (Australia AS4777)	No	Yes
Insulation fault locating	No	Yes
Night auxiliary source	Yes	Yes
PID Recovery	No	Yes
Export limitation	Yes	Yes

Terminal	SUN2000-29.9KTL, 30kTL-A, 36KTL	SUN2000-29.9KTL, 30KTL, 36KTL, 40KTL-M3
DC input terminal	Manufacturer: Amphenol DC male HH4CMD4TMS DC female HH4CFD4TMS	Manufacturer: Staubli DC male PV-KST4/6II-UR DC female PV-KBT4/6II-UR

1.4 C&I Accessory Packages

Inverter	Accessory BOM Number	Configuration Guide
SUN2000-12/15/17/20KTL-M0	02232VCP	<p>Inverter Accessory Package Configure no package for less than 100 inverters, 1 package for 100 to 500 inverters, and 2 packages for 500 to 1000 inverters, and so on. Key components in the accessory package:</p> <ul style="list-style-type: none"> • 14190937: female PV connector (Amphenol H4) , 4 PCS • 14190939: male PV connector (Amphenol H4) , 4 PCS • 14191312: AC connector, 1 PCS • 14191315: COM port connector, 1 PCS
SUN2000-12/15/17/20KTL-M2	02233FJE	<p>Inverter Accessory Package Configure no package for less than 100 inverters, 1 package for 100 to 500 inverters, and 2 packages for 500 to 1000 inverters, and so on. Key components in the accessory package:</p> <ul style="list-style-type: none"> • 14191131: female PV connector (staubli MC4) , 4 PCS in Appendix 5 • 14191133: male PV connector (staubli MC4) , 4 PCS • 14191312: AC connector, 1 PCS • 14191315: COM port connector, 1 PCS
SUN2000-30/36/40KTL-M3	02233ETX	<p>This item is an optional independent auxiliary material package. Configure no package for less than 100 inverters, 1 package for 100 to 500 inverters, and 2 packages for 500 to 1000 inverters, and so on. Key lower-layer materials in the auxiliary material package:</p> <ul style="list-style-type: none"> • 14191131: female PV wiring terminal, 8 PCS • 14191133: male PV wiring terminal, 8 PCS • 14191315: communications terminal, 1 PCS • 14170213: Bare crimp terminal, 4 PCS <p>Adaptive inverter: SUN2000-20/29.9/30/36/40KTL-M3</p>
SUN2000-29.9KTL, 33KTL-A SUN2000-36KTL	02232DPQ	<p>Inverter Accessory Package Configure 1 package for every 50 inverters. Key components in the accessory package:</p> <ul style="list-style-type: none"> • 14990316: DC connector unlock tool, 4 PCS • 14190376: male DC connector, 12 PCS • 14190377: female DC connector, 12 PCS • 14180482: AC cable terminal block, 3 PCS
SUN2000-50/60KTL-M0	02232RNX	<p>Inverter Accessory Package Configure 1 package for every 50 inverters. Key components in the accessory package:</p> <ul style="list-style-type: none"> • 14990316: DC connector unlock tool, 4 PCS • 14190937: female DC connector, 12 PCS • 14190939: male DC connector, 12 PCS • 14180528: AC cable terminal block, 3 PCS

Inverter	Accessory Part Number	Configuration Guide
SUN2000-100KTL-M1	02232XNM	Inverter Accessory Package Configure 1 package for every 50 inverters. Key components in the accessory package: <ul style="list-style-type: none"> • 14191548: MC4-Evo2 power connector disassembling tool, 4 PCS • 14191131: power connector, 1-pin, 1500 V, 30 A, 4–6 mm², PV connector, 20 PCS • 14191133: power connector, 1-pin, 1500 V, 30 A, 4–6 mm², PV connector, 20 PCS
	04095944	Y-branch connector (15 A) Compatible inverters: 01074684, 01074671, 01074686, 01074687, 01074694, 01074695, 01074695-001, 01074695-002 Each BOM number contains the Y-branch connector required by one MPPT, with a built-in 15 A fuse on the positive side.
	4095945	Y-branch connector (20 A) Compatible inverters: 01074684, 01074671, 01074686, 01074687, 01074694, 01074695, 01074695-001, 01074695-002 Each BOM number contains the Y-branch connector required by one MPPT, with a built-in 20 A fuse on the positive side.
	02232WWN	Accessory package to facilitate inverter lifting Configure 1 PCS for fewer than 20 inverters. Configure 5 PCS for 20 to 100 inverters. The maximum number shall not exceed 20 PCS.
	02232WAV	Accessory package for field replacement of inverter external fans Recommended fan quantity = Inverter quantity x 0.5% Configure one fan for fewer than 200 inverters.

1.5 FusionSolar App, WebUI, and Smart PV Management System

Application Scenario: Connecting to the FusionSolar Smart PV Management System



FusionSolar App(7.0)

- 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



WebUI

- Local commissioning of SmartLogger3000A
- Ethernet connection between SmartLogger3000A and PC



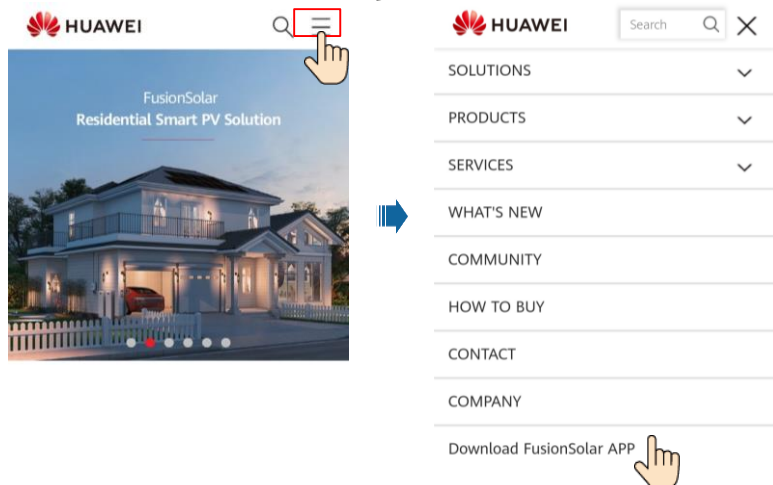
FusionSolar Smart PV Management System

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

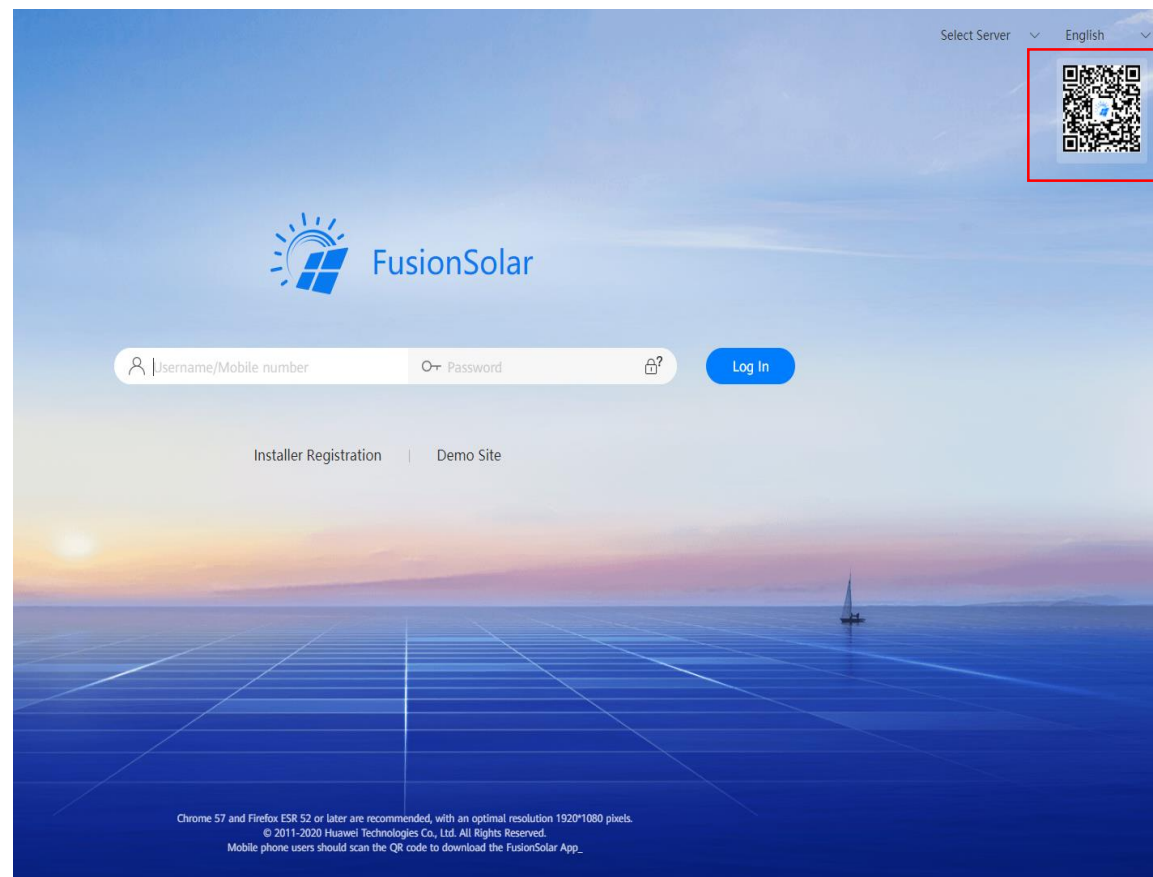
Downloading the FusionSolar App

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.

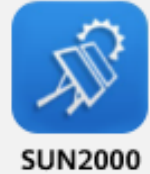


FusionSolar APP

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

1.6 SUN2000 App, NetEco 1000S, and Third-Party Management System

Application Scenario: Connecting to the NetEco 1000S or Third-Party Management System



SUN2000



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

SUN2000 App

- App for local commissioning
- Supports connection over Bluetooth, USB, or WLAN
- Download method:
 - ✓ Huawei phone: Access Huawei AppGallery.
 - ✓ Non-Huawei phone: Scan the QR code using a mobile browser and download via <https://appgallery.cloud.huawei.com/app/dl/C10279542>.
- 1. The latest app version for Android is required for local commissioning. The app version for iOS is not updated and cannot be used for local commissioning.
- 2. Apply to regions where FusionSolar is not released or third-party management systems for device local commissioning.



NetEco 1000S Management System

- Centralized management of all PV systems
- Smart I-V Curve Diagnosis
- Demo site available for all

Compatible with 29.9KTL, 33KTL-A, 36KTL, 50-60KTL-M0, 100KTL-M1 inverters



Third-Party Management System

- Transmits data over Modbus TCP to third-party monitoring server through SmartLogger3000A or Smart Dongle
- Smart PV Management System transmits data to third-party monitoring server over the RESTful interface

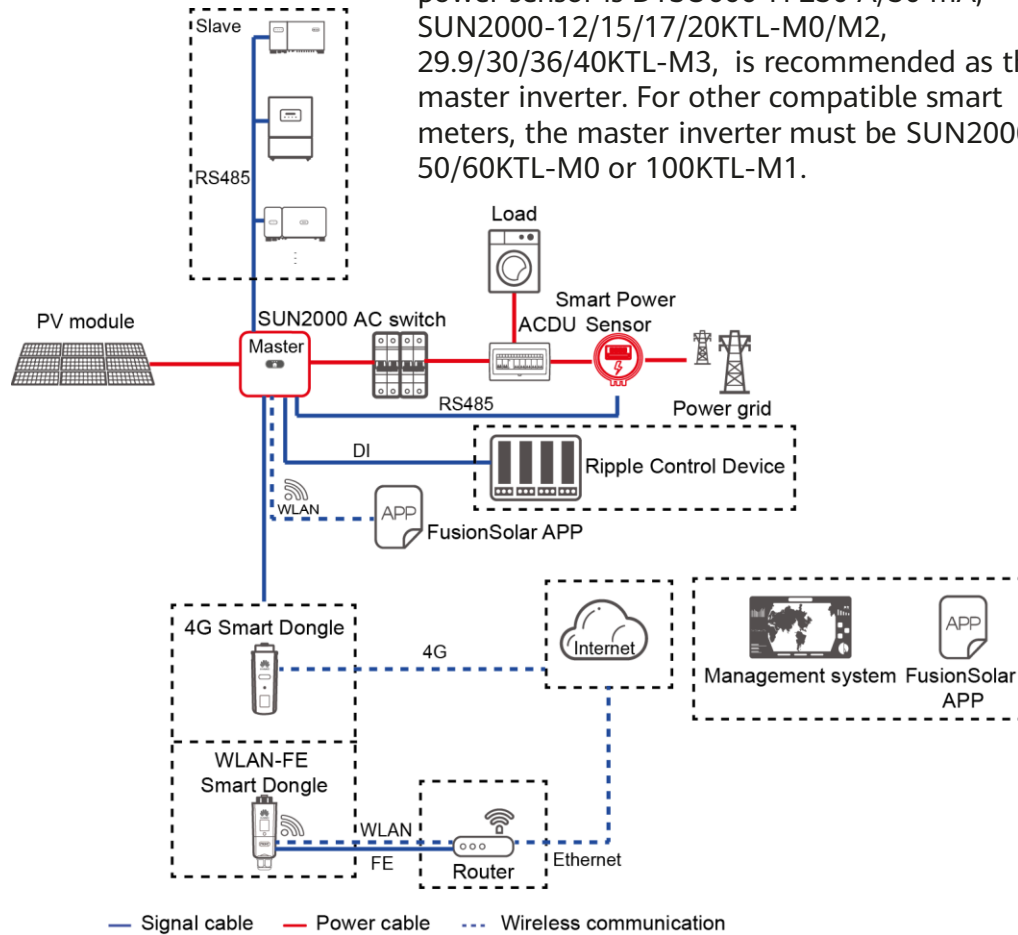
Third-party management system: MC, Solar-Log, Laplace, Field Logic, Taoke, Ecomegane, Fuji IT etc.

1.7 Smart Dongle Networking

Master Inverter	Slave Inverters	Communication	Number of Cascaded Inverters (Including Master Inverter)	Smart Power Sensor	Management System	AFCI	Ripple Control
SUN2000-12/15/17/20KTL-M0/M2, SUN2000-29.9/30/36/40KTL-M3	SUN2000-12/15/17/20KTL-M0/M2, 29.9/30/36/40KTL-M3, 50/60KTL-M0, 100KTL-M1	<ul style="list-style-type: none"> WLAN Smart Dongle: does not support a slave inverter, replaced by WLAN-FE Smart Dongle 4G Smart Dongle WLAN-FE Smart Dongle (Connected to the master inverter) 	≤ 10	DTSU666-H 250 A/50 mA (three-phase)	FusionSolar	Applicable to a system only consisting of SUN2000-12-20KTL-M0/M2, 36KTL (AFCI model)	Yes
SUN2000-50/60KTL-M0	SUN2000-12/15/17/20KTL-M0/M2, 29.9/30/36/40KTL-M3, 50/60KTL-M0, 100KTL-M1	<ul style="list-style-type: none"> 4G Smart Dongle (Connected to the master inverter) 	≤ 10	Compatible smart meter listed in Appendix 1	FusionSolar	No	No
SUN2000-100KTL-M1	SUN2000-12/15/17/20KTL-M0/M2, 29.9/30/36/40KTL-M3, 50/60KTL-M0, 100KTL-M1	<ul style="list-style-type: none"> 4G Smart Dongle (Connected to the master inverter) 	≤ 10	Compatible smart meter listed in Appendix 1	FusionSolar	No	No

NOTE

- Configure the components in the dashed-line boxes as required.
- In hybrid networking scenarios, if the smart power sensor is DTSU666-H 250 A/50 mA, SUN2000-12/15/17/20KTL-M0/M2, 29.9/30/36/40KTL-M3, is recommended as the master inverter. For other compatible smart meters, the master inverter must be SUN2000-50/60KTL-M0 or 100KTL-M1.



Local Commissioning

- SUN2000-12/15/17/20KTL-M0/M2, SUN2000- 29.9/30/36/40KTL-M3 : The FusionSolar app connects to the inverter through the inverter built-in WLAN.
- SUN2000-50/60KTL-M0, 100KTL-M1: The FusionSolar app connects to the inverter via USB-Adapter2000-C.

Remote Monitoring

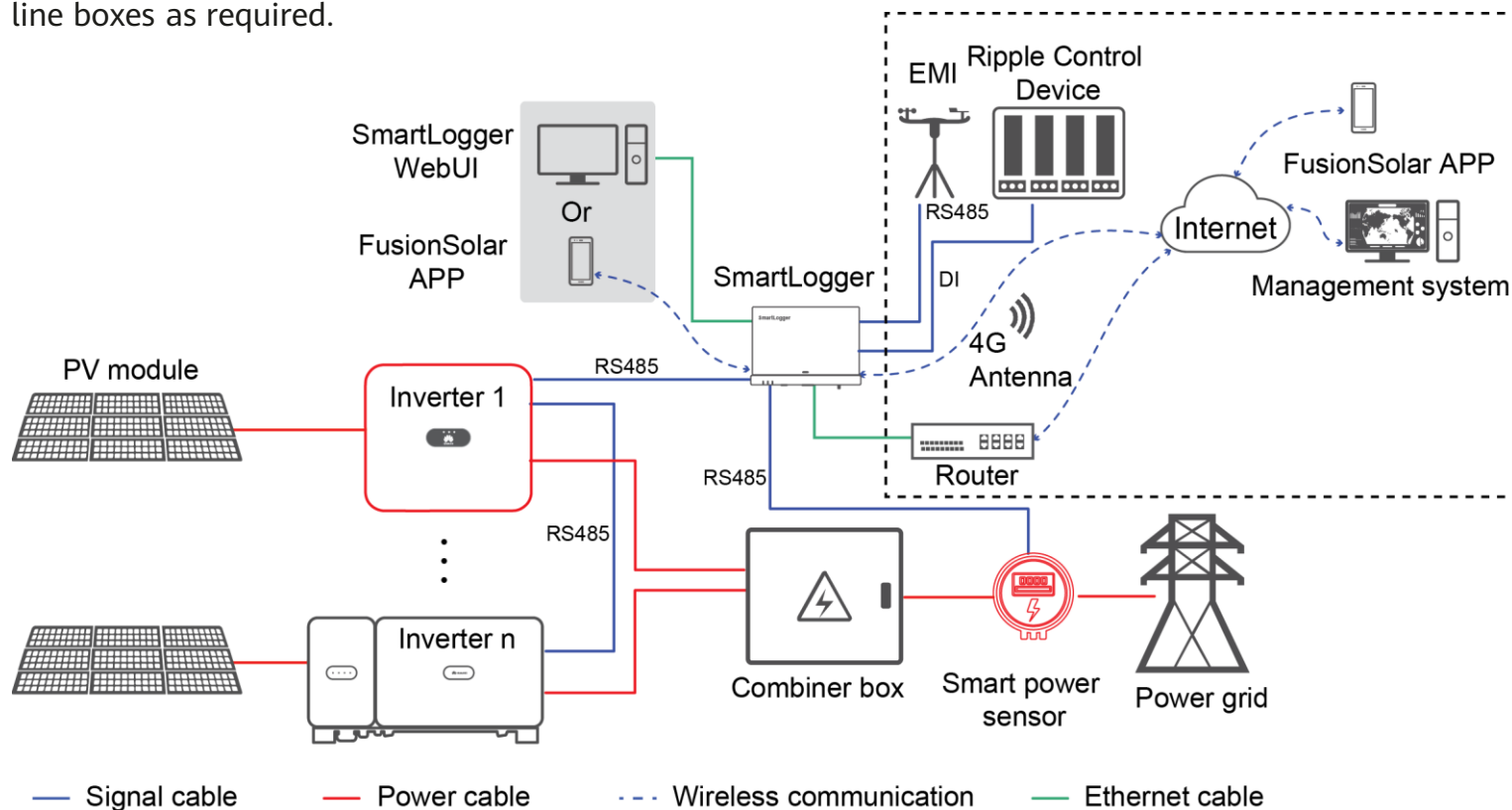
- For master inverter SUN2000-12/15/17/20KTL-M0/M2, SUN2000-29.9/30/36/40KTL-M3 : 4G, WLAN, or Ethernet communication to FusionSolar Smart PV Management System via Smart Dongle WLAN-FE
- For master inverter SUN2000-50/60KTL-M0, 100KTL-M1: 4G communication to FusionSolar Smart PV Management System via 4G Smart Dongle
- DTSU666-H 250 A/50 mA three-phase **smart power sensor** or a compatible smart meter listed in Appendix 1 connects to the inverter via RS485 for power output monitoring or control.
 - 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.

Built-in **Radio Ripple Control Receiver (RRCR)** interface enables control over the inverter power production through 4 digital inputs (DIs). **Ripple Control Device is applicable only to Germany.**

1.8 SmartLogger Networking

SmartLogger	Inverter	Communication	Number of Cascaded Inverters	Smart Power Sensor	EMI	Management System	AFCI	Ripple Control
SmartLogger3000A	SUN2000-12/15/17/20KTL-M0/M2, 29.9/30/36/40KTL-M3, 50/60KTL-M0, 100KTL-M1	RS485	≤ 80	See Appendix 2.	See Appendix 3.	FusionSolar	Applicable to a system only consisting of SUN2000-12-20KTL-M0/M2, 36KTL (AFCI model)	Yes

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



SmartLogger: SmartLogger3000A

Inverters: A maximum of **80** inverters can be connected.

Local Commissioning:

- WebUI software installed laptop connecting to SmartLogger3000A via its Ethernet port
- FusionSolar app connecting to SmartLogger3000A via its built-in WLAN

Remote Monitoring:

- SmartLogger3000A communicates to FusionSolar Smart PV Management System via Ethernet.
- SmartLogger3000A communicates to FusionSolar Smart PV Management System via built-in 4G.

Smart meter (Listed in Appendix 2) connects to SmartLogger3000A via RS485 for power output monitoring or control. *In the SmartLogger networking scenario, the duration of export limitation is less than 2s.*

Four DIs of SmartLogger3000A can be used as **Radio Ripple Control Receiver (RRCR)** interface to enable control over inverter power production.