

C&I Smart String Energy Storage System Solution Service White Paper (Applicable Only to ESSs)

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About This Document

Overview

This document describes the service modes and strategies of commercial and industrial (C&I) Energy Storage Systems (ESSs). It will be updated periodically and is subject to change. You can find the latest version at W3 intranet.

Intended Audience

This document provides guidance for pre-sales engineers and service engineers in pre-sales bidding, service sales, delivery, and maintenance of C&I ESSs.

Terms

Onsite or local in this document refers to the country or region to which the C&I ESS products are delivered as requested by the customer.

Symbol Conventions

Font notes:

Black and bold: critical content that requires close attention.

Black and italic: additional remarks for reference only.

Change History

Date	Issue	Description	Author	Reviewer
2022-10-13	1.0	Initial draft, applicable only to ESSs.	Mo Hongqing/0040472 2, Guo Jie/00505789, Lu Haiyang/84244610	Si Zhenfeng/00558593, Deng Liming/00630584, Guo Jie/00505789, Liao Jianlin/84230066

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1 Solution Overview

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1.1 Application Scenario

This white paper applies to the LUNA2000-200KWH C&I ESS products, including LUNA2000-200KWH-2H0 and LUNA2000-200KWH-2H1. This document describes in detail the service solution for the LUNA2000-200KWH ESS solution.

1.2 ESS Array Solution

The Smart String ESS solution consists of the LUNA2000-200KWH Smart String ESS, LUNA2000-100KTL-M0 Smart Power Control System (PCS), ESC360KW-F Smart Rack Controller, and SmartACU2000D-D-05CN Smart Array Controller (SACU).

Figure 1-1 Networking diagram for application scenarios in China (generation N)

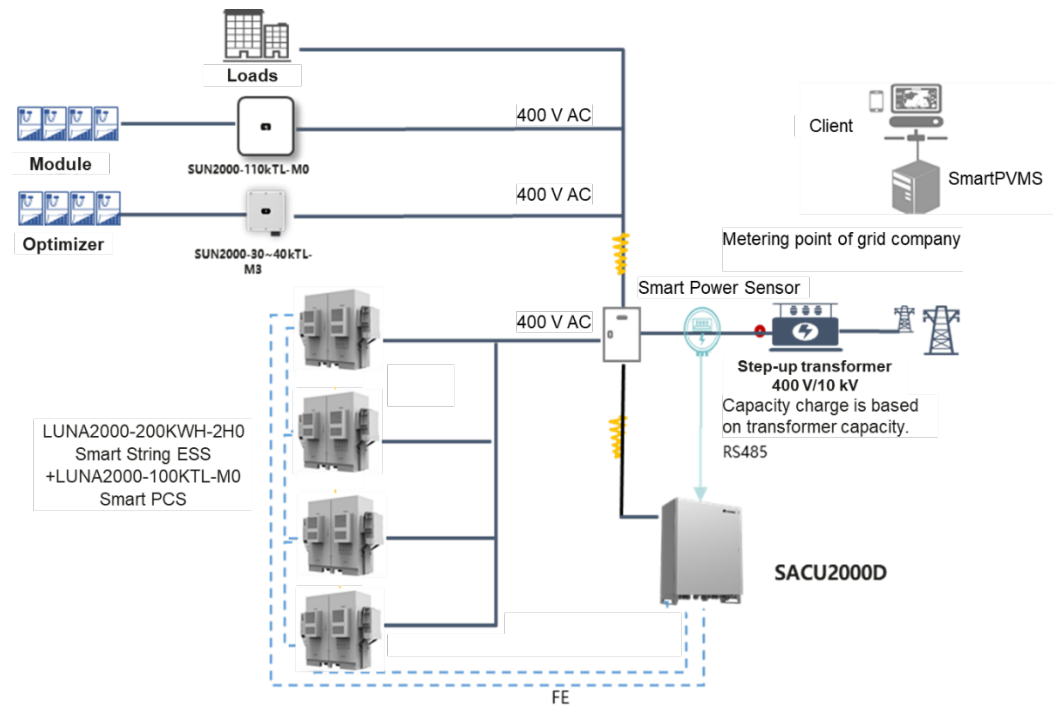


Table 1-1 Main devices in Huawei's solution

No.	Product Category	Model	Description	Sales Region	Current Sales Status
1	Smart String ESS	LUNA2000-200KWH-2H0	Hybrid power system	China	Saleable (Mandatory)
2	Battery pack		Rated capacity: 196 kWh	China	Saleable (Mandatory)
3	Smart PCS	LUNA2000-100KTL-M0	875 mm x 820 mm x 365 mm	China	Saleable (Mandatory)
4	Rack controller	ESC360KW-F	600 mm x 270 mm x 820 mm	China	Saleable (Mandatory)
5	SACU	SmartACU2000D-D-05CN	600 mm x 315 mm x 7000 mm	China	Saleable (Mandatory)
6	DC bus cable between the Smart String ESS and the PCS	0.6/1KV-ZC-YJV22-1 x 70 mm ² copper cable	Conductor cross-sectional area: 70–95 mm ²	China	Saleable (Configured by default, and can be removed)

No.	Product Category	Model	Description	Sales Region	Current Sales Status
7	Smart Power Sensor	DTSU666-H 250A/50mA	Three-phase Smart Power Meter	China	Saleable Optional

Figure 1-2 Networking diagram for application scenarios outside China (generation N+0.5)

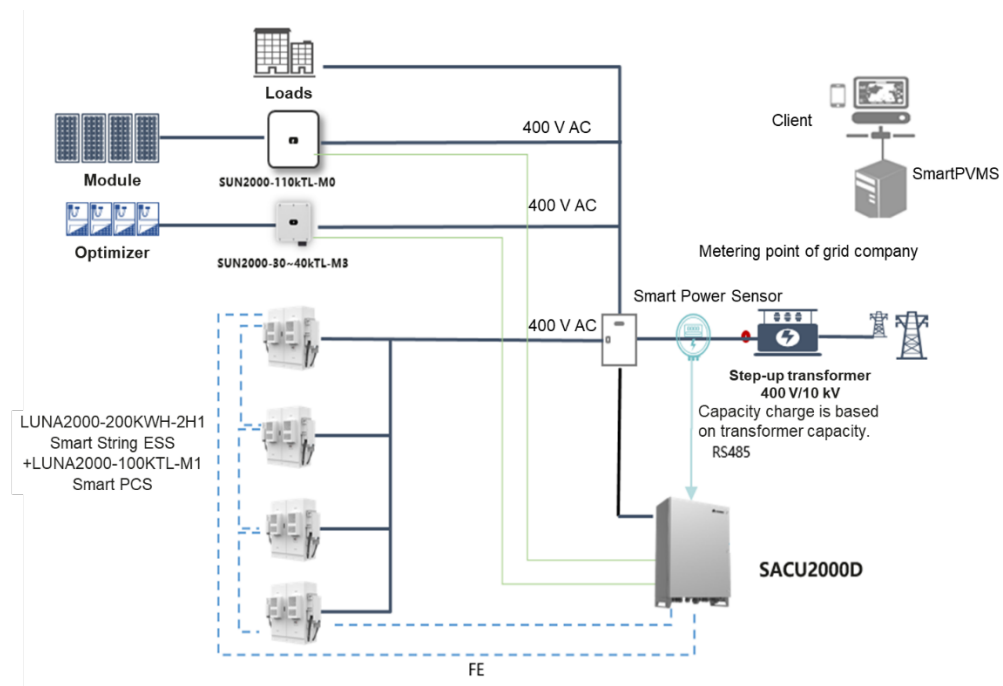


Table 1-2 Main devices in Huawei's solution

No.	Product Category	Model	Description	Sales Region	Current Sales Status
1	Smart String ESS	LUNA2000-200 KWH-2H1	Hybrid power system	Outside China	Saleable (Mandatory)
2	Battery pack		196 kWh per rack	Outside China	Saleable (Mandatory)
3	Smart PCS	LUNA2000-100 KTL-M1	875 mm x 820 mm x 365 mm	Outside China	Saleable (Mandatory)
4	Rack controller	ESC360KW-F	600 mm x 270 mm x 820 mm	Outside China	Saleable (Mandatory)
5	SACU	SmartACU2000 D-D-00	600 mm x 315 mm x 7000 mm	Outside China	Saleable (Mandatory)

No.	Product Category	Model	Description	Sales Region	Current Sales Status
6	DC bus cable between the Smart String ESS and the PCS	0.6/1KV-ZC-YJ V22-1 x 70 mm ² copper cable	Conductor cross-sectional area: 70–95 mm ²	Outside China	Saleable (Configured by default, and can be removed)
7	Smart Power Sensor	DTSU666-H 250A/50mA	Three-phase Smart Power Meter	Outside China	Saleable Optional

2 Service Strategy

2.1 Product Warranty

2.2 Performance Warranty

2.3 Engineering Implementation

2.4 Customer Support (CS)

2.1 Product Warranty

- There are two sales models for C&I ESS products: distribution by partners and direct sales by Huawei.
 - Distribution products: In principle, Huawei provides direct services only for value-added partners (VAPs) and remote technical support and spare parts services for end customers (installers and owners) of VAPs. Huawei services are available in distribution scenarios to provide original manufacturer services for end customers.
 - Direct sales products: Frontline service teams provide technical support, standard warranty, extended warranty, and training services for customers.
- Remote technical services are provided based on only the equipment SN, regardless of customer types. You can develop differentiated service strategies based on competitor services, including but not limited to spare parts replacement compensation and paid onsite service.
- The ESS products must be stored in accordance with the technical specifications. Damages caused by improper storage are not covered by the warranty.
 - a. The storage temperature ranges from 0°C to 40°C, and the storage humidity ranges from 5% RH to 80% RH.
 - b. The product must be protected against rain and water.
 - c. The products must not be tilted, placed upside down, stacked, or subject to heavy stress.
 - d. Keep the products away from direct sunlight, corrosive substances, fire sources, and heat sources.
 - e. For battery packs, in addition to the preceding requirements, battery packs must be stored at 40% to 50% SOC in a clean, dry, and well-ventilated room with an ambient temperature of 5°C to 35°C.

- The warranty of the products will be void if the transportation and storage period of battery packs exceeds eight months and the customer fails to charge the battery packs or calibrate the SOC as required during the period. For details, see the user manual.
- C&I ESSs must be connected to the FusionSolar Cloud so that the software can be updated on time to achieve optimal maintenance.

Table 2-1 Standard warranty period for each product series (year)

Category	Sales Strategy	Delivery Strategy
Warranty	<ul style="list-style-type: none"> • Standard warranty is provided with the products by default and not sold independently. • Product warranty is classified into basic warranty and advanced warranty. After devices are delivered, basic warranty is automatically obtained based on the contract. After devices are connected to the FusionSolar Cloud, advanced warranty is automatically obtained. • In special cases when the warranty service must be separately signed for a project, the warranty service contract must be signed by the rep office in the country where the project is deployed and spare parts supply must be ensured. If spare parts are unavailable, the local office shall evaluate whether to make commitment to provide local spare part services. • Regions must review contract clauses in accordance with the sales guide. In principle, it is prohibited to sell non-standard warranty services. Exceptions must be reported to and approved by the sales decision-making team (SDT) at headquarter. • For details about warranty policies, see Table 2-2 and Table 2-3. 	<ul style="list-style-type: none"> • China: Digital Power service team + partners • Outside China: Digital Power service team + partners
Extended warranty	<ul style="list-style-type: none"> • Customers need to purchase the extended warranty service together with the product; • Before the warranty expires; • Or after the health conditions of the devices are inspected and confirmed eligible for extended warranty if the standard warranty has expired. • Extended warranty needs to be quoted separately. • Extended warranty services are not provided for Huawei-developed auxiliary products, such meters. 	<p>The extend warranty is also delivered by Huawei in the same way as the original basic warranty.</p>

 **NOTE**

- When determining the product warranty period, consider the balance between pricing and product competitiveness. Generally, the warranty period is determined at GA, and warranty services are performed by service departments.
- If the frontline personnel need to extend the standard warranty period in a country or region to improve product competitiveness, the region needs to provide necessary supporting materials and apply for approval from the HQ service department. After the application is approved, the service representative must update the white paper.
- After devices are sold, basic warranty is automatically obtained based on the contract. After devices are connected to the FusionSolar Cloud, advanced warranty is automatically obtained.
- To extend the service life of C&I ESS products, an application must be submitted to the requirements analysis team (RAT) for approval.

Table 2-2 Basic warranty period of each product series (year)

Basic Warranty Period (Year)							
Category	Device	Europe	Japan	China	Middle East & Africa	Asia Pacific	Latin America
Devices	Smart String ESS	2	2	2	2	2	2
	DCDC						
	PCS						
Auxiliary products	SACU	1	1	1	1	1	1
	Fire suppression module	1	1	1	1	1	1

The following auxiliary materials and mechanical parts are not covered by the warranty:

Category	Description
Consumables	Including cables, door locks, and lamps
Cables	Cables between cabinets
Mechanical parts	Including battery installation racks and other mechanical parts
Accessories for battery cabinets	Including cabinet mechanical parts, documents, product accessories, installation accessories, and tools

After C&I ESSs are connected to the FusionSolar Cloud, the warranty is upgraded to advanced warranty. Details are as follows:

Table 2-3 Advanced warranty period of each product series (year)

Advanced Warranty Period (Year)							
Category	Device	Europe	Japan	China	Middle East & Africa	Asia Pacific	Latin America
Devices	Smart String ESS	5	5	5	5	5	5
	DCDC						
	PCS						
Auxiliary products	SACU	2	2	2	2	2	2
	Fire suppression module						

Table 2-4 Warranty period start dates

Start Date	Europe	Japan	China	Middle East & Africa	Asia Pacific	Latin America
The warranty period starts 90 days after the shipment date of Huawei products, or from the day when Huawei receives the request for product service (whichever is earlier)—Applicable to project-based products	√		√	√	√	√
The warranty period starts 90 days after the shipment date of Huawei products, or from the day when Huawei receives the request for product service (whichever is earlier)—Applicable to distribution products			√			
The warranty period starts 180 days after the shipment date of Huawei products, or from the day when Huawei receives the request for product	√	√		√	√	√

Start Date	Europe	Japan	China	Middle East & Africa	Asia Pacific	Latin America
service (whichever is earlier)—Applicable to distribution products						
Shortest warranty period after spare parts replacement	360 days	360 days	360 days	360 days	360 days	360 days

 **NOTE**

1. The warranty period of spare parts starts from the shipment date. This item must be specified in the contract. By default, the warranty period of spare parts is the same as that of the original parts. The minimum warranty period of spare parts is one year.
2. For channel sales projects, channel partners must complete necessary ESS capability certification.
3. For channel distribution projects, channel partners are responsible for notifying customers of technical requirements such as transportation, storage, site selection, installation space, and foundation construction requirements. Such content must be included in the contract. Huawei will not be responsible for any problems caused by ignorance of the preceding requirements.

Table 2-5 Standard warranty services

Category	Service	Description
Remote technical support	Hotline service	24/7 real-time response
	Remote troubleshooting	9/5
	Online technical support	Technical information sharing and patch download
	Multi-channel support	Including social media
Software support	Software update authorization	Device firmware maintenance version (patch and beta versions)
Hardware support	Spare parts replacement	After approving the customer's spare parts service application, Huawei will send the replacement parts within two business days. The customer only needs to return the faulty parts to the place designated by Huawei within 15 business days after receiving the replacement parts from Huawei. If the faulty parts are not returned within the specified period, it is deemed that the customer purchases the parts at the list price. If any damage or loss occurs during the return via a courier, the

Category	Service	Description
		customer shall be liable for the consequences. (The spare parts SLA of battery packs can be adjusted based on the actual capability of each region.)
Replacement compensation	Compensation for spare parts replacement	Based on the competition situation, after the installer provides the spare parts replacement service, Huawei pays part of the fee to compensate the installer for the onsite service. (Region-specific service strategy, not mandatory)

 **NOTE**

- 24/7: Monday to Sunday, 00:00–24:00
- 12/7: Monday to Sunday, 8:00–20:00
- 9/5: business days, 9:00–18:00, excluding public holidays
- BD: business day
- 2BD-S: Huawei ships spare parts within two business days after confirming the necessity of hardware replacement and receiving the RMA information.
- The standard warranty does not include onsite services, which need to be purchased separately.

Remote Support

Remote support means that Huawei provides technical consultation or troubleshooting solutions for Huawei devices by phone or email. It includes the help desk, remote technical support, and online technical support.

- The **help desk** is a service interface and platform for receiving and tracking service requests of customers.
- The remote technical support service includes technical consultation and troubleshooting. The technical consultation service provides consultation on issues not related to product faults. The troubleshooting service is to provide customers with solutions to fix problems within the period specified in the SLA.
- Online technical support: Maintenance experience, cases, and technical support information are available on the technical support website at <https://solar.huawei.com/en/>.

Software Support

If necessary, Huawei provides free software update guidance services for customers within the warranty period.

Huawei ensures that the product can run properly, but does not guarantee that the software runs without errors or interruption, or that Huawei will correct all program errors.

Hardware Support

During the warranty period, Huawei guarantees that:

- Huawei will replace hardware for free if the hardware has material, manufacturing, or processing defects.
- Huawei will replace hardware for free if the specifications of the hardware delivered by Huawei are incorrect.
- Huawei will send the replacement parts to the site agreed upon by both parties after confirming the service request of the customer. After receiving the replacement devices provided by Huawei, the customer shall pack the faulty devices using the packing materials of the replacement devices and instruct Huawei to arrange the logistics service provider to pick up the devices within 15 working days. If the faulty parts are not returned on time due to any reason of the customer, it is deemed that the customer purchases the faulty parts or waives the corresponding warranty service.
- If spare parts are included in the original order and Huawei confirms that faulty parts need to be replaced, the faulty parts must be preferably replaced by the spare parts delivered in the original order. The customer must return the faulty parts to Huawei. Huawei will send the logistics service provider to pick up the faulty parts and send spare parts to the customer.
- The functionality (features, functions, compatibility, and default software version) of the replacement parts provided by Huawei is not lower than that of the faulty parts.
- The warranty period of the replacement spare parts is the remaining warranty period of the original faulty parts.
- Onsite replacement (removal of faulty parts and installation of spare parts) should be performed by the customer.
- After confirming the customer's replacement request, Huawei is responsible for transporting the faulty parts within the warranty period.
- If the customer does not provide sufficient information and replaces the parts without Huawei's confirmation, and Huawei verifies that the replaced parts are not faulty, the customer shall pay the transportation cost.

2.2 Performance Warranty

2.2.1 Performance Warranty Description

1. Performance warranty is Huawei's commitment on the performance of the ESSs and is one of the main criteria for measuring whether the ESSs meet the quality standards.
2. Performance warranty defined for the ESS: 5000 cycles, 100% DOD, 0.5C, 70% capacity at EOL, operating temperature range of 10°C to 30°C, maximum performance warranty period of 10 years.
3. The performance warranty is not sold or promised separately. The performance warranty can be used as the criteria and basis for assuring quality only when the product warranty is valid.
4. Capacity test conditions: At an ambient temperature of 25°C±3°C, fully discharge the batteries, charge them to 100% SOC at a rate of 0.5C, discharge them to end-of-discharge SOC at a rate of 0.5C, and record the discharged energy.
5. To ensure the service life of battery cells, the ESSs must be connected to the FusionSolar Cloud to remotely upgrade the firmware on time. For ESS products

that are not connected to the FusionSolar Cloud, the warranty does not cover the battery cell damages caused by failure to upgrade the products on time.

2.2.2 Relationship Between Performance Warranty and Product Warranty

1. The performance warranty guarantees a service life of 5000 cycles (within the warranty period) and a capacity at the specified level at EOL.
2. The ESS warranty includes the product warranty and performance warranty. The performance warranty can be provided only when the product warranty meets the requirements. The performance warranty must be consistent across the 2-year basic warranty, 5-year advanced warranty, and 5-year extended warranty. The performance warranty expires when the warranty period expires. For example, if the 5-year product warranty expires and no extended warranty is purchased, the performance warranty will be void.
3. Extended warranty can be provided for the ESS, DCDC, and PCS as an entirety, which does not include the SACU. The extended warranty for the SmartLoggers in the SACUs, which are auxiliary products, can be purchased separately, and the maximum extended warranty period is the same as that of the main system.

2.3 Engineering Implementation

2.3.1 Technical Requirements Before Engineering Implementation

The technical requirements before engineering implementation must be observed to ensure the safety during product transportation and storage as well as smooth installation and operation. The requirements must be communicated to engineering contractors, which are responsible for the implementation of the requirements. When signing a contract with an end customer, the contractor is responsible for communicating relevant requirements and technical standards to the end customer, and instruct the customer to comply with the specifications and standards.

C&I ESS products are mainly sold through distributors. Distribution partners must pass the ESS product service certification and are responsible for communicating pre-sales technical requirements. Distribution partners must communicate technical requirements, including the transportation, storage, and charging, site selection, installation space, and foundation requirements to the customer, and ask the customer to implement the requirements. The preceding content must be included in the contract signed with channel partners. Product damages caused by failure to comply with the preceding requirements will not be covered by Huawei's warranty. The channel partner shall negotiate with the end customer to handle the problem.

2.3.2 Technical Guidance for Engineering and Installation

Huawei supervisors or supervisors certified by Huawei are mandatory for the installation and commissioning of C&I ESS products. The supervisors provide technical guidance for customers to complete installation, commissioning, and acceptance. The engineering is implemented by the customer's construction team. The warranty will be void if the ESSs are installed under the guidance of supervisors who are not authorized by Huawei.

Huawei's certified service partners can also provide installation supervision services for customers. If there are service personnel certified by Huawei in the project EPC or engineering construction team, such service personnel are allowed to provide supervision services if they can use Huawei's project management tools as required.

The ESS engineering management tool G-Toolkit must be used for engineering services. Use a browser to scan the following QR code to download the app.



2.4 C&I Smart String ESS Maintenance

2.4.1 Routine Maintenance Requirements

The ESS is a high-energy device and is dangerous. Huawei requires that the C&I ESSs be maintained by Huawei-certified professionals. Non-professional service personnel who are not certified by Huawei are not allowed to maintain the devices. Otherwise, the warranty will be void.

Only Huawei-certified service personnel are allowed to maintain C&I ESSs. Non-certified maintenance personnel are only allowed to view and manage the ESS operating information. They are not allowed to modify system parameters. Huawei encourages installers and customers to obtain Huawei PV service certification so that they can maintain C&I ESS products.

2.4.2 Parts Replacement Requirements

According to Huawei's warranty standard, Huawei provides spare parts for faulty components, but does not provide replacement service. The customer needs to contact Huawei-certified maintenance personnel for the replacement. Service personnel not certified by Huawei are allowed to replace parts.

2.4.3 Emergency Drill Requirements

To protect personal and property safety, Huawei requires channel partners and customers who have purchased Huawei C&I ESS products to perform emergency drills at least once a year according to Huawei's guidelines. The drills must be performed as required to ensure that evacuation and first aid measures can be effectively implemented in case of emergencies.

2.5 Customer Support (CS)

2.5.1 Extended Warranty Strategy

Warranty Service

A warranty is an assurance or guarantee that would repair or change the product purchased by a buyer if it breaks or malfunctions during the warranty period.

Distribution: During the warranty period, customers' technical issues are preferentially handled by VAPs. Huawei provides remote technical support services and spare parts services.

Project-based: During the warranty period, Huawei directly provides services for customers' technical issues.

If onsite services are needed, Huawei or its partners can provide paid onsite services. Warranty is not sold independently. It is sold together with products.

Extended Warranty Service

After the warranty period expires, a 5-year or 10-year warranty extension is available for ESS products. Extended warranty can be provided for the ESS, DCDC, PCS, and fire suppression module as an entirety, which does not include the SACU. The extended warranty for the SACUs, which are accessories, can be purchased separately, and the maximum extended warranty period is the same as that of the main system. If onsite services are needed, Huawei or its partners can provide paid onsite services.

In principle, the extended warranty period must be consecutive with the original standard warranty.

Quotation of the extended warranty = Quotation baseline x Number of devices. The following table lists the available standard extended warranty packages.

Table 2-6 Extended warranty periods for each region

Extended Warranty Period (Year)						
Category	Device	Europe	China	Middle East & Africa	Asia Pacific	Latin America
Devices	Smart String ESS	5	5	5	5	5
	DCDC					
	PCS					
	Fire suppression module					
Auxiliary products	SmartLogger	Identical warranty periods as those of the ESSs are supported.				

 **NOTE**

- The extended warranty for C&I ESSs can be purchased within the warranty period. If the extended warranty is purchased in addition to the basic warranty, the maximum total warranty period is 7 years. If the extended warranty is purchased in addition to the advanced warranty, the maximum total warranty period is 10 years.
- After the customer purchases the extended warranty, the maximum performance warranty period of ESSs is still 10 years.

2.5.2 Extended Warranty SLA

Table 2-7 describes the extended warranty service packages for C&I ESS products.

Table 2-7 Extended warranty services

Category	Service	Description
Remote technical support	Hotline service	24/7 real-time response
	Remote troubleshooting	9/5
	Online technical support	Technical information sharing and patch download
Software support	Software update authorization	Device firmware maintenance version (patch and beta versions)
Hardware support	Spare parts replacement	2BD-S: After approving the customer's spare parts service application, Huawei will send the replacement parts within two business days. The customer only needs to return the faulty parts to the place designated by Huawei within 15 business days after receiving the replacement parts from Huawei. If the faulty parts are not returned within the specified period, it is deemed that the customer purchases the parts at the list price. If any damage or loss occurs during the return via a courier, the customer shall be liable for the consequences.

 **NOTE**

- 24/7: Monday to Sunday, 00:00–24:00
- 12/7: Monday to Sunday, 8:00–20:00
- 9/5: business days, 9:00–18:00, excluding public holidays
- BD: business day
- 2BD-S: Huawei ships spare parts within two business days after confirming the necessity of hardware replacement and receiving the RMA information.
- The spare parts service delivery process, responsibilities, and restrictions must comply with the spare parts service requirements of the Enterprise BG.
- Extended warranty does not include onsite services, which need to be purchased separately.

2.5.3 Spare Parts Strategy

In principle, only faulty parts will be replaced. The replacement parts provided by Huawei may be new or repaired parts, and Huawei does not **replace spare parts free of charge**. Huawei provides remote technical instructions to guide the customer through parts replacement.

- Local organizations in the country where the project is delivered must have resources for warehousing, logistics, recycling, and disposal services to support the delivery of spare lithium batteries. Otherwise, warranty clauses are prohibited.
- It is recommended that an extra 1% of frequently used parts be sold together with devices for big projects. Quotation of spare parts is specified in the equipment contract. The HQ service personnel have provided the spare part list to the central spare parts center. The local planning and spare part contact person applies for spare parts from the central spare part warehouse based on the installed base. The application proportion is also provided by the central spare parts center. The return of faulty spare parts for repair or hardware replacement should be implemented based on warranty or extended warranty clauses. In addition, the EOM of spare parts and EOS of products must be considered.

2.5.4 Purchase of Auxiliary Materials

Table 2-8 Applying for auxiliary materials

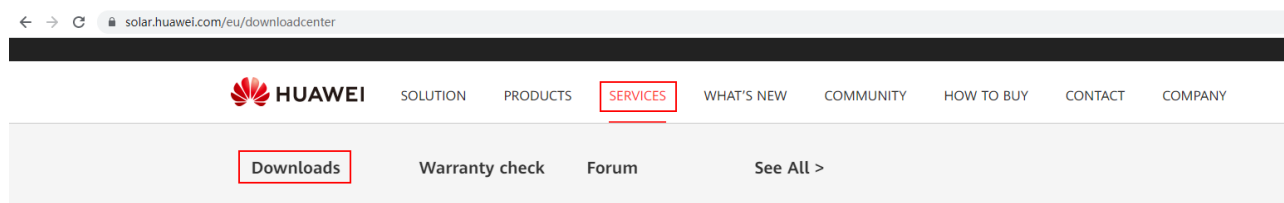
Category	Application Method
Materials in the auxiliary material package	Place an order as usual.
Materials with Huawei BOM codes but not included in the auxiliary material package	Apply for the accessories through the internal goods demand e-flow http://w3.huawei.com/s/iofa/lst/#/homePage . The frontline bears the expenses. These accessories are low-value materials and do not need to be registered.
Materials without Huawei BOM codes	Contact the LMT and ask the supplier to send the accessories.

3 Obtaining Product Documentation

- 3.1 FusionSolar Official Website
- 3.2 Support-e Website
- 3.3 Huawei Smart PV Community
- 3.4 FusionSolar App
- 3.5 Customer Service Chatbot
- 3.6 Websites of Channels

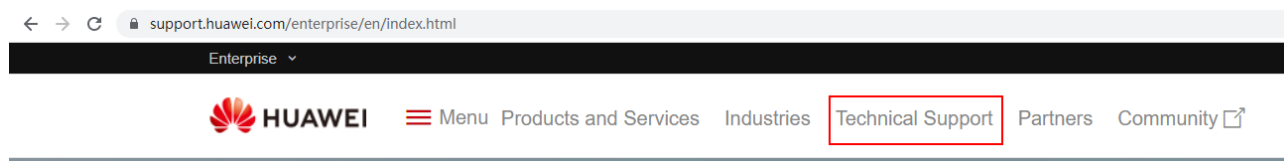
3.1 FusionSolar Official Website

Click <https://solar.huawei.com/eu> to go to the FusionSolar official website. Choose **SERVICES > Downloads**. Download the required documents by product.



3.2 Support-e Website

Step 1 Click <https://support.huawei.com/enterprise/en/index.html> to access the support-e website. Choose **Technical Support > Product Support > Digital Power > FusionSolar**.



Step 2 On the FusionSolar page, click a product to obtain documents.

The screenshot shows the Huawei FusionSolar website. At the top, there is a navigation bar with the Huawei logo and menu items: Menu, Products and Services, Industries, Technical Support, Partners, and Community. Below this is a banner for the "Digital Power Information Experience Center" with a "Click to Access >" button. A breadcrumb trail shows "Support > FusionSolar". The main content area is titled "FusionSolar Documentation" and lists three product categories:

- Smart PV Controller**
 - SUN2000
 - SUN2000MA
 - SUN8000
- Smart Array Controller**
 - SACU2000
- Smart PV Optimizer**
 - SUN2000P

----End

3.3 Huawei Smart PV Community

Click https://community.solar.huawei.com/en/events_new.html to access the smart PV community and choose Topic.

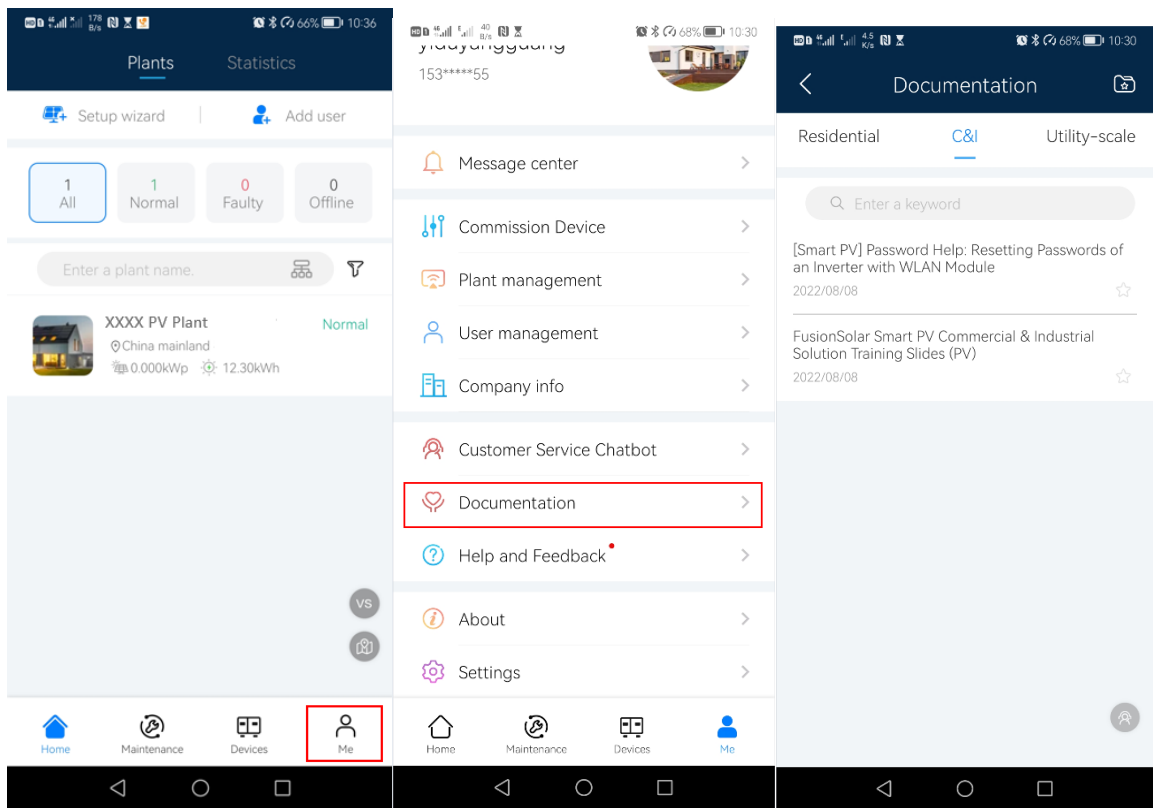
The screenshot shows the Huawei Smart PV Community website. The navigation bar includes the Huawei logo, "COMMUNITY", and menu items: Home, Training, Certification, Events, Rewards, Forums, and a language selector set to "English". The main heading is "Ongoing Events". Two event cards are visible:

- Thousand Digital Power Talents - Huawei Kenya Office...**
 - Time: (UTC + 3) 2022-12-05 08:00:00
 - Join Now button
- Thousand Digital Power Training - Huawei Nigeria ICT Trainin...**
 - Time: (UTC + 1) 2022-12-05 08:30:00
 - Join Now button

3.4 FusionSolar App

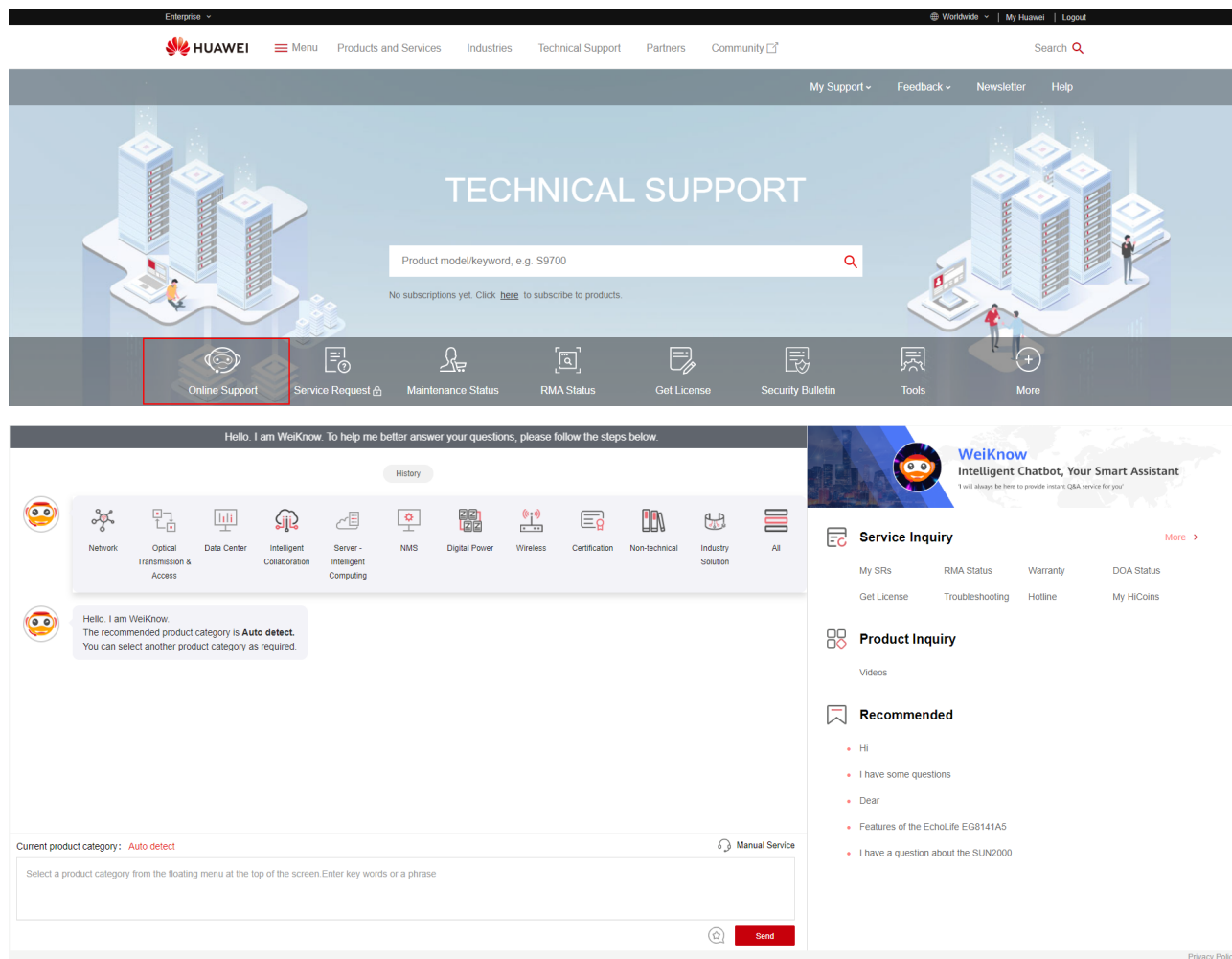
- **Documentation** is provided on the FusionSolar app. Product documents, FAQs, and installation tutorial videos are periodically pushed to installers and owners. Through self-learning, users can improve their product capabilities for efficient site deployment, commissioning, and maintenance. In addition, the number of service tickets and the cost of communication with customers can be reduced.
- To improve user satisfaction and enhance the loyalty of installers, frontline personnel are encouraged to work with VAPs to provide customers with diversified technical documents, such as quick reference guides, training screen recordings, and hands-on videos. Materials in local languages are recommended.

Figure 3-1 Documentation



3.5 Customer Service Chatbot

The Huawei Support website and Huawei Smart PV official account on WeChat provide a customer service chatbot to answer the questions of users.



3.6 Websites of Channels

It is recommended that Huawei's documentation packages for external users be sent to channel partners so that they can provide the document packages or download links to end customers.

4 Value-Added Services

4.1 Value-Added Service Description

4.2 48H Onsite Technical Support

4.3 Installation Supervision Service

4.4 Professional ESS Safety Inspection Service

4.1 Value-Added Services

The 48H onsite support service and professional ESS safety inspection service are value-added services and need to be quoted separately.

4.2 48H Onsite Technical Support

Table 4-1 Value-added maintenance services

Category	Service	Description	Region
Onsite technical support	Onsite troubleshooting 7x10x2CD	If a fault occurs on a device within the warranty period and the fault cannot be located remotely , the region will arrange onsite service within 2 CDs after receiving the onsite troubleshooting request from the service center.	The service is available in the China Region only.

NOTE

- 10/7: Monday to Sunday, 08:00–24:00
- CD: Calendar Day

Onsite troubleshooting 7x10x2CD

- Remote troubleshooting is preferred. If remote troubleshooting does not work, Huawei shall assign experienced technical support engineers to customer's site within the timeframe specified in the service agreement to assist with onsite fault diagnosis, development of the recovery scheme, and fault rectification. The onsite engineers will not repair or replace faulty parts or provide maintenance tools.
- Huawei provides onsite troubleshooting services according to the SLA specified in the agreement.

4.3 Installation Supervision Service

In the following table, Huawei refers to Huawei or its contractors or authorized service partners, and customer refers to the party responsible for the construction.

Category	Item	Action	Reference Standard	Execution Time	Responsible party	Supporter
Sending documentation	Sending product documentation	Send the user manual, quick installation guide, and material storage quick reference guide via email.	Obtain the customer contact information from the customer line, send a formal email to the customer and CC to the customer line to notify the customer of the storage requirements and risks.	Before device arrival	Huawei	Customer
Plant design, planning, and survey	Technical disclosure	Provide technical support based on the products.	Provide reasonable suggestions on plant site selection, foundation design requirements, safety standards, and monitoring and management solutions.	Before device arrival	Customer	Huawei
Goods inspection on arrival	Acceptance inspection on arrival	Inspect the goods on arrival.	Shipping list	On arrival	Customer	Huawei
Installation training	Training	Training before installation	Provide training on the installation	Before kickoff	Huawei	Customer

Category	Item	Action	Reference Standard	Execution Time	Responsible party	Supporter
			methods, installation tools, manual skills, and commissioning methods.			
Installation guide	Technical guidance	Onsite technical guidance	Provide technical guidance for the installation of Huawei products during project construction, but will not be responsible for implementation.	During implementation	Huawei	Customer
Device commissioning	Commissioning	Device commissioning and power-on	Power on and commission the auxiliary system	During implementation	Huawei	Customer
Acceptance inspection	Acceptance inspection	Acceptance upon completion	Connect the equipment to the power grid according to Huawei's acceptance inspection manual, check the items one by one to ensure that the system is running properly, and sign the completion report.	During implementation	Huawei	Customer
Transfer-to-maintenance training	Training	Transfer-to-maintenance training	Provide onsite customer training and specify the maintenance requirements for the transfer-to-maintenance stage.	After grid connection	Huawei	Customer

4.4 Professional ESS Safety Inspection Service

- Application scenario: During the warranty period or extended warranty period, Huawei provides onsite inspection services to ensure that system issues are resolved in a timely manner.
- During the warranty period or extended warranty period, it is mandatory to provide the professional inspection service once a year for each project. The details are subject to the contract.

4.4.1 ESS

Category	Item	Action	Reference Standard	System Power-Off Required?	Maintenance Frequency
Intelligent inspection	Proactive inspection	The system performs proactive inspection and generates health reports, which will be analyzed by professional engineers.	After the ESS is connected to the management system, the intelligent inspection function checks the health status of the ESS, identifies risks such as internal short circuits, abnormal voltage, abnormal temperature, and abnormal battery cells, and generates reports. In this way, the customers can eliminate safety risks before they occur.	No	Once a month
Battery check	Battery SOH check	Test the capacity.	Analyze the battery SOH through tests and provide professional reports.	No	Once a year
Safety check	System safety	Battery system Fire suppression system Air conditioning system Monitoring system	Engineers check the ESS onsite based on the inspection plan. The inspection items include changes in the installation environment and product appearance, reliability of device installation and cable connections, and operating status of the ESS. Engineers need to handle safety risks in a timely manner, and deliver a safety inspection report, and provide professional rectification and maintenance suggestions.	Yes	Once a year
Training	Training and	Safety training	ESS O&M experts communicate with the	No	Once a year

Category	Item	Action	Reference Standard	System Power-Off Required?	Maintenance Frequency
	certification	O&M training	plant O&M team onsite, and provide training for the team, including theoretical training and practices, to help the O&M personnel pass the exam and obtain the ESS safety O&M certificate.		
Emergency assurance		Natural disasters Safety incidents	When the power plant experiences a natural disaster or safety accident, engineers go to the site within 24 hours after receiving a request to ensure normal equipment operation or prevent risks from escalating, thereby ensuring the safety of life and property of the power plant.	Yes	Twice a year

4.4.2 PCS

Category	Item	Action	Reference Standard	System Power-Off Required?	Maintenance Frequency
Intelligent inspection	Proactive inspection	The system performs proactive inspection and generates health reports, which will be analyzed by professional engineers.	After the ESS is connected to the management system, the intelligent inspection function checks the health status of the PCS, identifies risks such as internal short circuits, abnormal voltage, and abnormal temperature, and generates reports. In this way, the customers can eliminate safety risks before they occur.	No	

5 Responsibility Matrix

R: Responsible party

S: Supporter. By default, Huawei provides remote support.

No.	Item	Provider	
		Huawei	Channel/Customer
1	Planning		
1.1	Planning and preliminary solution for the energy storage plant	S	R
2	Survey		
2.1	Survey, mapping, and investigation of the site for the energy storage plant	S	R
3	Design		
3.1	Low-level design and drawings of the plant	S	R
4	Logistics		
4.1	From Huawei warehouse to channel warehouse or power plant	R	S
4.2	From channel warehouses to power plant	/	R
5	Storage		
5.1	Store the devices according to the requirements in the user manual.	S	R
6	Device installation		
6.1	Transport the devices from the storage site to the installation site.	-	R
6.2	Hoisting	S	R
6.3	Hoist and install devices, such as battery packs, PCSs, DCDCs, PSUs, and	S	R

No.	Item	Provider	
		Huawei	Channel/Customer
	SmartACUs.		
6.4	Repair paint damages caused during construction.	S	R
7	Supply and installation of auxiliary materials and cables		
7.1	Supply external AC and DC power cables to the battery cabinets, PCSs, and DCDCs.	-	R
7.2	Connect AC and DC power cables between devices such as the battery cabinets, PCSs, DCDCs, and SmartACUs, ground cables, cables to battery copper bars, network cables, and optical fiber communications cables, and install the solenoid valves on the fire cylinders, and seal the cable holes.	S	R
8	Checking before power-on		
8.1	Check the insulation, cables, ground connections, whether foreign matters are found in the cabinets, positions of circuit breakers inside the cabinets, and cabinet doors.	S	R
9	Auxiliary power supply power-on check		
9.1	Power on the auxiliary power supply.	S	R
9.2	Check the AC voltage phase sequence.	S	R
9.3	Check the PSU running status.	S	R
9.4	Check and test the status of the fire suppression system (remove the 12 V green terminal and restore it).	S	R
9.5	Check whether an alarm is generated. If an alarm is generated, handle the alarm according to the troubleshooting requirements.	S	R
10	Commissioning		
10.1	Perform equipment commissioning.	S	R
10.2	Perform joint system commissioning.	S	R
10.3	Perform charge and discharge tests.	S	R
10.4	Sign the completion report.	S	R

No.	Item	Provider	
		Huawei	Channel/Customer
11	Grid connection acceptance inspection		
11.1	Third-party grid connection test	S	R
11.2	Grid connection acceptance inspection report	-	R
12	Remote support		
12.1	Contact Huawei service hotline and provide fault information.	S	R
12.2	Provide remote support, receive customer service requests through the hotline, and track and close the requests in the system.	R	S
12.3	Perform remote fault diagnosis and locating.	R	S
13	Spare parts		
13.1	Provide spare parts for Smart String ESS products.	R	S
13.2	Remove faulty parts and install replacement parts.	S	R
Supervision and Onsite Services (Optional)			
14	Onsite support		
14.1	Onsite technical support	R	S
15	Supervision service		
15.1	Sending documentation	R	S
15.2	Goods inspection on arrival	S	R
15.3	Installation guide	S	R
15.4	Device commissioning	R	S
15.5	Acceptance inspection	R	S
15.6	Installation training and transfer-to-maintenance training	R	S
16	Training		
16.1	Training on product knowledge, installation, commissioning, maintenance, and troubleshooting	R	S

6 Disclaimer

- All the preceding support services apply only to Huawei products. Huawei's service commitment does not cover hardware devices beyond the contract.
- Huawei's service commitment does not cover widely used vulnerable parts and consumables, such as cables.
- If Huawei's inability to fulfill the service commitment within the committed timeframe due to non-Huawei reasons, Huawei shall be exempted from the responsibilities and related compensations. If onsite service is required, the travel time should not be counted as part of the timeframe specified in the SLA.
- Huawei's service commitment does not cover the following types of damages to Huawei devices:
 - Damages to Huawei devices due to force majeure, such as natural disasters, fires, and wars
 - Damages to Huawei devices due to normal wear and tear
 - Direct damages caused by failure to comply with the written requirements on the operating environment or external electrical specifications
 - AC or DC connectors broken, damaged, or burnt due to the poor engineering quality of the connectors
 - Damages caused by lightning due to improper system design
 - Large-scale damages to Huawei hardware or data due to customer's negligence, improper operation, or intentional sabotage
 - Damages caused by customer's failure to operate Huawei products in accordance with the user manuals
 - ESS performance degradation caused by leaving idle batteries uncharged for 6 months or longer, or battery cell damages caused by leaving batteries uncharged for extended periods, which will not be covered by the warranty
 - Damages caused by improper operation or failure to comply with the temperature requirements during transportation or operation
 - Damages caused by maintenance or other services performed by personnel not authorized by Huawei
 - System damages caused by improper operations of a third party or customer, including system migration and installation performed in violation of Huawei's requirements, and adjustment, alteration, and removal of identification signs performed in violation of Huawei's requirements
 - System damages caused by customer's infrastructure problems

- Battery cell damages caused by outdated firmware due to the customer's failure to connect the ESS to Huawei's management system, which will not be covered by the warranty