



FusionSolar[®]

Residential Smart PV Solution

[SOLAR.HUAWEI.COM/EU/](https://solar.huawei.com/eu/)



About Huawei

Huawei is a leading global provider of information and communications technology (ICT) infrastructure and smart devices. With integrated solutions across four key domains – telecom networks, IT, smart devices, and cloud services – we are committed to bringing digital to every person, home and organization for a fully connected, intelligent world. Huawei's end-to-end portfolio of products, solutions and services are both competitive and secure. Through open collaboration with ecosystem partners, we create lasting value for our customers, working to empower people, enrich home life, and inspire innovation in organizations of all shapes and sizes. At Huawei, innovation focuses on customer needs. We invest heavily in basic research, concentrating on technological breakthroughs that drive the world forward.

 Employees
195,000+

 R&D Personnel
107,000+

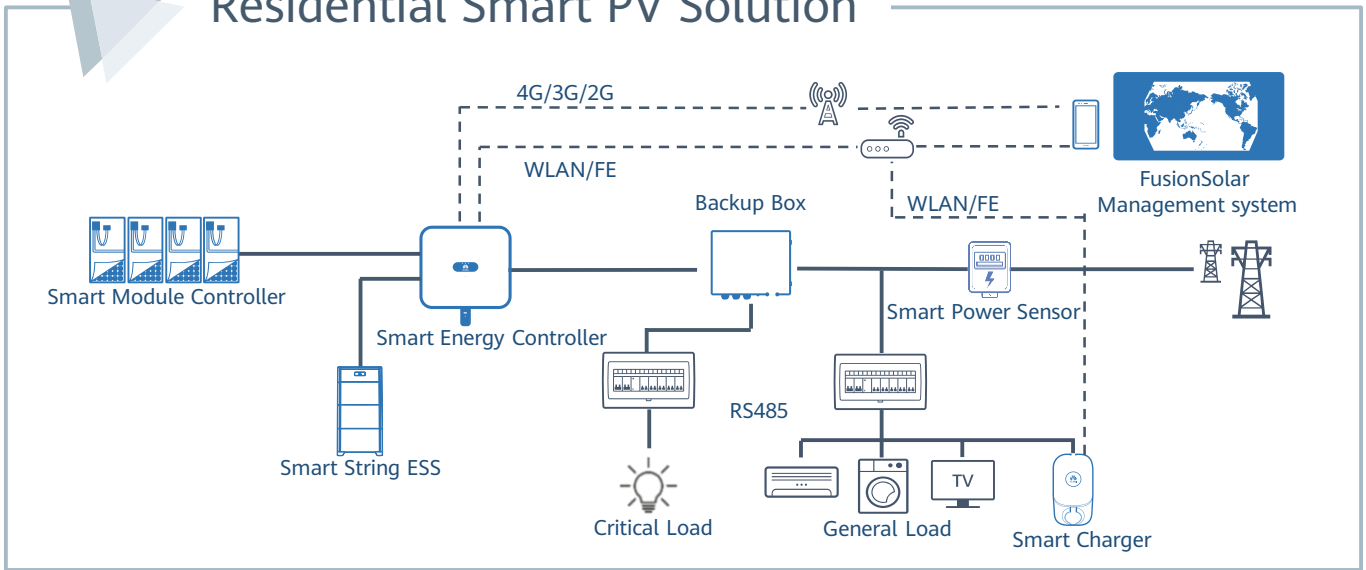
 Countries
170+

 Brands Finance
Global 500
9

 Fortune Global 500
44

 R&D Investment
2

Residential Smart PV Solution



Lower LCOE

Optimizers for Module-level Optimization, Improving Energy Yield by More Than 30%

Modular+ Architecture for Residential ESS, Improving Capacity by 10%

PV-ESS-Charger Synergy Increases the Self-consumption Rate from 70% to 90%

Active Safety

L4 AFCI, AI Powered Active Arcing Protection

Roof DC Voltage Rapid Shutdown

Four-layer ESS safety protection

Better Experience

One-fits-all Solution, Easier Business

SmartDesign Complete PV System Design within 10 Min.

Module Auto-Mapping within 5 Sec.



SUN2000-2-6KTL-L1 Smart Energy Controller



Active Safety

AI Powered
Active Arcing Protection



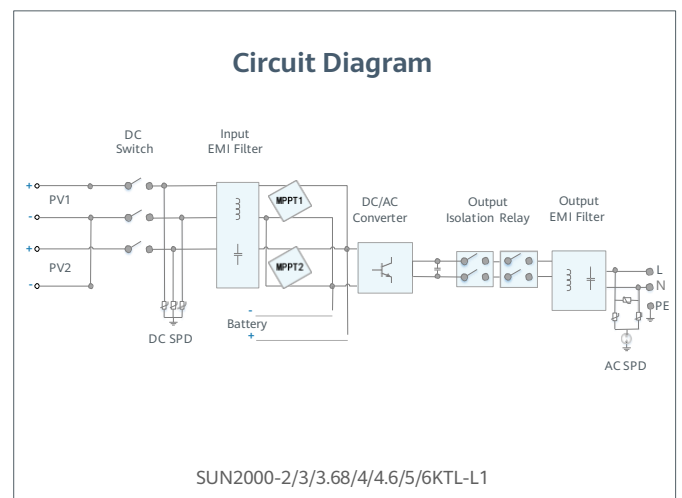
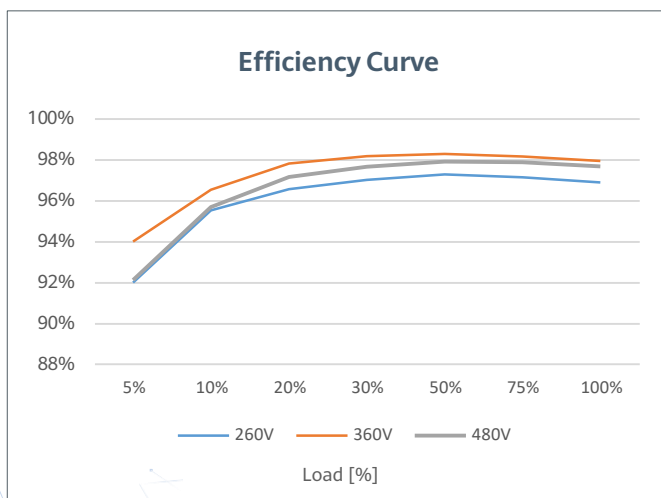
Higher Yields

Up to 30% More
Energy with Optimizer



2x POWER Battery Ready

5KW AC Output plus
5KW Battery Charge



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 ¹
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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 ²	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 ³						
Start-up voltage	100 V						
MPPT operating voltage range	90 V – 560 V ³						
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. input number per MPP tracker	1						

Input (DC Battery)

Compatible battery	HUAWEI Smart String ESS Battery 5kWh – 30kWh ¹						
Operating voltage range	350 ~ 560 Vdc						
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	5000 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 Vac / 230 Vac / 240 Vac						
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-5000 ¹)						

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 reverse charging from grid	Yes						

General Data

Operating temperature range	-25 ~ +60 °C (Derating above 45 °C @ Rated output power)						
Relative operating humidity	0 %RH ~ 100 %RH						
Operating altitude	0 ~ 4,000 m (Derating 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 bracket)	12.0 kg (26.5 lb)						
Dimension (incl. mounting bracket)	365mm * 365mm * 156 mm (14.4 x 14.4 x 6.1 inch)						
Degree of protection	IP65						
Nighttime power consumption	< 2.5 W						

Optimizer Compatibility

DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P						
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Standard 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} Inverter max input PV power is 10,000Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.

^{*2} The maximum input voltage and operating voltage upper limit will be reduced to 495 V when inverter connects and works with LG battery.

^{*3} 2,500 W @ 5kWh HUAWEI ESS battery

SUN2000-3-10KTL-M1 (High Current Version) Smart Energy Controller



Active Safety

AI Powered
Active Arcing Protection



Higher Yields

Up to 30% More Energy
with Optimizer ¹



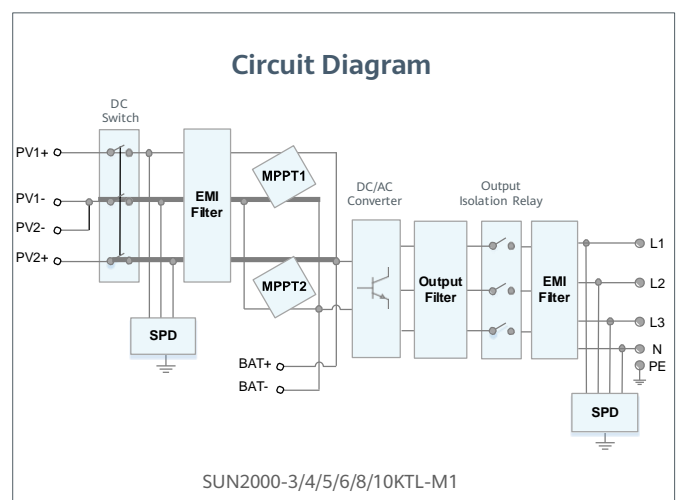
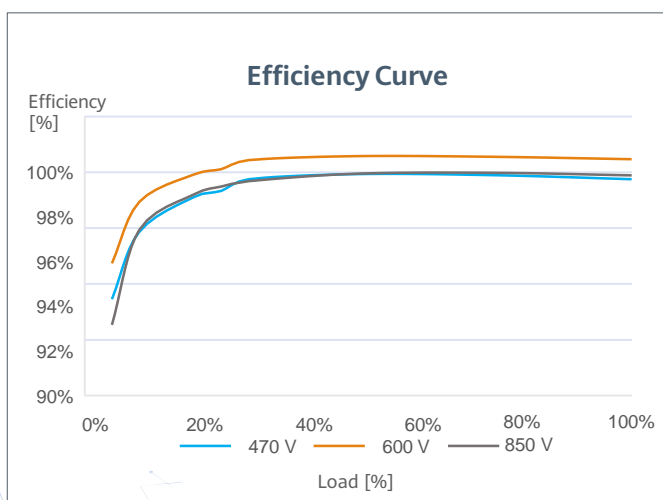
Battery Ready

Plug & Play battery interface ²



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported



¹ Only applicable to SUN2000-3/4/5/6/8/10KTL-M1 smart energy center.
² SUN2000-3/4/5/6/8/10KTL-M0 will be compatible with HUAWEI smart string ESS in Q1, 2021

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 V ~ 980 V					
Start-up 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	HUAWEI Smart String ESS 5kWh – 30kWh					
Operating voltage range	600 V ~ 980 V					
Max operating current	16.7 A					
Max charge power	10,000 W					
Max discharge power	3,300 W	4,400 W	5,500 W	6,600 W	8,800 W	10,000 W
Output (On Grid)						
Grid connection	Three-phase					
Rated output power	3,000 W	4,000 W	5,000 W	6,000 W	8,000 W	10,000 W
Max. apparent power	3,300 VA	4,400 VA	5,500 VA	6,600 VA	8,800 VA	11,000 VA ⁴
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 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)						
Backup Box	Backup Box – B1					
Maximum apparent power	3,000 VA	3,300 VA	3,300 VA	3,300 VA	3,300 VA	3,300 VA
Rated output voltage	220 V / 230 V					
Maximum output current	13.6 A	15 A	15 A	15 A	15 A	15 A
Power factor range	0.8 leading ... 0.8 lagging					
Features & Protections						
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					
Integrated PID recovery ⁵	Yes					
Battery reverse charging from grid	Yes					
General Data						
Operating temperature range	-25 ~ +60 °C (-13 °F ~ 140 °F)					
Relative operating humidity	0% RH ~ 100% RH					
Max. operating altitude	4,000 m (13,123 ft.) (Derating 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 bracket)	17 kg (37.5 lb)					
Dimension (incl. mounting bracket)	525 x 470 x 146.5 mm (20.7 x 18.5 x 5.8 inch)					
Degree of protection	IP65					
Nighttime power consumption	< 5.5 W ⁶					
Optimizer Compatibility						
DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P					
Standard Compliance (more available upon request)						
Certificate	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 Inverter max input PV power is 20,000 Wp when long strings are designed and fully connected with SUN2000-450W-P, SUN2000-450W-P2, SUN2000-600W-P power optimizers.

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

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

⁴ C10 / 11: 10,000 VA

⁵ SUN2000-3-10KTL-M1 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly).

⁶ <10 W when PID recovery function is activated.

SUN2000-12/15/17/20KTL-M2 (High Current Version) Smart Energy Controller



Active Safety

AI Powered Arcing Protection



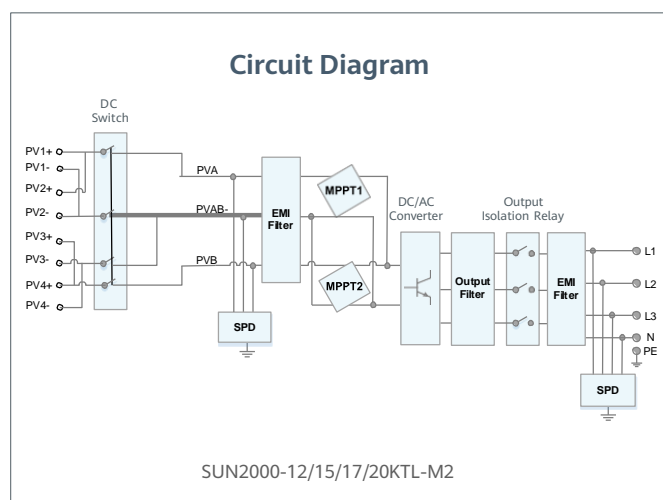
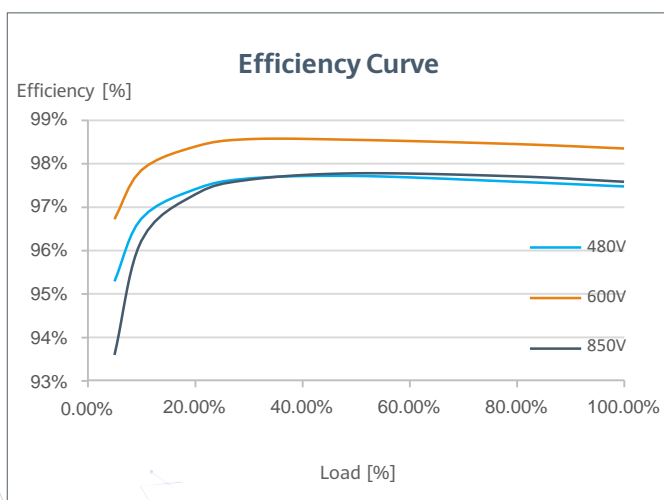
Higher Yields

Up to 30% More Energy with Optimizer



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported



SUN2000-12/15/17/20KTL-M2 (High Current Version) Technical Specification

Technical Specification	SUN2000 -12KTL-M2	SUN2000 -15KTL-M2	SUN2000 -17KTL-M2	SUN2000 -20KTL-M2
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Efficiency

Max. efficiency	98.50%	98.65%	98.65%	98.65%
European weighted efficiency	98.00%	98.30%	98.30%	98.30%

Input

Recommended max. PV power ¹	18,000 Wp	22,500 Wp	25,500 Wp	30,000 Wp
Max. input voltage ²	1,080 V			
Operating voltage range ³	160 V ~ 950 V			
Start-up voltage	200 V			
Rated input voltage	600 V			
Max. input current per MPPT	27 A (per MPPT) / 18 A (per Input) ⁴			
Max. short-circuit current	39 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
Max. apparent power	13,200 VA	16,500 VA	18,700 VA	22,000 VA
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 3W + N + PE			
Rated AC grid frequency	50 Hz / 60 Hz			
Max. output current	20 A	25.2 A	28.5 A	33.5 A
Adjustable power factor	0.8 leading ... 0.8 lagging			
Max. total harmonic distortion	≤ 3 %			

Features & Protections

Input-side disconnection device	Yes
Anti-islanding protection	Yes
AC over-current protection	Yes
AC short-circuit protection	Yes
AC over-voltage 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
Residual current monitoring unit	Yes
Arc fault protection	Yes
Ripple receiver control	Yes
Integrated PID recovery ⁵	Yes

General Data

Operation temperature range	-25 ~ +60 °C (-13 °F ~ 140 °F)
Relative humidity	0 % RH ~ 100% RH
Max. operating altitude	0 ~ 4,000 m (13,123 ft.) (Derating above 2000 m)
Cooling	Natural Convection
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)	25 kg
Dimensions (W x H x D) (incl. mounting plate)	525 x 470 x 262 mm (20.7 x 18.5 x 10.3 inch)
Degree of protection	IP65
Nighttime power consumption	< 5.5W ⁶

Optimizer Compatibility

DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P
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Standard Compliance (more available upon request)

Safety	EN/IEC 62109-1, EN/IEC 62109-2
Grid connection standards	G98, G99, EN 50549, CEI 0-21, CEI 0-16, VDE-AR-N-4105, VDE-AR-N-4110, AS 4777.2, C10/11, ABNT, VFR 2019, RD 1699, RD 661, PO 12.3, TOR D4, IEC61727, IEC62116, DEWA

¹ 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 maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.

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

⁴ The MPPT voltage of each PV string must exceed the lower limit of Full Power MPPT Voltage Range. (Full Power MPPT Voltage Range: 12KTL@360~850V, 15KTL@380~850V, 17KTL@400~850V, 20KTL@450~850V)

⁵ SUN2000-12~20KTL-M2 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly)

⁶ <10W when PID recovery function is activated

⁷ Smart IV Curve Diagnosis feature will be made available in a future firmware upgrade, which expected available 2021 Q4

SUN2000-12/15/17/20/25KTL-M5 Smart Energy Controller



Active Safety

AI Powered Arcing Protection



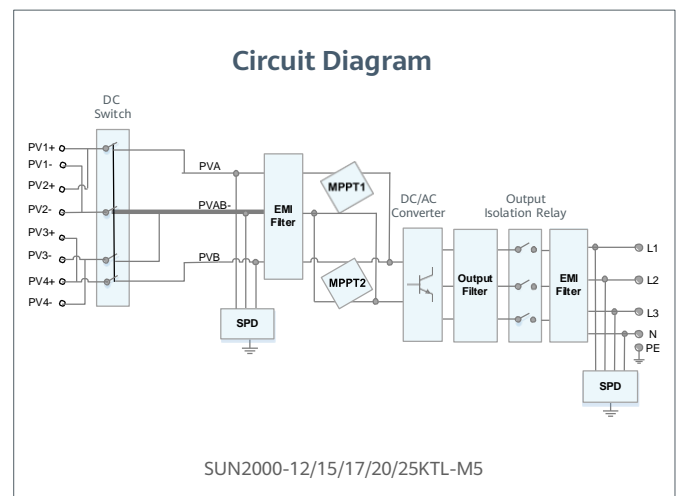
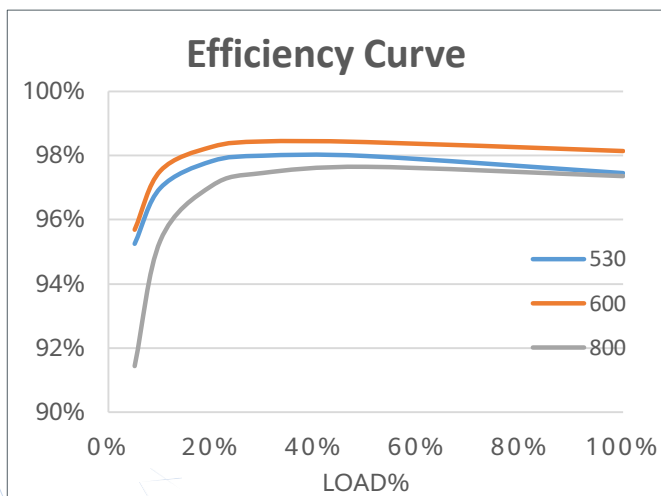
Higher Yields

Up to 30% More Energy with Optimizer



Flexible Communication

WLAN, Fast Ethernet, 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
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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	370V~800 V	410V~800 V	440V~800 V	480V~800 V	530~800 V
MPPT operating voltage range ³	200 V ~ 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 Vac / 380 Vac, 230 Vac / 400 Vac, 239.6 Vac / 415Vac, 3W + N + PE				
Rated AC grid frequency	50 Hz / 60 Hz				
Max. output current	18.2 A / 380 Vac 17.3 A / 400 Vac 16.7 A / 415 Vac	25.2 A / 380 Vac 23.9 A / 400 Vac 23.1 A / 415 Vac	28.6 A / 380 Vac 27.1 A / 400 Vac 26.1 A / 415 Vac	33.6 A / 380 Vac 31.9 A / 400 Vac 30.8 A / 415 Vac	42.0 A / 380 Vac 39.9 A / 400 Vac 38.5 A / 415 Vac
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3 %				

Features & Protections

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 control	Yes
Integrated PID recovery ⁴	Yes

General Data

Operation temperature range	-25 ~ + 60 °C (-13 °F ~ 140 °F)
Relative humidity	0 % RH ~ 100% RH
Max. operating altitude	0 ~ 4,000 m (13,123 ft.) (Derating 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)	21kg (46.4 lb)
Dimensions (W x H x D) (incl. mounting plate)	546 x 460 x 228mm (21.5 x 18.1 x 9.0 inch)
Degree of protection	IP66

Optimizer Compatibility

DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P, MERC-1100W-P, MERC-1300W-P
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Standard 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} 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 maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.

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

^{*4} SUN2000-12~20KTL-M2 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly)

Smart String Energy Storage System



More Usable Energy

100% Depth of Discharge
Pack Level Energy Optimization



Flexible Investment

5kWh Modular Design,
Scalable from 5 to 30 kWh



Safe & Reliable

LFP Cell
4-layer Safety Protection



Easy Installation

12 kg Power Module
50 kg Battery Module



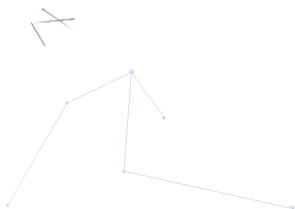
Quick Commissioning

Automatically Detected in App



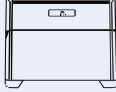


Perfect Compatibility

Compatible to Both Residential
Single & Three Phase Inverter



LUNA2000-5/10/15-S0

Technical Specification

Technical Specification	LUNA2000-5-S0	LUNA2000-10-S0	LUNA2000-15-S0
			

Performance

Power module	LUNA2000-5KW-C0		
Number of power modules	1		
Battery module	LUNA2000-5-E0		
Battery module energy	5 kWh		
Number of battery Modules	1	2	3
Battery usable energy 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 – 560V		
Nominal voltage (three phase system)	600 V		
Operating voltage range (three phase system)	600 – 980V		

Communication

Display	SOC status indicator, LED indicator
Communication	RS485 / CAN (only for parallel operation)

General Specification

Dimension (W*D*H)	670 * 150 * 600 mm (26.4 * 5.9 * 23.6 inch)	670 * 150 * 960 mm (26.4 * 5.9 * 37.8 inch)	670 * 150 * 1320 mm (26.4 * 5.9 * 60.0 inch)
Weight (Floor stand toolkit included)	63.8 kg (140.7lb)	113.8 kg (250.9lb)	163.8 kg (361.1lb)
Power module dimension (W*D*H)	670 * 150 * 240 mm (26.4 * 5.9 * 9.4 inch)		
Power module weight	12 kg (26.5 lb)		
Battery module dimension (W*D*H)	670 * 150 * 360 mm (26.4 * 5.9 * 14.0 inch)		
Battery module weight	50 kg (110.2 lb) ²		
Installation	Floor stand (standard), Wall mount (optional)		
Operating temperature	-20°C ~ + 55°C (-4°F ~ 131°F) ³		
Max. operating altitude	4,000 m (13,123 ft.) (Derating above 2,000 m)		
Environment	Outdoor ⁴ (*Please refer to the user manual for installation condition)		
Relative humidity	5% ~ 95%		
Cooling	Natural convection		
Protection rating	IP 66		
Noise emission	<29 dB		
Cell technology	Lithium-iron phosphate (LiFePO4)		
Scalability	Max. 2 systems in parallel operation		
Compatible inverters	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-3/4/5/6/8/10KTL-M0 ⁵ , SUN2000-3/4/5/6/8/10KTL-M1		

Standard Compliance (more available upon request)

Certificates	CE, RCM, CEC, VDE2510-50, IEC62619, IEC 60730, UN38.3
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Ordering and Deliverable Part

Product ordering model ⁶	LUNA2000-5KW-C0, LUNA2000-5-E0, LUNA2000 Wall Mounting Bracket
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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 module is subject to the actual product, with a tolerance of ±3%

3. Refer to battery warranty letter for conditional application.

4. Improper storage system installation may compromise product warranty and operation safety. Please follow the user manual during the installation, use, and maintenance of the storage system.

5. Please contact local engineer for the compatibility between the SUN2000-3/4/5/6/8/10KTL-M0 with the LUNA2000.

6. Storage system is ordered and delivered in the form of power module and battery module separately with corresponding quantity.

SUN2000-450W-P2/600W-P

Smart Module Controller



One-fits-all Optimizer
for Easier Business



<5s PV Module Physical
Layout Auto-mapping



Pinpointing Open-circuit Fault for Quick
Troubleshooting

Technical Specification	SUN2000-450W-P2	SUN2000-600W-P		
Input				
Rated Input DC Power 1	450 W	600 W		
Absolute Maximum Input Voltage	80 V			
MPPT Operating Voltage Range	10 ~ 80 V			
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5 A			
Maximum Efficiency	99.5 %			
Weighted Efficiency	99.0 %			
Overvoltage Category	II			
Output				
Maximum Output Voltage	80 V			
Maximum Output Current	15 A			
Output Bypass 2	Yes			
Output Voltage during Standby 3	0 V per Optimizer			
Output Impedance during Standby	1kΩ ± 10 % per Optimizer			
Communication				
Communication Method	MBUS			
Standard Compliance				
Safety	IEC62109-1 (class II safety)			
RoHS	Yes			
Fire Safety	VDE-AR-E 2100-712:2018-12			
General Data				
Dimensions (W x H x D)	75 x 140 x 28 mm (3.0 x 5.5 x 1.1 inch)			
Weight (including cables)	0.6 kg (1.3 lb.)			
Installation Part (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 / Relative Humidity Range	-40 °C ~ 85 °C 5 / 0 % ~ 100 %			
Protection Rating	IP68			
Compatible Inverters	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20KTL-M2, SUN2000-12/15/17/20/25KTL-M5, SUN2000-30/36/40KTL-M3			
PV System Design 6				
Minimum String Length (Power Optimizers)	SUN2000-2~6KTL-L1	SUN2000-3~10KTL-M1	SUN2000-12~20KTL-M2 SUN2000-12~25KTL-M5	SUN2000-30~40KTL-M3
Maximum String Length (Power Optimizers)	4	6	6	6
Maximum DC power per string	25	35	35	25
	6,000 W	10,000 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 remains 0Vdc.

*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 in single Smart Energy/PV Controller.

MERC-1100/1300W-P Smart Module Controller



Long String Design
to Reduce BOS



Maximum 20A Input Current
Suit All Type of PV Module



<5s PV Module
Auto-mapping



Identify Inefficient PV Module
Effectively



1V Safe Voltage Shutdown
Friendly to Inspection

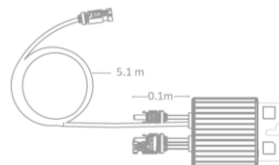


Pinpointing Open-circuit Fault
for Quick Troubleshooting



Technical Specification	MERC-1100W-P	MERC-1300W-P					
Input							
Rated Input DC Power ¹	1100 W	1300 W					
Absolute Maximum Input Voltage	125 V						
MPPT Operating Voltage Range	12.5 ~ 105 V						
Maximum Short Circuit Current (Isc) of Connected PV Module	20 A						
Maximum Efficiency	99.5 %						
Weighted Efficiency	99.0 %						
Overvoltage Category	II						
Output							
Maximum Output Voltage	80 V						
Maximum Output Current	22 A						
Output Bypass ²	Yes						
Safety Output Voltage per Optimizer ³	1 V						
Standard Compliance							
Safety	IEC62109-1 (class II safety)						
RoHS	Yes						
General Data							
Dimension (W X H X D)	149 x 104 x 48.8 mm (5.9 x 4.1 x 1.9 inch)						
Weight (including wires)	1.0 kg (2.2 lb.)						
Installation Part (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 ~ +85 °C ⁶						
Relative Humidity	0 % ~ 100 %						
Protection Rating	IP68						
Compatible Inverters	SUN2000-12/15/17/20KTL-M2, SUN2000-30/36/40KTL-M3, SUN2000-12/15/17/20/25KTL-M5, SUN2000-50KTL-M3						
PV System Design ^{7/8/9}	SUN2000-12~20KTL-M2	SUN2000-12~25KTL-M5	SUN2000-30~40KTL-M3	SUN2000-50KTL-M3			
Minimum String Length (Power Optimizers)	6	6	6	6			
Maximum String Length (Power Optimizers)	25	25	25	20			
Recommended Qty of Input Strings per Smart Energy/PV Controller (Only 1 PV string can be connected to each MPPT.)	12KTL	15-20KTL	12KTL	15-25KTL	30/36KTL	40KTL	4
	1	2	1	2	3	4	
Maximum DC Power per String	20,000 W	20,000 W	20,000 W	20,000 W	20,000 W	20,000 W	

Short-input-cable Version



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

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

^{*5} Please be cautious of the PV module wire length. To match with split junction box PV module with 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} It is compulsory to equip all PV modules with MERC-1100/1300W-P under single inverter.

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

^{*9} It is recommended to split string capacity equally under single inverter. Moreover, it is compulsory to keep string capacity difference in single inverter no more than 2kW, otherwise the power generation yield can be reduced.

Residential Smart Charger



Single Phase

7.4 kW/32 A

SCharger-7KS-S0

Three Phase

22 kW/32 A

SCharger-22KT-S0



PV Power Preferred

Power Your Car with Solar
Make EV Even Greener



Automatic Phase Switch ¹

Automatic Switch between 1 Phase and 3 Phase
More Usable Green Power



3 Ways Authentication

Bluetooth, RFID and APP
Avoid Accidental Charging



Dynamic Charging Power

Automatic Detection and Adjustment
No Worry about Overload



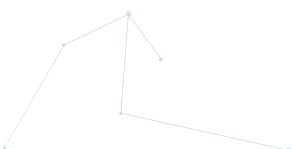
All on a Single APP

Full Control Through One APP
for All PV + ESS + Charger



3-Step Installation

Fast Installation in 16 Minutes
Wiring-free Maintenance



Smart Charger 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 ² to 22 kW
Nominal voltage	230 V (1-phase) ± 20%	400 V (3-phase) ± 20%
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 width	Up to 10 mm ²	
Network types	TN, TT, IT	TN, TT
User Interface & Communications		
Protocol	Modbus TCP	
Communication	Wi-Fi/Ethernet	
Charger status information	WRGB LED, App	
Authentication	RFID (ISO-14443-A), App, Bluetooth	
Remote control & monitoring	App	
Working mode	Normal Charge Scheduled Charge PV Power Preferred	
Protection		
Cable protection	Cable E-Lock via App	
Residual current protection (RCD)	Type A(30mA) + DC 6 mA integrated (IEC 62955 & IEC 61008-1)	
Fire Class	UL94	
Overcurrent protection	IEC 61851-1	
Over-temperature protection	Yes	
Surge protection	CAT II	
General Specifications		
Operating temperature range	-35°C to +45°C	-35°C to +40°C @ 32A -35°C to +50°C @ 16A
Application environment	Outdoor/Indoor	
Storage temperature	-40°C to +70°C	
Relative humidity	5% RH–95% RH	
Altitude	≤ 2000 m (derating between 2000~4000m)	
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)		
Standard	EN 61851-1 2019, IEC 62955:2018, IEC 61008-1 2010, IEC/EN 62196-1	
Others		
Accessories	RFID Card * 2	

*1 Available in PV Power Preferred Mode
*2 1.4 kW for 1-Phase charge and 4.2 kW for 3-Phase charge

Backup Box



Simple

Automatic detection & switchover



Reliable

Provide Reliable backup power



Solar Reloading

Battery reloading from sun in backup mode



Black start

Restart the system after battery shutdown

Technical Specification	Backup Box-B0	Backup Box-B1
AC Output (On grid)		
Grid connection	Single Phase	Three Phase
Rated voltage	220 V / 230 V	380 V / 400 V
AC frequency	50Hz / 60Hz	
AC output voltage range	198 V ~ 253 V	342 V ~ 440 V
AC Output (Backup)		
Load connection	Single Phase	Single Phase
Rated voltage	220 V / 230 V	220 V / 230 V
AC frequency	50Hz / 60Hz	
Maximum apparent power	5,000 VA	3,300 VA
Maximum output current	22.7 A	15.2 A
Switchover time	< 3 s	
AC Input (Inverter)		
Rated voltage	220 V / 230 V	380 V / 400 V
AC frequency	50Hz / 60Hz	
Compatible inverter	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1	SUN2000-3/4/5/6/8/10KTL-M1
General Specification		
Operating temperature range	-20 °C to +45 °C (-4 °F to 113 °F)	
Relative humidity range	0 %RH ~ 100 %RH	
Dimensions (W * H * D)	400 x 350 x 130 mm (15.8 x 13.8 x 5.1 inch)	
Weight	11 kg	
Degree of protection	IP 65	



Smart Dongle-WLAN-FE



Smart

WLAN & Fast Ethernet (FE) communication
Support 3rd-party monitoring system ¹



Simple

Plug & Play
Support max. 10 devices



Reliable

IP65
Support auto reconnection

Technical Specification	SDongleA-05(AP+STA)
General Data	
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 * H * D)	146 x 48 x 33 mm (5.1 x 1.9 x 1.3 inch)
Weight	90 g (0.2 lb.)
Degree of protection	IP65
Power consumption (typical)	2.5 W
Operation Mode	AP + STA
Encryption Algorithm	Encryption Mechanism: WPA/WPA2 Encryption: TKIP/CCMP/AES
Wireless Parameter	
Supported standards & frequencies	802.11b/g/n (2.412G—2.484G)
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.)
Standard Compliance (more available upon request)	
Certificate	SRRC, CE, RCM
Inverter Compatibility	
Inverter Model	SUN2000-2/3/3.68/4/4.6/5/6-L1 SUN2000-3/4/5/6/8/10-M1 SUN2000-12/15/17/20KTL-M2 SUN2000-12/15/17/20/25KTL-M5 SUN2000-30/36/40/50KTL-M3 SUN2000-100/115KTL-M2

¹: 3rd-party management system shall match the communication protocol with Huawei Smart Dongle. Currently this function is only compatible with M5 Inverter.

Smart Dongle-4G



Smart

4G communication ¹

Support 3rd-party monitoring system ²



Simple

Plug & Play

WLAN-AP for local deploying ³



Reliable

IP65

Support auto reconnection

Technical Specification	SDongleB-06-EU	SDongleB-06-AU	SDongleB-06-NH
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General Data	
Max. Devices Supported	10
Max. Inverters Supported	10
Connection interface	USB
Installation	Plug-and-play
Indicator	LED Indicator
Dimensions (W * H * D)	162*48*28mm
Degree of protection	IP65
Power consumption (typical)	3.5W

Wireless Parameter			
Sim card type	mini-sim (15 mm*25 mm)		
Supported standards & frequencies ⁴	LTE-FDD: B1/B3/B7/B8/B20/B28 LTE-TDD: B38/B40/B41 GSM: 850/900/1800/1900MHz	LTE-FDD: B1/B2/B3/B4/B5/B7/B8/B28 LTE-TDD: B40 WCDMA: B1/B2/B5/B8 GSM: 850/900/1800/1900MHz	LTE-FDD: B1/B3/B8/B18/B19/B26 LTE-TDD: B41 WCDMA: B1/B6/B8/B19
Wifi Operation Mode	AP		
Supported standards & frequencies	802.11b/g/n (2.412G—2.484G)		

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.)

Standard Compliance (more available upon request)			
Certificate	CE	RCM	TELEC

Inverter Compatibility	
Inverter model	SUN600-5/6KTL-L0 SUN2000-2~6KTL-L1 SUN2000-3~10KTL-M1 SUN2000-8~20KTL-M2 SUN2000-12~25KTL-M5 SUN2000-20~50KTL-M3 SUN2000-50/60KTL-M0 SUN2000-50KTL-JPM1 SUN2000-63KTL-JPM0 SUN2000-75KTL-M1 SUN2000-100KTL-M0/M1 SUN2000-100KTL-INM0 SUN2000-100/115KTL-M2

1: To ensure stable data transmission, Huawei suggests 4G dongle to be installed in areas with stable mobile signal (2G signal ≥ 4 bars, 3G/4G signal ≥ 3 bars).
 2: 3rd-party management system shall match the communication protocol with Huawei Smart Dongle. Currently this function is only compatible with M5 Inverter.
 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.

Smart Power Sensor



Accurate

Class 1 measurement accuracy



Simple & Easy

LCD display, easy to set and check



Energy Efficient

Overall power consumption ≤ 1.5 W

Technical Specification	SmartPS-100A-S0	SmartPS-80AI-T0
General Data		
Dimension (W × H × D)	36 x 100 x 65.5 mm	72 x 100 x 80 mm
Mounting type	DIN35 Rail	
Weight (including cables)	≤ 0.85 kg	≤ 0.99 kg
Height requirement of cabinet	≥ 52 mm	≥ 62 mm
Power Supply		
Power grid type	1P2W	3P4W/3P3W
Input voltage (line voltage)	176 ~ 288 Vac	90 ~ 500 Vac
Power consumption	≤ 0.8 W	≤ 1.5 W
Measurement Range		
Line voltage	/	90 ~ 1000 Vac (> 500 with external PT ¹)
Phase voltage	176 ~ 288 Vac	52~577 Vac
Current	0 ~ 100 A	0 ~ 80 A(>80 with external CTs ²)
Measurement Accuracy		
Voltage / Current	± 0.5 %	
Power / Energy	± 1 %	
Frequency	± 0.01 Hz	
Communication		
Interface	RS485	
Baud rate	4800/9600/19200/115200 (Default 9600bps)	
Communication protocol	Modbus-RTU	
Environment		
Operating temperature range	-25 °C ~ 60 °C	
Storage temperature range	-40 °C ~ 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)	/

¹ 2nd voltage of CT should be 100V. And accuracy should be better than Class 0.5
² 2nd current of PT should be 1A or 5A. And accuracy should be better than Class 0.5

Smart Home Energy Management

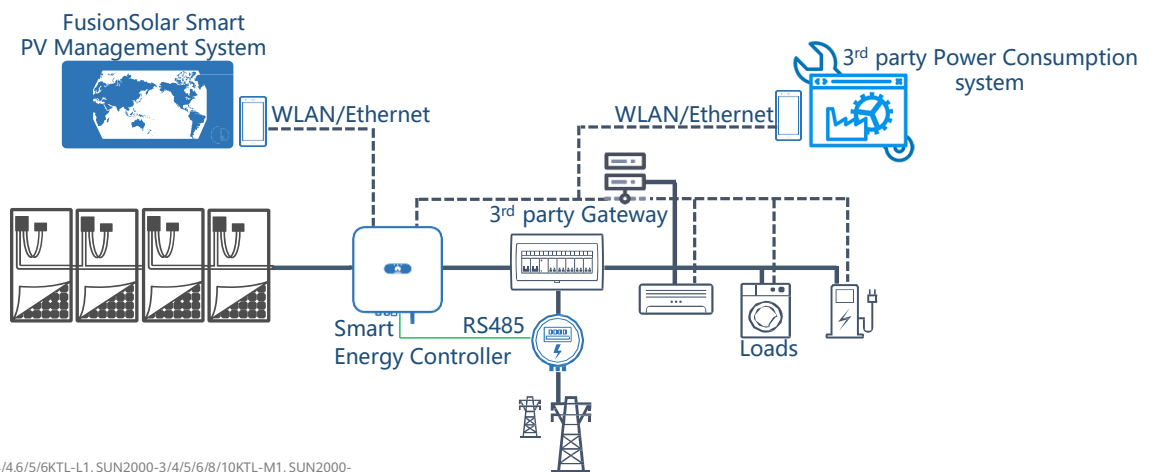


Powerful Ecosystem
Expanding supported partners



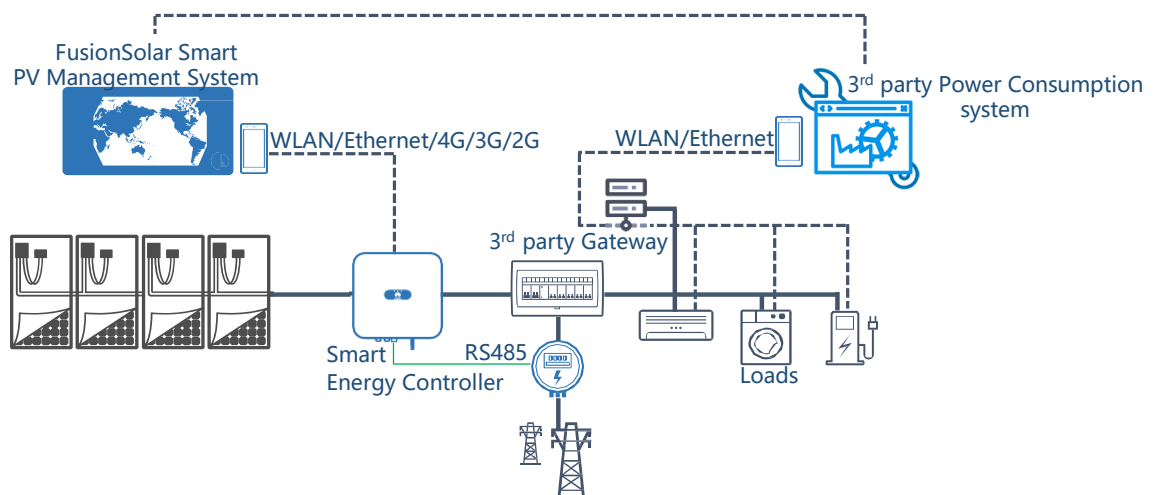
AI Management
Higher Self-consumption Rate

Local Communication













*1 Only SUN2000-2/3/3.68/4/4.6/5/6/KTL-L1, SUN2000-3/4/5/6/8/10/KTL-M1, SUN2000-12/15/17/20/KTL-M2 support Local Communication

Cloud Open API



Smart Home Energy Management



Mode	Supported Partners		Homepage
Local Communication		Solarmanager	www.solarmanager.ch
		my-PV	www.my-pv.com
		Smartfox	www.smartfox.at
		Elausys KNX Interface	www.elausys.be
		sonniQ	www.sonniq.de
		Solaranzeige	www.solaranzeige.de
		loxone	www.loxone.com/de
		Solar-Log	www.solar-log.com
Cloud Open API		clever-pv	www.clever.pv.com
		ev-autocharge	www.ev-autocharge.com



1.8kWp

Residential PV System in Amsterdam, Netherlands

System Configuration

- 6 × 300Wp modules
- 6 × 450W optimizers
- SUN2000L-2KTL-L1

COD

July, 2020



25kWp

Residential PV System in Hungary

System Configuration

- 84 × 295Wp modules
- SUN2000-20KTL-M0

COD

May, 2019



12KWp

Residential PV System in Oosterzele, Belgium

COD
Mar 2016

System Configuration

- 36 × 340Wp Modules
- SUN2000-8KTL-M0



33kWp

Residential PV system in Hanadacho Chokushi, Japan

COD
April, 2018

System Configuration



- 120 × 275Wp modules
- 8 × SUN2000L-4.125KTL-JP
- SmartACBox12in1



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Huawei Technologies Düsseldorf GmbH

Südwestpark 37-41, 90449 Nürnberg, Deutschland
Hotline: 0080 03 38 88 888
Email: eu_inverter_support@huawei.com

HUAWEI TECHNOLOGIES SWITZERLAND AG

Waldeggstrasse 30 3097 Liebefeld BE Switzerland
Hotline: 0080 03 38 88 888
Email: eu_inverter_support@huawei.com

HUAWEI TECHNOLOGIES CO.,LTD

Huawei Industrial Base Bantian Longgang
Shenzhen 518129,P.R.China
Tel.:400-822-9999 Version No.:04-(20201006)
solar.huawei.com