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Fusionsolar

Residential Smart PV Solution



ABOUT FUSIONSOLAR



921

Billion kWh
Green Power
Generated



405

Million Tons of
CO₂ Emissions
Reduced



554

Million Equivalent
Trees Planted



1000+ Global Partners

300+

Sales
Partners

70+

Service
Partners

600+

Certified
Installers



160+ Global Technical Support and
Spare Parts Centers

3

Technical
Support
Centers

9

Spare Parts
Operation
Centers

16

Spare Parts
Repair
Centers

130+

National Spare
Parts Logistics
Centers



17 Global Research
Centers

5

Competence
Centers

12

R&D Centers

10%+

of Revenue on
R&D

*Based on data available as of 2023.8

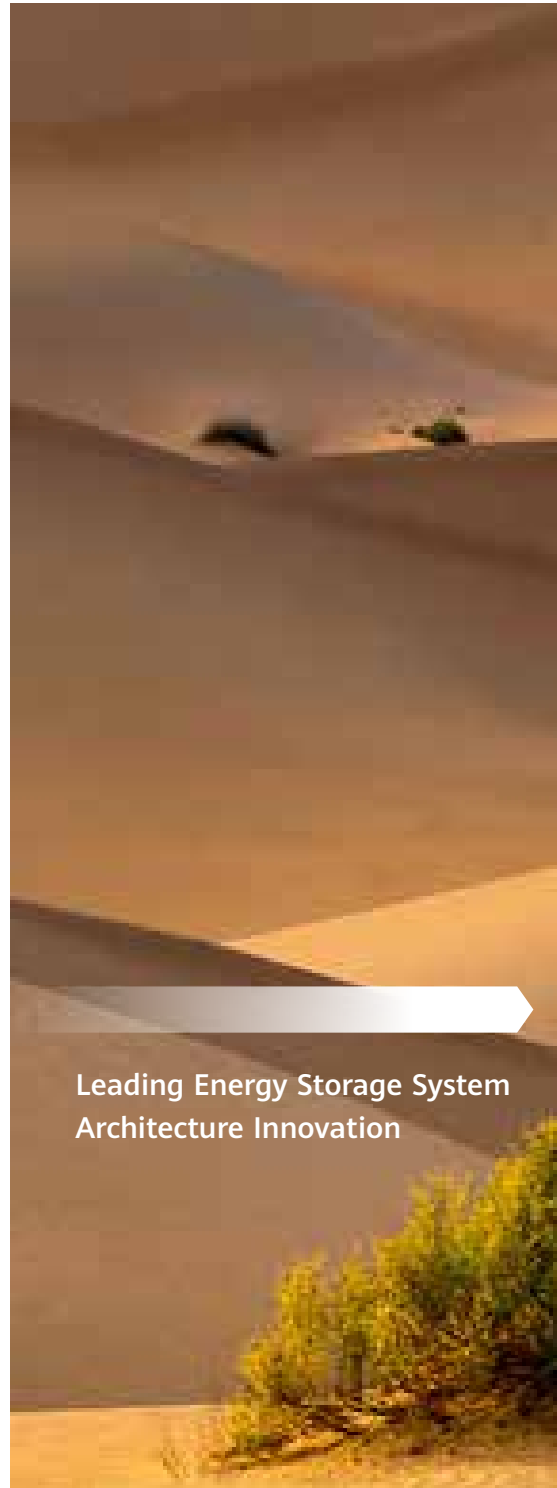




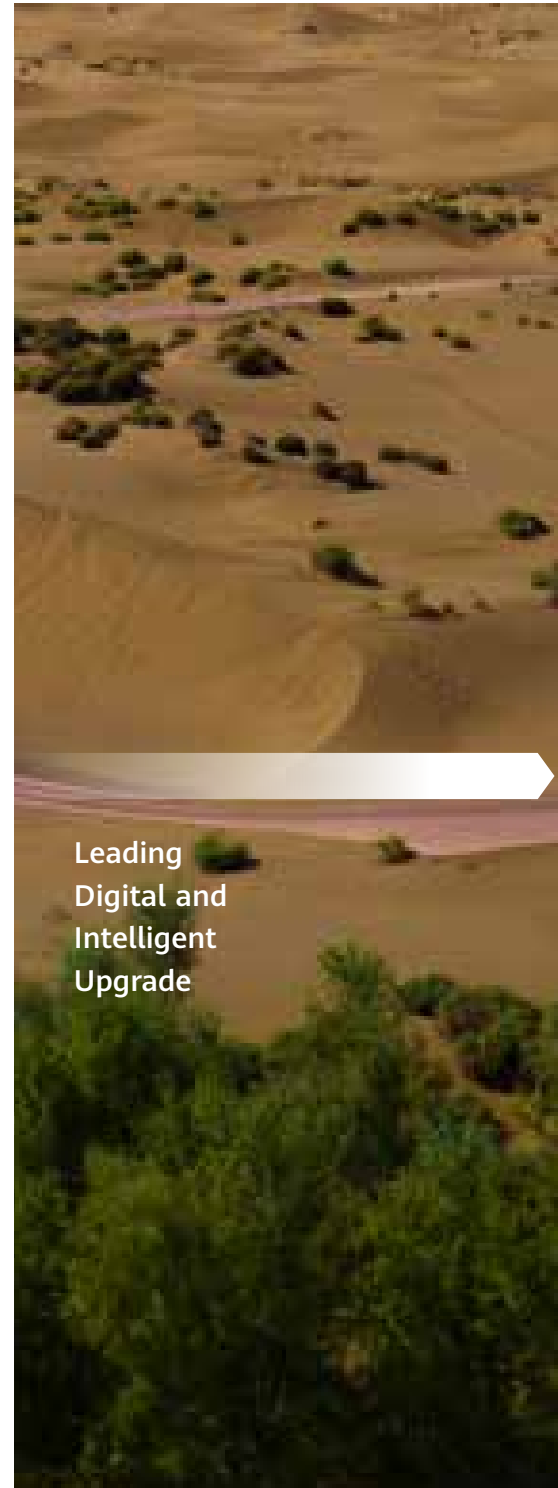
LEADING INNOVATIONS FOR THE MOST VALUABLE CREATIONS



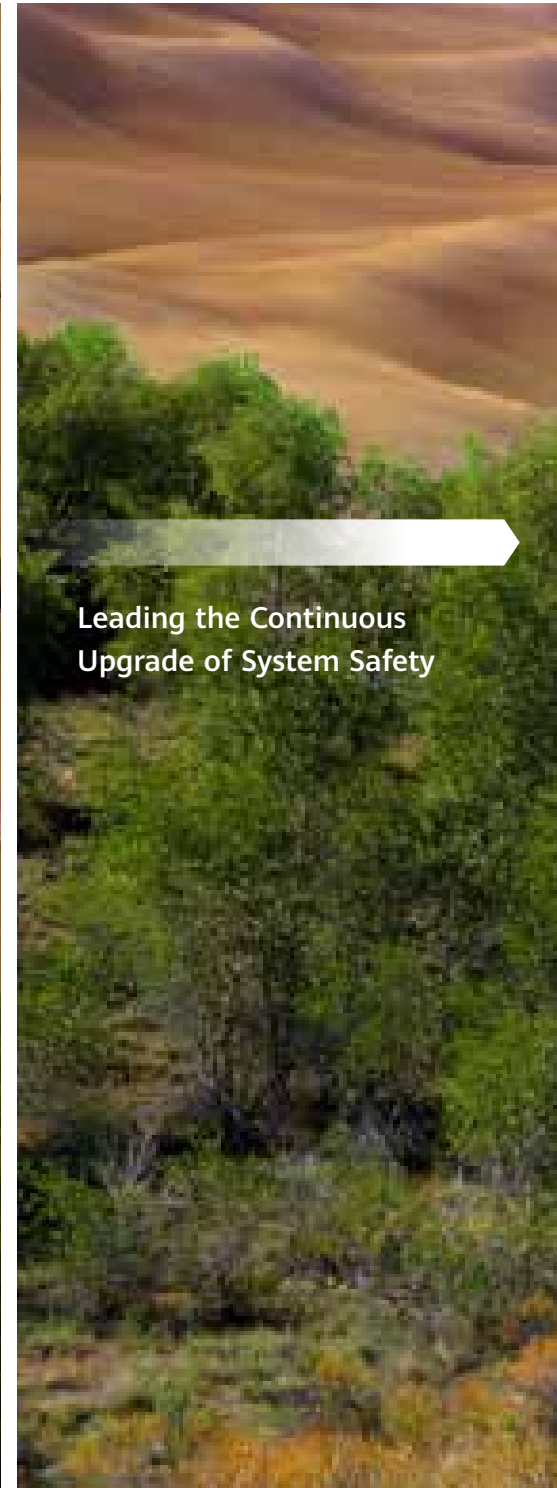
Leading String Inverters into the Mainstream



Leading Energy Storage System Architecture Innovation



Leading Digital and Intelligent Upgrade



Leading the Continuous Upgrade of System Safety



Leading Smart Grid-connection

A HOME THAT ALWAYS SHINES

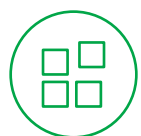
Our Mission

FusionSolar Residential Smart PV provides a one-fits-all solution from power generation, storage, to charging and power consumption. We always maximize efficiency and safety to power more households for a better, smarter, and more sustainable future

By the end of 2023,

FusionSolar has provided clean energy for **3.3** million homes in over **170** countries





MAKE SMART PV ACCESSIBLE TO EVERY HOME

For Artists

“ It's better to add a touch of green to the earth than to the canvas. ”



For the Seniors

“ I may be grey, but my power is green. ”



For Professionals

“ Green is the new black. ”



For Young People

“ Green energy gets you energized. ”



For Homeowners

“ Visibility and control of your energy on the go. ”



For Children

“ Future generations deserve a greener planet. ”





A HOME THAT ALWAYS SHINES

C O N T E N T S

01

SOLUTION
VALUE

P01

02

PRODUCT
COLLECTION

P13

03

SERVICE

P55

04

CASE
STUDY

P61





01

SOLUTION VALUE



FUSIONSOLAR RESIDENTIAL SMART PV SOLUTION

Smart Energy Controller

- SUN2000-2/3/3.68/4/4.6/5/6KTL-L1 (Single-Phase)
- SUN2000-3/4/5/6/8/10KTL-M1 (Three-Phase)
- SUN2000-5/6/8/10/12K-MAP0 (Three-Phase)
- SUN2000-12/15/17/20/25KTL-M5 (Three-Phase)
- SUN2000-12/15/17/20/25K-MB0 (Three-Phase)

Smart Module Controller

- SUN2000-450W-P2
SUN2000-600W-P
- MERC-1100W-P
MERC-1300W-P

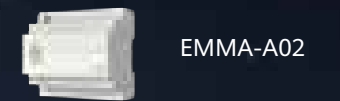
Smart String ESS

- LUNA2000-7/14/21-S1
- LUNA2000-5/10/15-S0

SmartGuard

- SmartGuard-63A-S0 (Single-Phase)
- SmartGuard-63A-T0/AUTO (Three-Phase)

Energy Management Assistant



FusionSolar Smart PVMS & App



Smart Charger

- SCharger-7KS-S0 (Single-Phase)
- SCharger-22KT-S0 (Three-Phase)

*Available in specific regions only

Smart Module
Controller

Smart Charger

SmartGuard

Smart Energy
Controller

Smart
String ESS

FusionSolar
App



FUSIONSOLAR RESIDENTIAL SMART PV SOLUTION





SHINE ON ACTIVE SAFETY

System Safety is always our priority. FusionSolar Residential Smart PV Solution meets the highest industry standard to ensure safety with advanced technologies applied in optimizers, inverters, and energy storage system.

Safety On the Rooftop

Making DC Safety Protection a Mainstream Feature

Rapid shutdown, safe voltage



Shutdown Time



Voltage

Meets NEC 2017&2020

AFCI, active arc protection



TÜV Certification

Safety Under the Rooftop

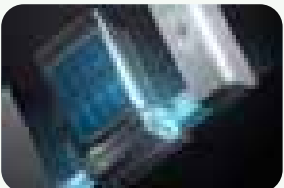
Unique 5-layer ESS Safety Protection in the Industry



Structural Protection



Emergency Protection



Electrical Protection



Cell-level Protection



Active Protection





SHINE ON FULL JOURNEY CONVENIENCE

ONE-FITS-ALL

One Supplier

More business opportunities and lower time costs

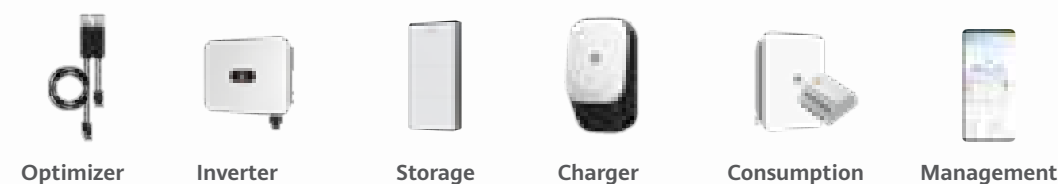
One Solution

Extremely quick and easy installation with less effort

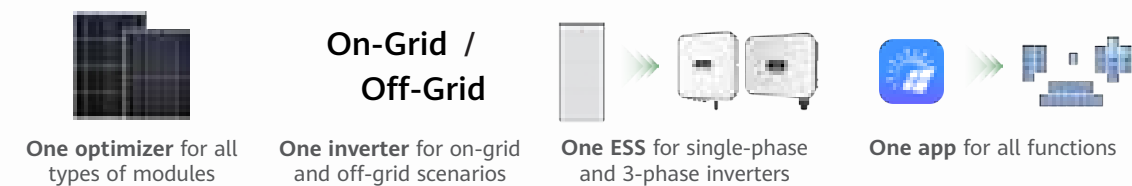
One Service Window

Reliable digital management and stress-free O&M

One supplier for all products

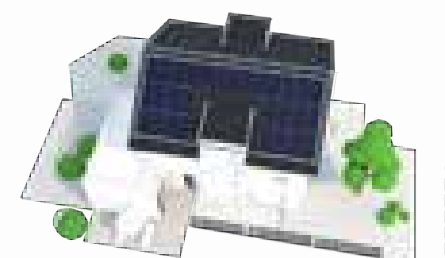


One solution for all scenarios



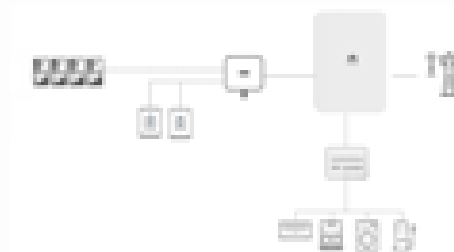
Easier Purchase, Wider Utilization

Smart Design 2.0



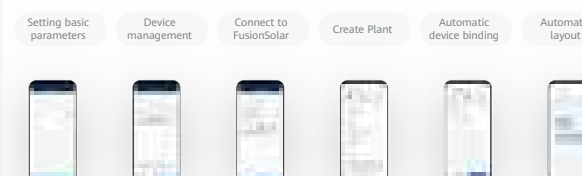
Design Easily, Sell Professionally

SmartGuard for whole home backup



0 Modification for Whole Home Backup

Commissioning with setup assistant



One-stop Commissioning with Setup Assistant

Remote diagnosis

Disconnection detection



PV panel fault locating



Real-time data

Rapid data refreshing



Intelligent Management without Site Visit



SHINE ON ENERGY-USING PROSPECT

FusionSolar Residential Smart PV Solution provides stable and reliable power and supports seamless on-grid/off-grid switchover



Higher energy yield



More energy storage



Seamless switchover

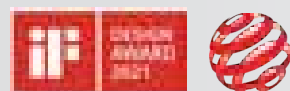


Intelligent management



Attractive design

The design of the product appearance integrates natural elements with technologies. All product outlines, colors, and styles are consistent. Smart charger and FusionSolar APP have won the iF Product Design Award.



A modern, multi-story house is shown at night. The house has large glass windows and doors, some of which are illuminated from within, showing interior furniture and a television. A car is parked on the left side of the house. The sky is dark with a crescent moon and stars visible. A large green rectangular overlay is positioned in the center of the image, containing the number '02' in large white font and the text 'PRODUCT COLLECTION' in smaller white font.

02

PRODUCT
COLLECTION

SMART ENERGY CONTROLLER

Model: SUN2000-2/3/3.68/4/4.6/5/6KTL-L1



Active Safety
Active Arcing Protection



Higher Yields
Up to 30% More Energy
with Optimizer



Battery Ready
Plug & Play, Whole-house
Power Backup

SUN2000-2/3/3.68/4/4.6/5/6KTL-L1 Technical Specification

Technical Specification	SUN2000 -2KTL-L1	SUN2000 -3KTL-L1	SUN2000 -3.68KTL-L1	SUN2000 -4KTL-L1	SUN2000 -4.6KTL-L1	SUN2000 -5KTL-L1	SUN2000 -6KTL-L1
Efficiency							
Max. efficiency	98.2%	98.3%	98.4%	98.4%	98.4%	98.4%	98.4%
European weighted efficiency	96.7%	97.3%	97.3%	97.5%	97.7%	97.8%	97.8%
Input (PV)							
Recommended max. PV power ¹	3,000 Wp	4,500 Wp	5,520 Wp	6,000 Wp	6,900 Wp	7,500 Wp	9,000 Wp
Max. input voltage	600 V						
Startup voltage	100 V						
MPPT operating voltage range	90–560 V						
Rated input voltage	360 V						
Max. input current per MPPT	12.5 A						
Max. short-circuit current	18 A						
Number of MPP trackers	2						
Max. inputs per MPP tracker	1						
Input (DC Battery)							
Compatible battery	LUNA2000-5/10/15-S0, LUNA2000-7/14/21-S1 ¹						
Operating voltage range	350–560 V DC						
Max. operating current	15 A						
Max. charge power	5,000 W						
Max. discharge power	2,200 W	3,300 W	3,680 W	4,400 W	4,600 W	5,000 W	5,000 W
Output (On Grid)							
Grid connection	Single-phase						
Rated output power	2,000 W	3,000 W	3,680 W	4,000 W	4,600 W	5,000 W	6,000 W
Max. apparent power	2,200 VA	3,300 W	3,680 W	4,400 VA	5,000 VA	5,500 W	6,000 VA
Rated output voltage	220 V AC/230 V AC/240 V AC						
Rated AC grid frequency	50 Hz/60 Hz						
Max. output current	10 A	15 A	16 A	20 A	23 A	25 A	27.3 A
Adjustable power factor	0.8 leading ... 0.8 lagging						
Max. total harmonic distortion	≤ 3%						
Backup power output	Yes (via Backup Box - B0, SmartGuard-63A-S0)						
Protection Feature							
Anti-islanding protection	Yes						
DC reverse polarity protection	Yes						
Insulation monitoring	Yes						
DC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11						
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11						
Residual current monitoring	Yes						
AC overcurrent protection	Yes						
AC short-circuit protection	Yes						
AC overvoltage protection	Yes						
Over-heat protection	Yes						
Arc fault protection	Yes						
Battery charging from grid	Yes						
General Specification							
Operating temperature range	–25°C to +60°C (Derated above 45°C @ Rated output power)						
Relative operating humidity	0%–100% RH						
Operating altitude	0–4,000 m (Derated above 2,000 m)						
Cooling	Natural convection						
Display	LED indicators; integrated WLAN + FusionSolar app						
Communication	RS485, WLAN via inverter built-in WLAN module, Ethernet via Smart Dongle-WLAN-FE (Optional); 4G/3G/2G via Smart Dongle-4G (Optional)						
Weight (incl. mounting brackets)	12.0 kg (26.5 lb)						
Dimensions (incl. mounting brackets)	365 mm x 375 mm x 156 mm						
IP rating	IP65						
Nighttime power	< 2.5 W						
Optimizer Compatibility							
DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P						
Standards Compliance (More Available Upon Request)							
Safety	EN/IEC 62109-1, EN/IEC 62109-2						
Grid connection standards	G98, G99, EN 50549-1, CEI 0-21, VDE-AR-N-4105, AS 4777.2, C10/11, ABNT, UTE C15-712, RD 1699, TOR D4, IEC61727, IEC62116						

^{*1} The inverter max input PV power is 10,000 Wp when long strings are designed and fully connected with optimizers.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART ENERGY CONTROLLER

Model: SUN2000-3/4/5/6/8/10KTL-M1
(High Current Version)



Active Safety
AFCI Active Arcing
Protection



Higher Yields
Up to 30% More Energy
with Optimizer ¹



Battery Ready
Plug & Play Battery
Port ²

SUN2000-3/4/5/6/8/10KTL-M1 (High Current Version) Technical Specification

Technical Specification	SUN2000 -3KTL-M1	SUN2000 -4KTL-M1	SUN2000 -5KTL-M1	SUN2000 -6KTL-M1	SUN2000 -8KTL-M1	SUN2000 -10KTL-M1
Efficiency						
Max. efficiency	98.2%	98.3%	98.4%	98.6%	98.6%	98.6%
European weighted efficiency	96.7%	97.1%	97.5%	97.7%	98.0%	98.1%
Input (PV)						
Recommended max. PV power ¹	4,500 Wp	6,000 Wp	7,500 Wp	9,000 Wp	12,000 Wp	15,000 Wp
Max. input voltage ²	1,100 V					
Operating voltage range ³	140–980 V					
Startup voltage	200 V					
Rated input voltage	600 V					
Max. input current per MPPT	13.5 A					
Max. short-circuit current	19.5 A					
Number of MPP trackers	2					
Max. input number per MPP tracker	1					
Input (DC Battery)						
Compatible battery	LUNA2000-5/10/15-S0, LUNA2000-7/14/21-S1					
Operating voltage range	600–980 V					
Max. operating current	16.7 A					
Max. charge power	10,000 W					
Max. discharge power	3300 W	4400 W	5500 W	6600 W	8800 W	10000 W
Output (On Grid)						
Grid connection	Three-phase					
Rated output power	3000 W	4000 W	5000 W	6000 W	8000 W	10,000 W
Max. apparent power	3300 VA	4400 VA	5500 VA	6600 VA	8800 VA	11,000 VA ⁴
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 V AC, 3W/N+PE					
Rated AC grid frequency	50 Hz/60 Hz					
Max. output current	5.1 A	6.8 A	8.5 A	10.1 A	13.5 A	16.9 A
Adjustable power factor	0.8 leading ... 0.8 lagging					
Max. total harmonic distortion	≤ 3%					
Output (Off Grid)						
BackupBox	BackupBox-B1					
Max. apparent power	3000 VA	3300 VA	3300 VA	3300 VA	3300 VA	3300 VA
Rated output voltage	220 V/230 V					
Max. output current	13.6 A	15 A	15 A	15 A	15 A	15 A
Power factor range	0.8 leading ... 0.8 lagging					
Protection Feature						
Input-side disconnection device	Yes					
Anti-islanding protection	Yes					
DC reverse polarity protection	Yes					
Insulation monitoring	Yes					
DC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11					
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11					
Residual current monitoring	Yes					
AC overcurrent protection	Yes					
AC short-circuit protection	Yes					
AC overvoltage protection	Yes					
Arc fault protection	Yes					
Ripple receiver control	Yes					
Battery charging from grid	Yes					
General Specification						
Operating temperature range	–25°C to +60°C (–13°F to +140°F)					
Relative operating humidity	0%–100% RH					
Max. operating altitude	4,000 m (13,123 ft.) (Derated above 2000 m)					
Cooling	Natural convection					
Display	LED Indicators; Integrated WLAN + FusionSolar app					
Communication	RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE; 4G/3G/2G via Smart Dongle-4G (Optional)					
Weight (incl. mounting brackets)	17 kg (37.5 lb)					
Dimensions (incl. mounting brackets)	525 mm x 470 mm x 146.5 mm (20.7 in. x 18.5 in. x 5.8 in.)					
IP rating	IP65					
Nighttime power	< 5.5 W					
Optimizer Compatibility						
DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P					
Standards Compliance (More Available Upon Request)						
Safety	EN/IEC 62109-1, EN/IEC 62109-2, IEC 62116					
Grid connection standards	G98, G99, EN 50438, CEI 0-21, VDE-AR-N-4105, AS 4777, C10/11, ABNT, UTE C15-712, RD 1699, TOR D4, NRS 097-2-1, IEC61727, IEC62116, DEWA					

^{*1} The inverter max input PV power is 20,000 Wp when long strings are designed and connected to SUN2000-450W-P2 or SUN2000-600W-P power optimizers.

^{*2} The max. input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter.

^{*3} Any DC input voltage beyond the operating voltage range may result in inverter malfunction.

^{*4} C10/11: 10,000 VA

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART ENERGY CONTROLLER

Model: SUN2000-12/15/17/20/25K-MB0



Active Safety
AFCI Active Arcing
Protection



Higher Yields
Up to 30% More Energy
with Optimizer ¹



Battery Ready
2 Battery Terminals;
Compatible with LUNA2000-S0

SUN2000-12/15/17/20/25K-MB0 Technical Specification

Technical Specification ¹	SUN2000-12K-MB0	SUN2000-15K-MB0	SUN2000-17K-MB0	SUN2000-20K-MB0	SUN2000-25K-MB0
Efficiency					
Max. efficiency	98.4%	98.4%	98.4%	98.4%	98.4%
European weighted efficiency	97.9%	98.0%	98.1%	98.1%	98.2%
DC Input					
Recommended max. PV power	18,000 Wp	22,500 Wp	22,500 Wp	30,000 Wp	37,500 Wp
Max. input voltage ²	1,100 V				
Max. input current per MPPT	30 A (two strings) / 20 A (single string)				
Max. short-circuit current	40 A				
Start-up voltage	200 V				
MPPT operating voltage range ³	200 V~1000 V				
Full-load MPPT voltage range	370 V~800 V	410 V~800 V	440 V~800 V	480 V~800 V	530 V~800 V
Rated input voltage	600 V				
Max. number of inputs	4				
Number of MPP trackers	2				
Smart String Energy Storage System Terminal					
Compatible Smart String ESS	LUNA2000-5/10/15-S0, LUNA2000-7/14/21-S1				
Number of terminals	2				
Max. charging power	21 kW (Single string) / 25 kW (Two strings)				
Max. discharge power	13.2 kW	16.5 kW	18.7 kW	22.0 kW	25.0 kW
Max. operating current	26.25 A (per string)				
Operating voltage range	600 V ~ 980 V				
Output					
Rated output power	12,000 W	15,000 W	17,000 W	20,000 W	25,000 W
Max. apparent power	13,200 VA	16,500 VA	18,700 VA	22,000 VA	27,500 VA
Max. active power (cosφ = 1)	13,200 W	16,500 W	18,700 W	22,000 W	27,500 W
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 Vac, 240 V AC/415 V AC; 3 W/N + PE				
Rated output current	18.2 A/380 V AC	22.8 A/380 V AC	25.8 A/380 V AC	30.4 A/380 V AC	38.0 A/380 V AC
	17.3 A/400 V AC	21.7 A/400 V AC	24.5 A/400 V AC	28.9 A/400 V AC	36.1 A/400 V AC
	16.7 A/415 V AC	20.9 A/415 V AC	23.7 A/415 V AC	27.8 A/415 V AC	34.8 A/415 V AC
Max. output current	20.2 A/380 V AC	25.2 A/380 V AC	28.6 A/380 V AC	33.6 A/380 V AC	42.0 A/380 V AC
	19.1 A/400 V AC	23.9 A/400 V AC	27.1 A/400 V AC	31.9 A/400 V AC	39.9 A/400 V AC
	18.5 A/415 V AC	23.1 A/415 V AC	26.1 A/415 V AC	30.8 A/415 V AC	38.5 A/415 V AC
Rated AC grid frequency	50 Hz/60 Hz				
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3%				
Feature & Protection					
Overvoltage category	PV II/AC III				
Input-side disconnection device	Yes				
Anti-islanding protection	Yes				
AC over-current protection	Yes				
DC reverse-polarity protection	Yes				
DC surge protection	TYPE II				
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11				
DC insulation resistance detection	Yes				
Residual current monitoring unit	Yes				
Arc fault protection	Yes				
General Specification					
Operating temperature range	-25 °C to +60 °C (-13 °F to 140 °F)				
Relative humidity	0 % RH~100 % RH				
Max. operating altitude	4,000 m (13,123 ft.) (Derated above 2,000 m)				
Cooling	Smart air cooling				
Display	LED indicators, Integrated WLAN + FusionSolar APP				
Communication	RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G/3G/2G via Smart Dongle-4G (Optional); EMMA (Optional)				
Weight	21 kg				
Dimensions (W x H x D)	546 mm x 460 mm x 228 mm (21.5 x 18.1 x 9.0 inch)				
Protection level	IP66				
Max. number of paralleled unit (with Smart String ESS)	3				
Optimizer Compatibility					
Compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P, MERC-1100W-P, MERC-1300W-P				
Standards Compliance (More Available Upon Request)					
Certificates	EN/IEC62109-1, EN/IEC62109-2				
Grid connection standards	IEC61727, IEC62116, IEC61683, EN50530, ABNT NBR 16149/16150, MEA/PEA, G99, IRR-DCC-MV/IRR-TIC, Philippine Grid Code Resolution No. 07, NRS 097-2-1, EN50549-1, VDE4105, UTE15-712-1/VFR 2019, UNE217002, NTS631, RD244(UNE217001), PPDS, ROGA, TOR Erzeuger, CEI 0-21:2020-12 V1, CEI-016, C10/C11, EN50549-2, VDE4110				

^{*1} For Thailand, only SUN2000-12K-MB0 & SUN2000-15K-MB0 & SUN2000-20K-MB0 are available.

^{*2} The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter.

^{*3} Any DC input voltage beyond the operating voltage range may result in inverter malfunction.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART ENERGY CONTROLLER

Model: SUN2000-5/6/8/10/12K-MAP0



Asymmetric Load
Three-phase asymmetric output
200% overload



Active Safety
AFCI & RSD (with optimizer)
Connector temperature detection



Future Ready
LUNA S0 or S1
Whole home backup (with
SmartGuard)

SUN2000-5/6/8/10/12K-MAP0 Technical Specification

Technical Specification ¹	SUN2000-5K-MAP0	SUN2000-6K-MAP0	SUN2000-8K-MAP0	SUN2000-10K-MAP0	SUN2000-12K-MAP0
Efficiency					
Max. efficiency	98.4%	98.6%	98.6%	98.6%	98.6%
European weighted efficiency	97.5%	97.7%	98.0%	98.1%	98.2%
Input (PV)					
Recommended max. PV power ¹	9000 Wp	11,000 Wp	14,600 Wp	18,000 Wp	22,000 Wp
Max. input voltage ²	1100 V				
Operating voltage range ³	160~1000 V				
Max. short-circuit current	160 V				
Startup voltage	600 V				
Max. input current per MPPT	16 A				
Max. short-circuit current	22 A				
Number of MPP trackers	2				
Max. input per MPP tracker	1				
Input (DC Battery)					
Compatible battery	LUNA2000-5/10/15-S0 / LUNA2000-7/14/21-S1				
Operating voltage range	600~980 V				
Max. operating current	20 A				
Max. charging power	12,000 W				
Max. discharging power	5500 W	6600 W	8800 W	11,000 W	12,000 W
Output (On Grid)					
Grid connection	Three-phase				
Rated output power	5000 W	6000 W	8000 W	10,000 W	12,000 W
Max. apparent power	5500 VA	6600 VA	8800 VA	11,000 VA	13,200 VA
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 V AC, 240 V AC/415 V AC 3W/N + PE				
Rated AC grid frequency	50 Hz/60 Hz				
Max. output current	18.3 A	10.0 A	13.3 A	16.7 A	20.2 A
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3%				
Output (Off Grid)					
Compatible backup device	SmartGuard-63A-T0 (3 phase)				
Rated output power	5000 W	6000 W	8000 W	10,000 W	10,000 W
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 V AC, 240 V AC/415 V AC 3W/N + PE				
110% overload	Continuous				
150% overload	5 min (3-phase) / 5 min (Single-phase)			1 min (3-phase) / 5 min (Single-phase)	
200% overload	10 seconds				
Automatic switchover time	≤ 20 ms (with SmartGuard-63A-T0)				
Protection Feature					
Asymmetric load	Yes, supports 100% three-phase asymmetric load				
Input-side disconnection device	Yes				
Anti-islanding protection	Yes				
DC reverse polarity protection	Yes				
Insulation detection	Yes				
DC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11				
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11				
Residual current detection	Yes				
AC overcurrent protection	Yes				
AC short-circuit protection	Yes				
AC overvoltage protection	Yes				
Arc fault protection	Yes				
Connector temperature detection	Yes (PV & Battery connectors)				
Ripple receiver control	Yes				
Battery charging from grid	Yes				
General Specification					
Operating temperature range	-25°C to +60°C (-13°F to +140°F)				
Relative operating humidity	0 % - 100% RH				
Max. operating altitude	4000 m				
Cooling	Natural convection				
Noise	≤ 29 dB				
Display	LED Indicators; Integrated WLAN + FusionSolar APP				
Communication	RS485; WLAN / Ethernet via Smart Dongle-WLAN-FE (Optional) 4G/3G/2G via Smart Dongle-4G (Optional); EMMA (Optional)				
Weight (incl. mounting brackets)	21 kg				
Dimensions (incl. mounting brackets)	490 mm x 460 mm x 130 mm				
IP rating	IP66				
Nighttime power	< 5.5 W				
Optimizer Compatibility					
DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P				
Standards Compliance (More Available Upon Request)					
Safety	EN/IEC62109-1, EN/IEC62109-2				
Grid connection standards	IEC61727, IEC62116, MEA/PEA, G99, IRR-DCC-MV/IRR-TIC, Philippine Grid Code Resolution No. 07, NRS 097-2-1, EN50549-1, VDE4105, UTE15-712-1/VFR 2019, UNE217002, NTS631, RD244(UNE217001), PPDS, ROGA, TOR Erzeuger, CEI 0-21:2020-12 V1, CEI-016, C10/C11				

*1 The max. input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter.
*2 Any DC input voltage beyond the operating voltage range may result in inverter malfunction.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with product software version, test conditions, and environmental factors.

SMART ENERGY CONTROLLER

Model: SUN2000-12/15/17/20/25KTL-M5



Active Safety
AFCI Active Arcing
Protection



Higher Yields
Up to 30% More Energy
with Optimizer



Flexible Communication
WLAN, Fast Ethernet, and 4G
Communication Supported

SUN2000-12/15/17/20/25KTL-M5 Technical Specification

Technical Specification	SUN2000 -12KTL-M5	SUN2000 -15KTL-M5	SUN2000 -17KTL-M5	SUN2000 -20KTL-M5	SUN2000 -25KTL-M5
Efficiency					
Max. efficiency	98.4%	98.4%	98.4%	98.4%	98.4%
European weighted efficiency	97.9%	98.0%	98.1%	98.1%	98.2%
Input					
Recommended max. PV power ¹	18,000 Wp	22,500 Wp	25,500 Wp	30,000 Wp	37,500 Wp
Max. input voltage ²	1100 V				
Full-load MPPT voltage range	370–800 V	410–800 V	440–800 V	480–800 V	530–800 V
MPPT operating voltage range ³	200–1000 V				
Start-up voltage	200 V				
Rated input voltage	600 V				
Max. input current per MPPT	30 A (two-string)/20 A (single string)				
Max. short-circuit current	40 A				
Number of MPP trackers	2				
Max. number of inputs	4				
Output					
Grid connection	Three-phase				
Rated output power	12,000 W	15,000 W	17,000 W	20,000 W	25,000 W
Max. apparent power	13,200 W	16,500 VA	18,700 VA	22,000 VA	27,500 VA
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 V AC, 239.6 V AC/415V AC, 3W + N + PE				
Rated AC grid frequency	50 Hz/60 Hz				
Max. output current	18.2 A/380 V AC	25.2 A/380 V AC	28.6 A/380 V AC	33.6 A/380 V AC	42.0 A/380 V AC
	17.3 A/400 V AC	23.9 A/400 V AC	27.1 A/400 V AC	31.9 A/400 V AC	39.9 A/400 V AC
	16.7 A/415 V AC	23.1 A/415 V AC	26.1 A/415 V AC	30.8 A/415 V AC	38.5 A/415 V AC
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3%				
Protection Feature					
Overvoltage category	PV II/AC III				
Input-side disconnection device	Yes				
Anti-islanding protection	Yes				
AC over-current protection	Yes				
DC reverse polarity protection	Yes				
String fault detection	Yes				
DC surge protection	TYPE II				
AC surge protection	CLASS II				
Residual current monitoring unit	Yes				
Arc fault protection	Yes				
Ripple receiver control	Yes				
General Specification					
Operating temperature range	–25°C to +60°C (–13°F to +140°F)				
Relative humidity	0%–100% RH				
Max. operating altitude	4,000 m (13,123 ft.) (Derated above 2000 m)				
Cooling	Smart air cooling				
Display	LED Indicators; Integrated WLAN + FusionSolar App				
Communication	RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G/3G/2G via Smart Dongle-4G (Optional)				
Weight (with mounting plate)	21 kg (46.4 lb)				
Dimensions (W x H x D) (incl. mounting plate)	546 mm x 460 mm x 228 mm (21.5 in. x 18.1 in. x 9.0 in.)				
IP rating	IP66				
Optimizer Compatibility					
DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P				
Standards Compliance (More Available Upon Request)					
Safety	EN/IEC 62109-1, EN/IEC 62109-2				
Grid connection standards	G99, EN 50549, CEI 0-21, CEI 0-16, VDE-AR-N-4105, VDE-AR-N-4110, C10/11, ABNT, VFR 2019, UNE 217001, UNE 217002, RD 244, TOR D4, IEC61727, IEC62116				

*1 The inverter max. input PV power is 40,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.

*2 The max. input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter.

*3 Any input DC voltage beyond the operating voltage range may result in inverter malfunction.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART STRING ENERGY STORAGE SYSTEM

Model: LUNA2000-7/14/21-S1



Flexible Capacity

6.9 kWh per Battery Module
Scalable from 6.9 kWh to 20.7 kWh per Group
Max. 4 Groups with 82.8 kWh for an Inverter⁸



More Usable Energy

Module+ Architecture, Built-in Energy Optimizer
Ultra-long Service Time
100% Depth of Discharge



5-layer Safety Protection

Cell-level, Electrical-level, Structural-level
Active Protection, Emergency Protection



Ultimate Use Experience

-20°C to +55°C Operating Temperature
Max 10.5 kW Charging & Discharging Power per Group
Super Quiet Operation



Easy Installation

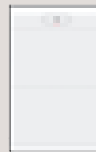
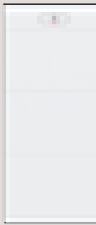
Cable Free Connection Between Modules
Horizontal Adjustment Design
Quick Commissioning



Aesthetically Pleasing Design

Breathing Star Ring Display
Silky Curve Design
Simplistic and Borderless

LUNA2000-7/14/21-S1 Technical Specification

	LUNA2000-7-S1	LUNA2000-14-S1	LUNA2000-21-S1	
Technical Specification				
	Performance			
	Power module	LUNA2000-10KW-C1		
	Number of power modules	1		
Battery module	LUNA2000-7-E1			
Battery module capacity	6.9 kWh			
Number of battery modules	1	2	3	
Battery usable energy ¹	6.9 kWh	13.8 kWh	20.7 kWh	
Max. charging & discharging power	3.5 kW	7 kW	10.5 kW	
Operating voltage range (single-phase system)	350–560 V			
Operating voltage range (three phase system)	600–980 V			
Communication				
Display	SOC status indicator, LED indicator			
Communication ²	RS485/FE/CAN			
General Specification				
Dimensions (W x D x H)	590 mm x 255 mm x 510 mm	590 mm x 255 mm x 870 mm	590 mm x 255 mm x 1230 mm	
Weight (Floor stand toolkit included)	80 kg	148 kg	216 kg	
Power module dimensions (W x D x H)	590 mm x 255 mm x 150 mm			
Power module weight	10 kg			
Battery module dimensions (W x D x H)	590 mm x 255 mm x 360 mm			
Battery module weight ³	68 kg (110.2 lb) ²			
Installation	Floor stand (standard), Wall mount (optional)			
Operating temperature ⁴	–20°C to +55°C (–4°F to +131°F)			
Max. operating altitude ⁵	4,000 m (13,123 ft.) (Derated above 2,000 m)			
Environment ⁶	Outdoor / Indoor			
Relative humidity	5%–95%			
Cooling	Natural convection			
IP rating	IP 66			
Noise emission	< 29 dB ⁷			
Cell technology	Lithium-iron phosphate (LiFePO ₄)			
Scalability ⁸	Max.4 systems in parallel operation			
Compatible inverters ⁹	SUN2000-12/15/17/20/-25K-MB0, SUN2000-3/4/5/6/8/10KTL-M1 SUN2000-5/6/8/10/12K-MAP0, SUN2000-8/10K-LC0, SUN2000-2/3/3.68/4/4.6/5/6KTL-L1 SUN5000-8/12K-MAP0, SUN5000-17/25K-MB0			
Standards Compliance (More Available Upon Request)				
Certificates	CE, RCM, CEC, VDE2510-50, IEC62619, IEC 60730, UN38.3, ISO13849, REACH, RoHS			
Ordering and Deliverable Part				
Available for ordering ¹⁰	LUNA2000-7-E1, LUNA2000-10KW-C1, Wall Mounting Bracket for LUNA2000-7/14/21-S1			

*1 Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25°C , at the beginning of service life.
*2 CAN is for communication between ESSs in parallel scenarios only. The launch time of the FE communication version is to be determined. Please confirm with your local product manager of Huawei for information about the final version.
*3 The weight of the battery modules varies with products, with a tolerance of ±3%.
*4 The output power may be affected by temperature. Please refer to the output derating curve for details.
*5 The output power may be affected by altitude. Please refer to the output derating curve for details.
*6 Outdoor installation is recommended. For indoor installation instructions, please refer to the user manual.
*7 The data is from Huawei lab, and the test condition is 1m distance and typical working voltage.
*8 Only SUN2000-12/15/17/20/25K-MB0 supports 4 energy storage systems in parallel operation.
*9 For details on the timetable of compatibility with SUN2000-8/10K-LC0 and SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, please confirm with your local product manager of Huawei for final version.
*10 The power module and battery modules of the storage system are separately ordered in the required quantity.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART STRING ENERGY STORAGE SYSTEM

Model: LUNA2000-5/10/15-S0



More Usable Energy
100% Depth of Discharge and
Pack-Level Energy Optimization



Flexible Investment
5 kWh Modular Design,
Scalable from 5 to 30 kWh



Safe & Reliable
5-layer Safety Protection
IP66



Easy Installation
12 kg Power Module
50 kg Battery Module

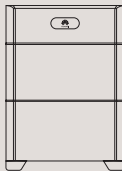


Quick Commissioning
Automatic Device
Discovery by the App



Perfect Compatibility
Compatible to Single & Three
Phase Inverters

LUNA2000-5/10/15-S0 Technical Specification

	LUNA2000-5-S0	LUNA2000-10-S0	LUNA2000-15-S0	
Technical Specification				
	Performance			
	Power module	LUNA2000-5KW-C0		
	Number of power modules	1		
Battery module	LUNA2000-5-E0			
Battery module capacity	5 kWh			
Number of battery modules	1	2	3	
Battery usable capacity ¹	5 kWh	10 kWh	15 kWh	
Max. output power	2.5 kW	5 kW	5 kW	
Peak output power	3.5 kW, 10s	7 kW, 10s	7 kW, 10s	
Nominal voltage (single-phase system)	450 V			
Operating voltage range (single-phase system)	350–560 V			
Nominal voltage (three-phase system)	600 V			
Operating voltage range (three phase system)	600–980 V			
Communication				
Display	SOC status indicator, LED indicator			
Communication	RS485/CAN (only for parallel operation)			
General Specification				
Dimensions (W x D x H)	670 mm x 150 mm x 600 mm (26.4 in. x 5.9 in. x 23.6 in.)	670 mm x 150 mm x 960 mm (26.4 in. x 5.9 in. x 37.8 in.)	670 mm x 150 mm x 1320 mm (26.4 in. x 5.9 in. x 60.0 in.)	
Weight (Floor stand toolkit included)	63.8 kg (140.7 lb)	113.8 kg (250.9 lb)	163.8 kg (361.1 lb)	
Power module dimension (W x D x H)	670 mm x 150 mm x 240 mm (26.4 in. x 5.9 in. x 9.4 in.)			
Power module weight	12 kg (26.5 lb)			
Battery module dimensions (W x D x H)	670 mm x 150 mm x 360 mm (26.4 in. x 5.9 in. x 14.0 in.)			
Battery module weight	50 kg (110.2 lb) ²			
Installation	Floor stand (standard), Wall mount (optional)			
Operating temperature	–20°C to +55°C (–4°F to +131°F) ³			
Max. operating altitude	4,000 m (13,123 ft.) (Derated above 2,000 m)			
Environment	Outdoor/Indoor ⁴			
Relative humidity	5%–95% RH			
Cooling	Natural convection			
IP rating	IP 66			
Noise emission ⁵	< 29 dB			
Cell technology	Lithium-iron phosphate (LiFePO4)			
Compatible inverters ⁶	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-8/10K-LC0			
	SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20/25K-MB0			
	SUN2000-5/6/8/10/12K-MAP0, SUN5000-8/12K-MAP0, SUN5000-17/25K-MB0			
Standards Compliance (More Available Upon Request)				
Certificates	CE, RCM, CEC, VDE2510-50, IEC62619, IEC 60730, UN38.3			
Ordering and Deliverable Part				
Available for ordering ⁷	LUNA2000-5KW-C0, LUNA2000-5-E0, LUNA2000 Wall Mounting Bracket			

^{*1} Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25°C, at the beginning of life. If no PV modules are installed or the system has not detected sunlight for at least 24 hours, the minimum end-of-discharge SOC is 15%.

^{*2} The weight of the battery modules varies with products, with a tolerance of ±3%.

^{*3} Refer to battery warranty letter for conditional application.

^{*4} Outdoor installation is recommended. For indoor installation, refer to the user manual for instruction.

^{*5} Noise level (typical): < 29 dB(A) @1 m, 30°C, power on and run stably for 2 hours

^{*6} Please contact a local engineer for compatibility information.

^{*7} The power module and battery modules of the storage system are separately ordered in the required quantity.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART MODULE CONTROLLER

SUN2000-450W-P2/SUN2000-600W-P



Higher Yields
Module-level Optimization
Increases System Energy
Yield by 5% to 30%



Active Safety
Module-level Rapid
Shutdown for worry-free
firefighting



Flexible Design
Easier Module Layout
and 30% Higher Installed
Capacity on Average



Smart O&M
Module-level
Visibility and Refined
Management

SUN2000-450W-P2/SUN2000-600W-P Technical Specification

Technical Specification	SUN2000-450W-P2	SUN2000-600W-P
Input		
Rated input DC power ¹	450 W	600 W
Absolute max. input voltage	80 V	
MPPT operating voltage range	10–80 V	
Max. short-circuit current (Isc)	14.5 A	
Max. efficiency	99.5%	
Weighted efficiency	99.0%	
Overvoltage category	II	
Output		
Max. output voltage	80 V	
Max. output current	15 A	
Output bypass ²	Yes	
Output voltage during standby ³	0 V	
Output impedance during standby	1 kΩ ± 10%	
Communication		
Communication protocol	MBUS	
Standards Compliance		
Safety	IEC62109-1 (class II safety)	
RoHS	Yes	
Fire Safety	VDE-AR-E 2100-712:2018-12	
General Specifications		
Dimensions (W x H x D)	75 mm x 140 mm x 28 mm (3.0 in. x 5.5 in. x 1.1 in.)	
Weight (including cables)	0.6 kg (1.3 lb.)	
Installation kit (optional)	Frame mounting bracket/T-shaped bolt ⁴	
Input connector	Staubli MC4	
Input wire length	0.15 m (0.49 ft.)	
Output connector	Staubli MC4	
Output wire length	1.3 m (4.3 ft.)	
Operating temperature/humidity range	–40°C to +85°C ⁵ /0%–100%	
IP rating	IP68	
Compatible inverters	SUN5000-8/12K-MAP0, SUN5000-17/25K-MB0, SUN2000-5/6/8/10/12K-MAP0 SUN2000-12K/15K/17K/20K/25K-MB0, SUN2000-8K/10K-LC0, SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20/25KTL-M5, SUN2000-30K/36K/40K-M3	

PV System Design ⁶	SUN2000-2~6KTL-L1	SUN2000-8K/10K-LC0	SUN5000-17/25K-MB0	SUN5000-8/12K-MAP0	SUN2000-3~10KTL-M1	SUN2000-5/6/8/10/12K-MAP0	SUN2000-12~25KTL-M5	SUN2000-12~25K-MB0	SUN2000-30K/36K/40K-M3
Min. string length (power optimizers)	4	4	6	6	6	6	6	6	6
Max. string length (power optimizers)	25	25	35	35	35	35	35	35	25
Max. DC power per string	6,000 W	6,000 W	12,000 W	12,000 W	10,000 W	12,000 W	12,000 W	12,000 W	12,000 W

^{*1} The maximum power of PV module at STC shall NOT exceed the “Rated Input DC Power” of the power optimizer. PV modules with up to +5% power tolerance are allowed.
^{*2} Any power optimizer, which is connected to an operating inverter in a PV string, will be bypassed when it fails.
^{*3} Once the power optimizer stops working, its output voltage is reduced to 0 V.
^{*4} It is for PV module frame/extruded aluminum profile racking system installation.
^{*5} When the operating temperature of the SUN2000-450W-P2/600W-P reaches 70 °C to 85 °C, it may shut down due to over-temperature protection and report an over-temperature alarm. After the temperature decreases, it can automatically resume working without causing any damage.
^{*6} SUN2000-450W-P2/600W-P and MERC-1100/1300W-P can NOT be used in mixture under the same Smart Energy/PV Controller.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART MODULE CONTROLLER

Model: MERC-1100/1300W-P



Higher Yields
Module-level Optimization
Increases System Energy
Yield by 5% to 30%



Flexible Design
Long String Design to
Reduce Bos



Active Safety
Firefighting and O&M
Safety with Module-
level Rapid Shutdown



Smart O&M
Pinpointing Open-
Circuit Fault for Quick
Troubleshooting

MERC-1100/1300W-P Technical Specification

Technical Specification	MERC-1100W-P	MERC-1300W-P
Input		
Rated input DC power ¹	1100 W	1300 W
Absolute max. input voltage	125 V	
MPPT operating voltage range	12.5–105 V	
Max. short-circuit current (Isc)	20 A	
Max. efficiency	99.5%	
Weighted efficiency	99.0%	
Overvoltage category	II	
Output		
Max. output voltage	80 V	
Max. output current	22 A	
Output bypass ²	Yes	
Safety output voltage ³	1 V	
Standards Compliance		
Safety	IEC62109-1 (class II safety)	
RoHS	Yes	
General Specification		
Dimensions (W X H X D)	149 mm x 104 mm x 48.8 mm (5.9 in. x 4.1 in. x 1.9 in.)	
Weight (including wires)	1.0 kg (2.2 lb.)	
Installation kit (optional)	PV Module Frame Plate/T-shaped Bolt ⁴	
Input connector	Staubli MC4	
Input wire length	0.1 m (+/-) (short-input-cable version) ⁵	
Output connector	Staubli MC4	
Output wire length	0.1 m (+), 5.1 m (-) (short-input-cable version) ⁵	
Operating temperature	–40°C to +85°C ⁶	
Relative humidity	0%–100%	
IP rating	IP68	
Compatible inverters	SUN2000-12-25K-MB0, SUN2000-12-25KTL-M5, SUN2000-30-40KTL-M3, SUN2000-50KTL-M3, SUN5000-150K-MG0	

PV System Design ^{7/8/9}	SUN2000-12~25K-MB0	SUN2000-12~25KTL-M5	SUN2000-30~40KTL-M3	SUN2000-50KTL-M3	SUN5000-150K-MG0
Min. string length (power optimizers)	8	8	8	8	12
Max. string length (power optimizers)	25	25	25	20	20
Max. DC power per string	20,000 W	20,000 W	20,000 W	20,000 W	20,000 W



^{*1} The maximum power of PV module at STC shall NOT exceed the “Rated input DC power” of MERC-1100/1300W-P. PV Modules with up to ±10% power tolerance are allowed.

^{*2} Any power optimizer, which is connected to an operating inverter in a PV string, will be bypassed when it fails.

^{*3} When the MERC-1100/1300W-P is disconnected from inverter or when the inverter is off, its output voltage will become 1 V.

^{*4} It is for PV module frame/extruded aluminum profile racking system installation.

^{*5} Pay attention to the PV module wire length. To match PV modules with a split junction box and short output wire, the long-input-cable version (input wire: 1.3 m (+/-); output wire: 0.1m (+)/2.9m (-)) of MERC-1100/1300W-P is available upon request.

^{*6} When the operating temperature of the MERC-1100/1300W-P reaches 70 °C to 85 °C, it may shut down due to over-temperature protection and report an over-temperature alarm. After the temperature decreases, it can automatically resume working without causing any damage.

^{*7} Each PV module under the same inverter must be equipped with a MERC-1100/1300W-P.

^{*8} SUN2000-450W-P2/600W-P and MERC-1100/1300W-P can NOT be used in mixture under the same Smart Energy/PV Controller.

^{*9} It is recommended that strings under the same inverter have an equal capacity. If this is not feasible, the capacity difference between strings under the same inverter must not exceed 2 kW. Otherwise, the energy yield will be reduced.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART CHARGER

Model: SCharger-7KS-S0/SCharger-22KT-S0



Single-Phase

7.4 kW/32 A
SCharger-7KS-S0

Three-Phase

22 kW/32 A
SCharger-22KT-S0

*Available in specific regions only



PV Power
Power Your Car with Solar
Make EV Even Greener



Dynamic Charging Power
Automatic Detection and
Adjustment
No Worry about Overload



3 Ways of Authentication
Authentication through
Bluetooth, RFID and APP



3-Step Installation
Fast Installation in 15
Minutes
Wiring-free Maintenance

SCharger-7KS-S0/SCharger-22KT-S0 Technical Specifications

Technical Specification	SCharger-7KS-S0	SCharger-22KT-S0
Inputs and Outputs		
Charge power (configurable)	1.4 kW to 7.4 kW	1.4 kW ¹ to 22 kW
Nominal voltage	230 V ± 20% (1-phase)	400 V ± 20% (3-phase)
Nominal current (configurable)	6–32 A (1-phase)	6–32 A (3-phase or 1-phase)
Nominal frequency	50 Hz/60 Hz ± 1 Hz	
Vehicle connection	Type 2 socket	
Cable cross-sectional area	Up to 10 mm ²	
Network types	TN, TT, IT	TN, TT
User Interface & Communications		
Protocol	Modbus TCP, OCPP 1.6	
Communication	Wi-Fi/Ethernet	
Charger status information	WRGB LED and app	
Authentication	RFID (ISO-14443-A), app, Bluetooth	
Remote control & monitoring	App	
Working mode	Normal Charge Scheduled Charge PV Power Preferred Next Trip ²	
Protection		
Cable protection	Cable E-Lock via app	
Residual current protection (RCD)	Type A (30 mA) + DC 6 mA integrated	
Fire class	UL94	
Overcurrent protection	IEC 61851-1	
Over-temperature protection	Yes	
Surge protection	CAT II	
General Specification		
Operating temperature range	–35°C to +45°C	–35°C to +50°C @ 16A –35°C to +40°C @ 32A
Application environment	Outdoor/Indoor	
Storage temperature	–40°C to +70°C	
Relative humidity	5%–95% RH	
Altitude	≤ 2000 m (Derated between 2000–4000 m)	
Dimensions (H x W x D)	335 mm x 180 mm x 145 mm	
Weight	3 kg	3.1 kg
Installation mode	Wall-mounted	
IP rating	IP54	
Impact protection level	IK10	
Standby self-consumption	< 6 W	
Standards Compliance (More Available Upon Request)		
Safety & health	EN IEC 61851-1 2019, EN 62311 2008, EN IEC 62311 2020, EN 50665 2017, EN 50364 2018	
EMC	EN IEC 61851-21-2 2021, EN 301 489-1 V2.2.3 2019, EN 301 489-3 V2.1.1 2019, EN 301 489-17 V3.2.4 2020	
Radio	ETSI EN 300 328 V2.2.2, ETSI EN300 330 V2.1.1	
RoHS	EN IEC 63000:2018	
Others		
Accessories	RFID Card * 2	

^{*1} 1.4 kW for 1-phase charging and 4. 2 kW for 3-phase charging

^{*2} Next Trip mode is only available with EMMA-A02

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMARTGUARD

Model: SmartGuard-63A-T0/AUT0



Simple

Three-phase whole home backup supported



Seamless

≤20ms Ultra-fast switchover to power backup mode



Reliable

Provide bypass mode when a fault occurs



Intelligent

Ready for DG, intelligent loads management with EMMA

SmartGuard-63A-T0/AUT0 Technical Specifications

Technical Specification	SmartGuard-63A-T0	SmartGuard-63A-AUT0
General Data		
Dimensions (W x H x D)	600 mm × 170 mm × 490 mm	
Weight (not including mounting plate)	17 kg	
Performance		
AC Voltage (Nominal)	380/400/415V, 220/230/240V, L1/L2/L3/N+PE	
Max. current (from/to Grid)	63 A	
Max. current (from/to Inverter)	60 A	
Max. current (to Backup Load)	63 A	
Max. current(to Non-BackupLoad) ¹	63 A	
Low-Voltage ride-through	Supported	
Switchover time	≤ 20ms (MAP0), ≤ 100ms (M1/MB0) ²	
Bypass operation mode	Manual	
DG mode	Remote control	
Interface		
Power output	9.5~13.2V @ 100mA, ≤ 3m	
LAN	10/100Mbps, ≤ 100m	
WAN	10/100Mbps, ≤ 100m	
WLAN	AP Mode, 802.11b/g/n (2.412GHz~2.484GHz)	
RS485	9600/19200/115200bps,× 2, ≤ 50m	
Digital input	×2, ≤ 20m; Active port ³	
Digital output	×2, ≤ 20m	
DG Do Port	Passive Port, 1-100mA ≤24V	
ATS	Need prepare the ATS, which supports automatic control and automatic switch-in and reset.	
Measurement Range		
Current range	≤ 63 A	
Energy accuracy	± 1%	
Device Management		
Smart energy controllers	up to 3	
Smart chargers	up to 2	
Heat pump	up to 1 ⁴	
Shelly device	up to 20	
Environment		
Cooling	Natural Convection	
Relative humidity range	5%-95% RH (non condensing)	
Max. operating altitude	4000m (derated over 2000m)	
Degree of protection	IP55	
Operating temperature range	-25°C~50°C ⁵	
Compatible Device		
Smart energy controller	SMax. 3 inverters supported in parallel connection (MAP0) Max. 1 inverter supported (M1/MB0)	
Smart charger	SCharger-7KS/22KT-S0	
Heat pump	SG-ready	
Shelly device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM ⁶	

^{*1} The sum of the output current of the backup port and the non backup port could not be more than 63A

^{*2} Seamless switching is disabled by default and needs to be manually enabled.

^{*3} The position feedback signal must be a passive port that works with an external circuit and can work at a current of less than or equal to 0.7 mA@12 V.
The low impedance of the circuit for the position feedback signal is less than or equal to 100 ohms.

^{*4} 1 SG ready Heat Pump can be connected directly. Others can be connected via shelly devices.

^{*5} On grid Mode: 25~30°C, no derating; 30~50°C, linear derating from 63A to 43A;
Off grid Mode: 25~40°C, no derating; 40~50°C, linear derating from 60A to 50A

^{*6} The supported firmware version of shelly devices can be found in user manual.

Disclaimer: the preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMARTGUARD

Model: SmartGuard-63A-S0



Simple

Whole home backup,
no need of additional
switchboard



Seamless

≤ 20 ms ultra-fast switchover to
power backup mode



Reliable

Provide bypass mode
when a fault occurs



Intelligent ¹

Intelligent load control with
built-in EMMA

SmartGuard-63A-S0 Technical Specifications

Technical Specification	SmartGuard-63A-S0
General Data	
Dimensions (W x H x D)	485 mm × 150 mm × 355 mm
Weight	≤14 kg
Performance	
AC Voltage (nominal)	220/230/240 V L/N+PE
Max. current (from Grid)	63 A
Max. current (from Inverter)	60 A
Max. current (to backed-up load)	63 A
Max. current (to non-backed-up load) ²	63 A
Self consumption	10 W
Low-voltage ride-through	Supported
Switchover time	≤ 20 ms (in Seamless Mode)
Bypass operation mode	Manual
Interface	
Power output	9.5–13.2V @ 100mA, ≤ 3m
LAN	10/100 Mbps, ≤ 100 m
WAN	10/100 Mbps, ≤ 100m
WLAN	AP Mode, 802.11b/g/n (2.412 GHz–2.484 GHz)
RS485	9600/19200/115200 bps,× 2, ≤ 50m
Digital input	×2, ≤ 20 m
Digital output	×2, ≤ 20 m
Measurement Range	
Current range	≤ 63 A
Voltage range	1P (L-N): 85–299 V AC
Energy accuracy	± 1%
Device Management	
Smart energy controllers	up to 1
Smart chargers	up to 2
Heat pump	up to 1 ³
Shelly device	up to 20
Environment	
Noise emission	≤ 29 dBA
Cooling	Natural Convection
Relative humidity range	5%-95% RH (non condensing)
Max. operating altitude	4000m (derated over 2000m)
IP rating	IP55
Operating temperature range	-25°C–50°C ⁴
Compatible Device	
Smart energy controller	SUN2000-2-6KTL-L1/SUN2000-8-10K-LC0
Smart charger	SCharger-7KS-S0
Heat pump	SG-ready
Shelly device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM ⁵

^{*1} The intelligent energy scheduling feature is available for a 2-year free trial. After the trial, it will be available at no more than €99 per site per year.

^{*2} The sum of the output current of the backup port and the non-backup port could not be more than 63A

^{*3} 1 SG-ready Heat Pump can be connected directly. Others can be connected via shelly devices

^{*4} On-grid Mode: 25–30 °C, no derating; 30–40 °C, linear derating from 63A to 50A; 40–50 °C, linear derating from 50A to 40A
Off-grid Mode: 25–40 °C, no derating; 40–50 °C, linear derating from 54.5A to 50A

^{*5} The supported firmware version of shelly devices can be found in user manual

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

ENERGY MANAGEMENT ASSISTANT

Model: EMMA-A02



Unified management
One-stop management of inverters, ESS, optimizers, chargers and appliances



More intelligent
Peak shaving, PV preference, feed-in power limitation, and automatic start/stop of diesel generators.



More economical
Automatically connect to Nord Pool, supporting peak-valley price arbitrage and zero-power feed-in during negative price periods.



Open to 3rd parties
Supports Modbus-TCP and third-party VPP integration, enabling FCR-D frequency modulation.

EMMA Technical Specifications

Technical Specification	EMMA-A02		
	General Data		
Dimension(W × H × D)	108 mm × 100 mm × 65 mm		
Mounting type	DIN35 Rail		
Height requirement of cabinet	≥ 47.5 mm		
Weight	0.5 kg		
	Power Supply		
AC Voltage	1P2W: 100 ~ 240V, 50 / 60Hz	3P3W: 346 ~ 415V, 50 / 60Hz	3P4W: 346 ~ 415V, 50 / 60Hz
Typical power consumption	4 W		
	Interface		
Power output	9.5 ~ 13.2V @ 100mA, ≤ 3m		
LAN	10 / 100Mbps,≤ 100m		
WAN	10 / 100Mbps,≤ 100m		
WLAN	AP + STA, 802.11b/g/n (2.412GHz ~ 2.484GHz)		
RS485	9600 / 19200 / 115200bps,× 2, ≤ 50m		
Digital input	× 2, ≤ 20 m		
Digital output	× 2, ≤ 20 m		
	Interaction		
LED	LED Indicator × 3 RUN, ALM, COM		
Button	RST		
APP	Communication by WLAN for Commissioning		
	Measurement Range		
Current range	Direct connection: ≤ 63 A, external CT ¹ : > 63 A		
Voltage range	1P (L-N): 85 ~ 299 Vac; 3P (L L): 148 ~520 Vac		
Energy accuracy	±1%		
	Device Management		
Smart energy controllers	up to 3		
Smart chargers	up to 2		
Heat pump	up to 1 ²		
Shelly device	up to 20		
	Environment		
Operating temperature range	-25 °C~ +60 °C		
Storage temperature range	-40 °C~ +85 °C		
Relative humidity range	5% ~ 95% RH (non condensing)		
Max. operating altitude	4000m (derating over 2000m)		
Degree of protection	IP2X		
	Compatible Device		
Smart energy controller	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-8/10K-LC0, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20/25KTL-M5, SUN2000-12/15/17/20/25K-MB0, SUN2000-5/6/8/10/12K-MAP0, SUN5000-8/12K-MAP0, SUN5000-17/25K-MB0		
Smart charger	SCharger-7KS/22KT-S0		
Heat pump	SG-ready		
Shelly device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM ³		
Smart Scheduling ⁴	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-8/10K-LC0, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20/25KTL-M5, SUN2000-12/15/17/20/25K-MB0, SUN2000-5/6/8/10/12K-MAP0, SUN5000-8/12K-MAP0, SUN5000-17/25K-MB0+ LUNA2000-5/10/15-S0 / LUNA2000-7/14/21-S1		
Dynamic tariff	Automatically connect to Nord Pool electricity market and obtain day-ahead dynamic tariff. (Available in Sweden, Denmark, Finland, Norway, Lithuania, Estonia, Latvia, and the Netherlands.)		

^{*1} The secondary current of an external CT connected shall be 50 mA, and the cable length can be up to 30 m.
^{*2} A heat pump can be directly connected to EMMA-A02. More appliances can be connected through a Shelly device.
^{*3} For the Shelly device firmware version supported, please refer to the user manual.
^{*4} The smart scheduling function of the EMMA is offered free of charge for two years from the trial start date. After this period, we reserve the right to charge for this service.

Disclaimer: the preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART DONGLE-WLAN-FE



Smart
WLAN & Fast Ethernet (FE)
Communication, Support 3rd-
Party Monitoring System ¹



Simple
Plug-and-play, with a
Maximum of 10 Devices
Connected



Reliable
IP65 Protection

Smart Dongle-WLAN-FE Technical Specifications

Technical Specification	SDongleA-05 (AP+STA)
General Specification	
Max. devices supported	10
Max. inverters supported	10
Connection interface	USB
Ethernet interface	10/100M Ethernet
Installation	Plug-and-play
Indicator	LED Indicator
Dimensions (W x H x D)	146 mm x 48 mm x 33 mm (5.1 in. x 1.9 in. x 1.3 in.)
Weight	90 g (0.2 lb.)
IP rating	IP65
Power (typical)	2.5 W
Working mode	AP + STA
Security	Security protocol: WPA/WPA2 Encryption: TKIP/CCMP/AES
Radio Specification	
Supported standards & frequencies	802.11b/g/n (2.412–2.484 GHz)
Environment	
Operating temperature range	–30°C to +65°C (–22°F to +149°F)
Relative humidity range	5%–95% RH
Storage temperature range	–40°C to +70°C (–40°F to +158°F)
Max. operating altitude	4,000 m (13,123 ft.)
Standards Compliance (More Available Upon Request)	
Certificate	SRRC, CE, RCM
Inverter Compatibility	
Inverter model	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-8/10K-LC0, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20/25KTL-M5, SUN2000-12/15/17/20/25K-MB0, SUN2000-5/6/8/10/12K-MAP0, SUN5000-8/12K-MAP0, SUN5000-17/25K-MB0

1: 3rd-party management system shall support the communication protocol used on Huawei Smart Dongle.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART DONGLE-4G



Smart
4G Communication ¹
Support for 3rd-party ²
Monitoring System



Simple
Plug-and-play WLAN-AP
Local Deployment ³



Reliable
IP65
Auto Reconnection

Smart Dongle-4G Technical Specifications

Technical Specification	SDongleB-06-EU	SDongleB-06-AU	SDongleB-06-NH
General Specification			
Max. devices supported	10		
Max. inverters supported	10		
Connection interface	USB		
Installation	Plug-and-play		
Indicator	LED indicator		
Dimensions (W x H x D)	162 mm x 48 mm x 28 mm		
IP rating	IP65		
Power (typical)	3.5 W		
Wireless Parameter			
SIM card type	Mini-SIM (15 mm x 25 mm)		
Supported standards & frequencies ⁴	LTE-FDD: B1/B3/B7/B8/B20/B28 LTE-TDD: B38/B40/B41 GSM: 850/900/1800/1900 MHz	LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28 LTE-TDD: B40 WCDMA: B1/B2/B5/B8 GSM: 850/900/1800/1900 MHz	LTE-FDD: B1/B3/B8/B18/B19/B26 LTE-TDD: B41 WCDMA: B1/B6/B8/B19
Wi-Fi operation mode	AP		
Supported standards & frequencies	802.11b/g/n (2.412–2.484 GHz)		
Environment			
Operating temperature range	–30°C to +65°C (–22°F to +149°F)		
Relative humidity range	5%–95% RH		
Storage temperature range	–40°C to +70°C (–40°F to +158°F)		
Max. operating altitude	4,000 m (13,123 ft.)		
Standards Compliance (More Available Upon Request)			
Certificate	CE	RCM	TELEC
Inverter Compatibility			
Inverter model	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-8/10K-LC0, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20/25KTL-M5, SUN2000-12/15/17/20/25K-MB0, SUN2000-5/6/8/10/12K-MAP0, SUN5000-8/12K-MAP0, SUN5000-17/25K-MB0, SUN2000-4.95KTL-JPL1, SUN2000-4.95KTL-NHL2		

1: To ensure stable data transmission, Huawei recommends that a 4G Dongle be installed in areas with stable mobile signal (2G signal ≥4 bars, 3G/4G signal ≥3 bars).
2: 3rd-party management system shall support the communication protocol used on Huawei Smart Dongle.
3: When all inverters support WLAN hotspot, hotspot of Dongle will be disabled by default.
4: For recommended carriers list and details on supported frequencies, please contact local distributors.

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

SMART POWER SENSOR



Accurate
Class | Measurement
Accuracy



Simple & Easy
LCD Display, Easy to Set
and Check



Energy Efficient
Overall Power
Consumption $\leq 1.5\text{ W}$

Smart Power Sensor Technical Specifications

Technical Specification	DDSU666-H	DTSU666-H
General Specification		
Dimensions (H x W x D)	100 mm x 36 mm x 65.5 mm (3.9 in. x 1.4 in. x 2.6 in.)	100 mm x 72 mm x 65.5 mm (3.9 in. x 2.8 in. x 2.6 in.)
Mounting type	DIN35 Rail	
Weight (including cables)	1.2 kg (2.6 lb)	1.5 kg (3.3 lb)
Power Supply		
Power grid type	1P2W	3P3W/3P4W
Input voltage (phase voltage)	176 V AC–288 V AC	
Power consumption	≤ 0.8 W	≤ 1 W
Measurement Range		
Line voltage	/	304 V AC–499 V AC
Phase voltage	176 V AC–288 V AC	
Current	0–100 A	0–100 A
Measurement Accuracy		
Current/Voltage	±0.5%	
Power/Energy	±1%	
Frequency	±0.01 Hz	
Communication		
Interface	RS485	
Baud rate	9,600 bps	
Communication protocol	Modbus-RTU	
Environment		
Operating temperature range	–25°C to +60°C	
Storage temperature range	–40°C to +70°C	
Operating humidity	5% RH–95% RH (non-condensing)	
Others		
Accessories	RS485 Cable (10 m / 33 ft.)	
	1 CT 100 A/40 mA (5 m/16.4 ft.) 	3 CT 100 A/40 mA (5 m/16.4 ft.) 

Disclaimer: The preceding values are measured by an internal laboratory of Huawei in a specific environment. The actual values may vary with products, software versions, usage conditions, and environmental factors.

FUSIONSOLAR SMART PV MANAGEMENT SYSTEM



Better Experience

One app for All Products
Auto-Discovery of Local
Components
Modular Auto-mapping Within 5S



Energy Visualization

KPI Dashboard and Centralized
Management of Multiple Plants
Module-level Monitoring
Report Subscription and Real-time
Alarm Push



Smart O&M

Site, Personnel, and Status Management on
One Screen

FusionSolar Smart PV Management System

Category	Function	Web	App
Homepage	PV Plants List	●	●
	Add Plant	●	●
Report Management	Plant Report	●	
	Inverter Report	●	
	Battery Report	●	
Device Management	Device Details	●	●
	Remote Parameter Setting	●	
	Remote Optimizer Search	●	
Intelligent O&M	Real-time Status	●	
	Alarm Management	●	●
	Task Management	●	●
	Smart IV-Curve Diagnose	●	
KPI Dashboard	KPI Dashboard	●	
Homepage of Single Plant	Energy Flow	●	●
	Energy Management	●	●
	Plant Layout	●	●
	Kiosk Mode	●	
System Setting	Plant Management	●	●
	Company Management	●	
Demo	Demo Site	●	●

An aerial photograph of a modern, two-story house with a large, dark-colored solar panel array installed on its roof. The house has a light-colored exterior and a flat roof. The surrounding area includes a paved driveway, a small garden with some shrubs, and a neighboring property with a similar roof style. A large green rectangular overlay is positioned in the center of the image, containing the text '03' and 'SERVICE'.

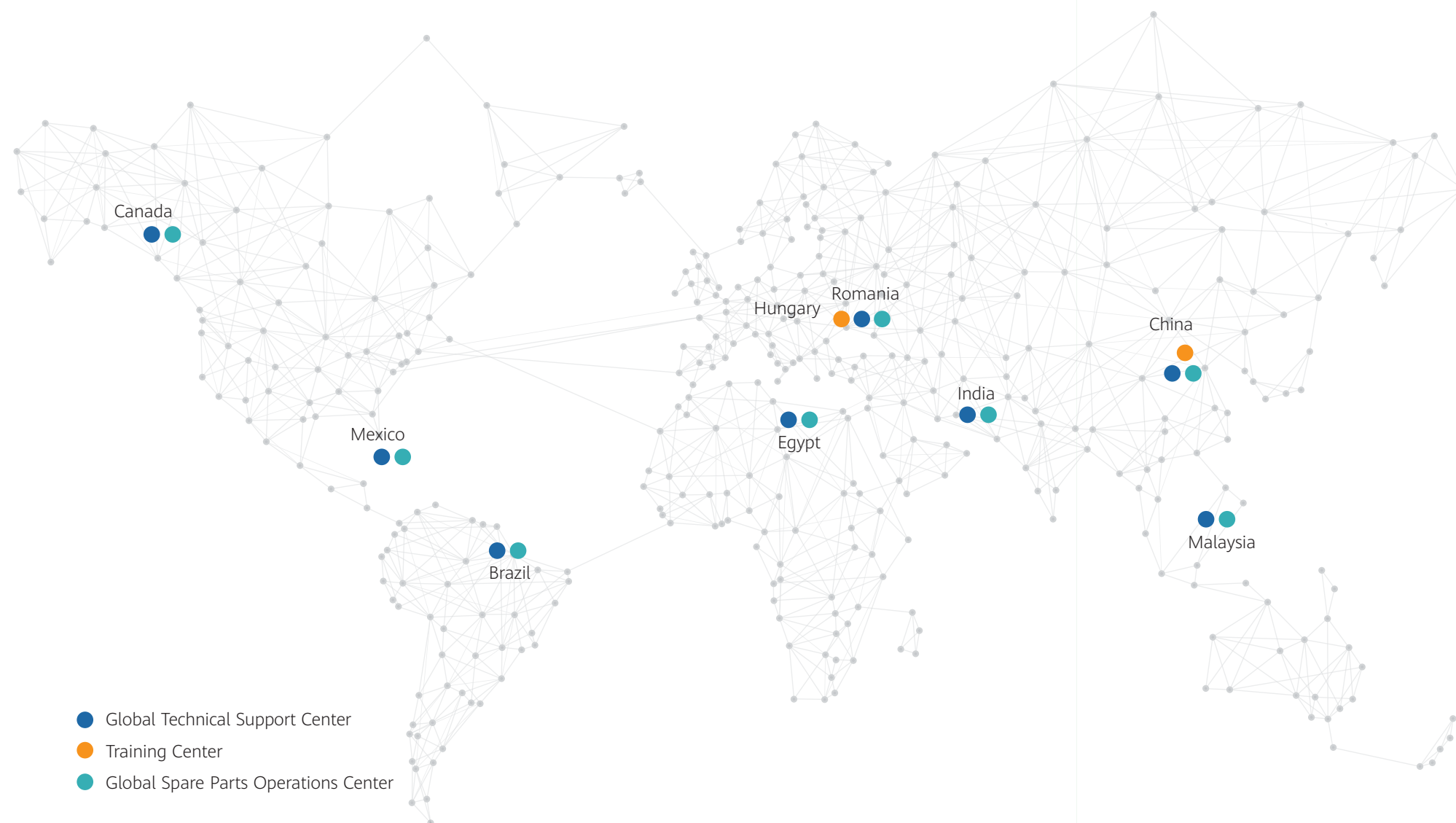
03

SERVICE



CUSTOMER SERVICE

FusionSolar global service centers cover more than 170 countries, supporting 1/3 of the world's population



14+

Languages



600+

Professional Technical Engineers



24/7

Support

Warrant service Your energy system guardian

If product quality defects occur under warranty, Huawei would provide the following services:

- 24/7 and real-time response
- Remote troubleshooting by experts
- Online technical support
- Spare parts support
- Software update authorization

Extended warranty service

- Inverter warranty extended to 20 years
- Extended energy storage to 10 years (15 years in Japan)



Process and Method Maintenance

Issue to Resolution (ITR) process: The "technology + management escalation" mechanism ensures the involvement of experts and mid- and high-level executives in the process.



Organization and Personnel

The three-level support system provides reliable technical support for global customers.



Smart tools-FusionSolar

Monitor your energy system anytime anywhere
AI-based customer support robot for your request
All service accessible on the App



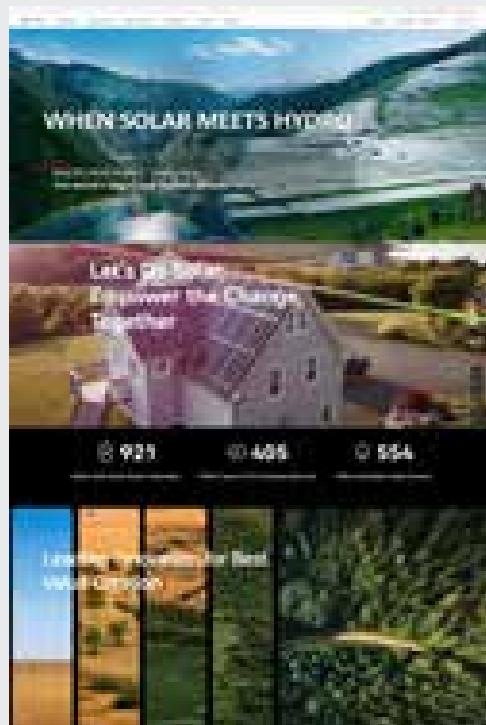
FUSIONSOLAR PARTNER

Please click the link to join us: <https://community.solar.huawei.com>

01

Official Website

Provide solution, products, service, and news related information.



02

Community

Knowledge learning, certification, communication, and rewards center.



03

Documents Center

Professional materials for online view, download and sharing.



Have more questions? Contact us and get support

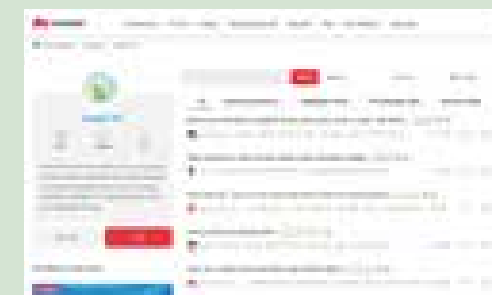
Online Service

The online Digital Power Customer Service is available now. You can find it in the floating window on the website or FusionSolar app, and get help anytime, anywhere



Installer Forums

You also can post your questions on the online forum to discuss with other installers. The technical experts also would respond to the questions



A modern living room interior with light wood flooring, a large circular rug, and a white sofa. A green rectangular overlay is positioned in the center of the image, containing the text '04 CASE STUDY'.

04

CASE STUDY

CASES

◆ PV+ESS Scenario



Residential PV systems in
Gnesta, Sweden

Capacity 5 MWp

System Configuration

- + SUN2000-450W-P2/600W-P
- + SUN2000-10KTL-M1
- + LUNA2000-5/10/15-S0
- + SCharger-22KT-S0



Scan the code to learn more

◆ PV+ESS Scenario

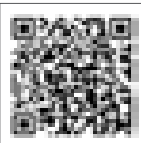


Residential PV system in
Villa Argentino, Italy

Capacity: 6 kWp

System Configuration

- + SUN2000-6KTL-M1
- + LUNA2000-10-S0



Scan the code to learn more

CASES

◆ PV+ESS Scenario



Residential PV system in
Xanten, Germany

Capacity: 11 kWp

System Configuration

- + SUN2000-5KTL-M1
- + SUN2000-6KTL-M1
- + LUNA2000-10-S0



Scan the code to learn more

◆ PV+ESS Scenario



Residential PV system in
Ho Chi Minh, Vietnam

Capacity: 5 kWp

System Configuration

- + SUN2000-5KTL-L1
- + LUNA2000-5-S0
- + SUN2000-450W-P



Scan the code to learn more