



# FusionSolar<sup>®</sup>

## 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+**

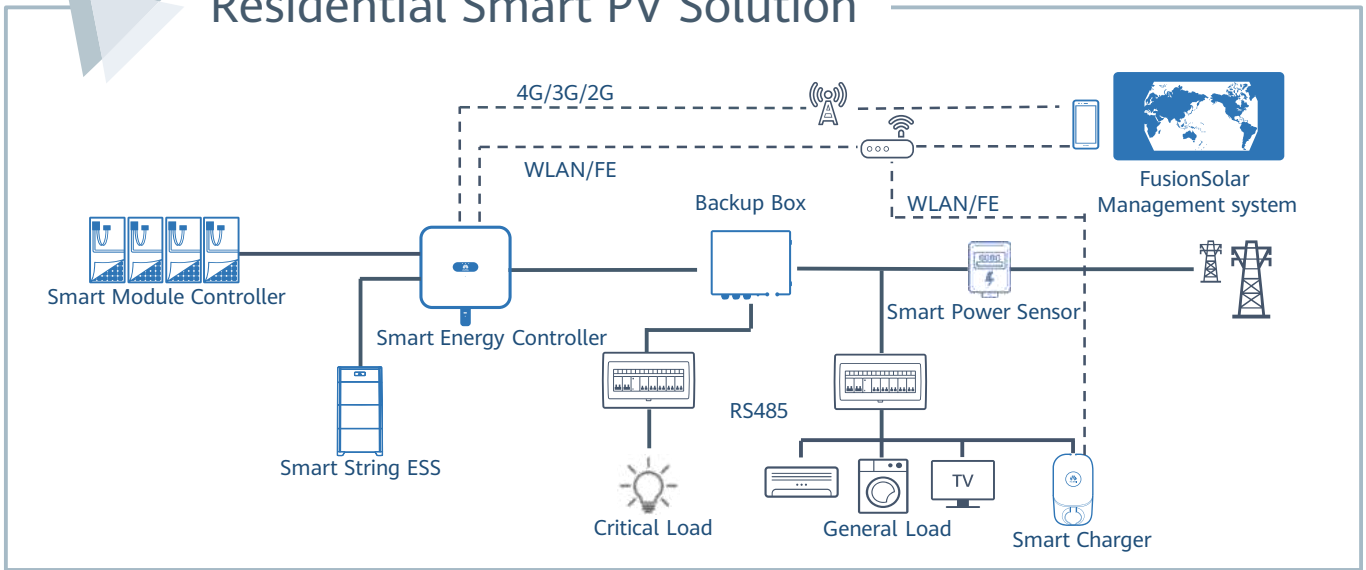
Countries  
**170+**

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



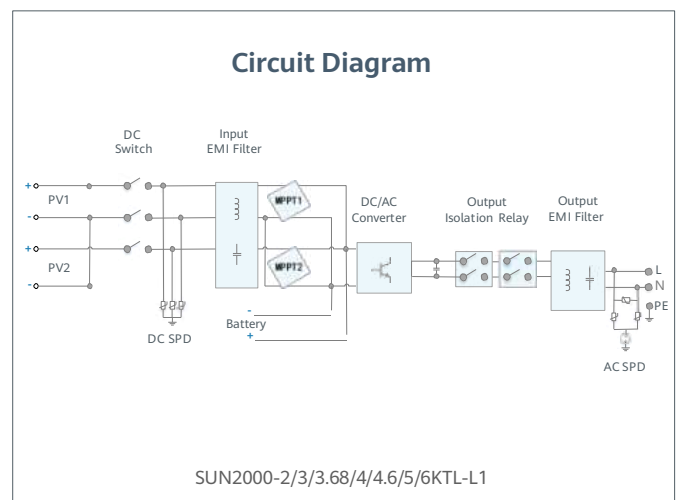
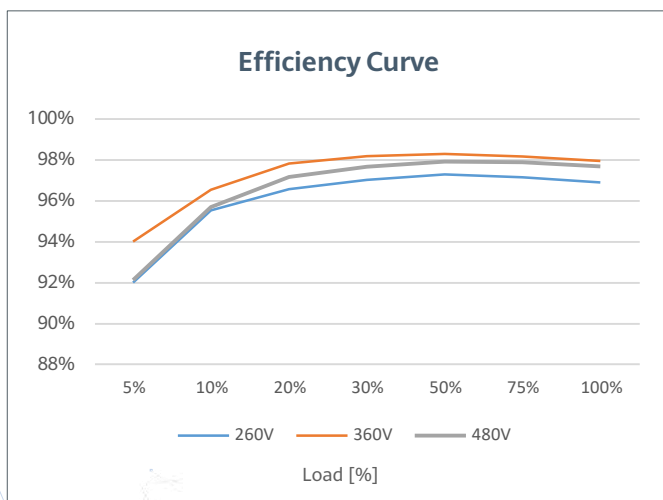
## Higher Yields

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 <sup>1</sup>
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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 <sup>2</sup>	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 <sup>3</sup>						
Start-up voltage	100 V						
MPPT operating voltage range	90 V – 560 V <sup>3</sup>						
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 <sup>1</sup>						
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 <sup>1</sup> )						

## 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						

<sup>\*1</sup> Inverter max input PV power is 10,000Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.

<sup>\*2</sup> The maximum input voltage and operating voltage upper limit will be reduced to 495 V when inverter connects and works with LG battery.

<sup>\*3</sup> 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 <sup>1</sup>



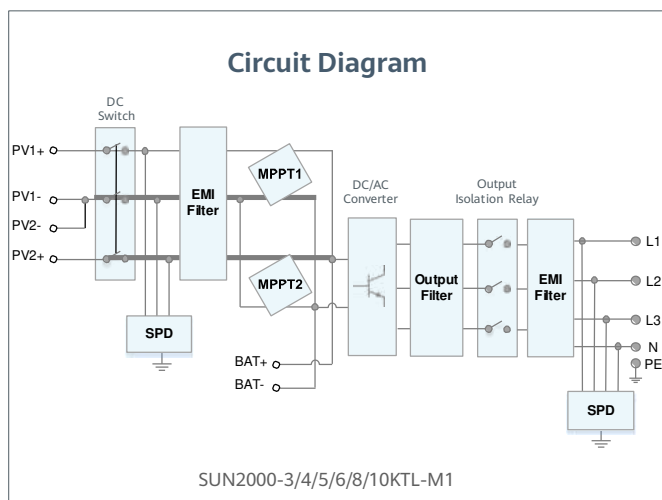
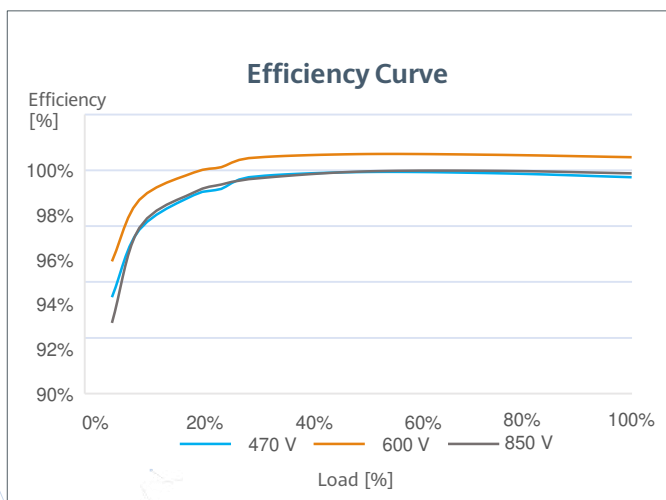
## Battery Ready

Plug & Play battery interface <sup>2</sup>



## Flexible Communication

WLAN, Fast Ethernet, 4G  
Communication Supported



<sup>1</sup> Only applicable to SUN2000-3/4/5/6/8/10KTL-M1 smart energy center.  
<sup>2</sup> 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
<b>Efficiency</b>						
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%
<b>Input (PV)</b>						
Recommended max. PV power <sup>1</sup>	4,500 Wp	6,000 Wp	7,500 Wp	9,000 Wp	12,000 Wp	15,000 Wp
Max. input voltage <sup>2</sup>	1,100 V					
Operating voltage range <sup>3</sup>	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					
<b>Input (DC Battery)</b>						
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
<b>Output (On Grid)</b>						
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 <sup>4</sup>
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%					
<b>Output (Off Grid)</b>						
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					
<b>Features &amp; Protections</b>						
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 <sup>5</sup>	Yes					
Battery reverse charging from grid	Yes					
<b>General Data</b>						
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 <sup>6</sup>					
<b>Optimizer Compatibility</b>						
DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P					
<b>Standard Compliance (more available upon request)</b>						
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					

<sup>1</sup> 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.

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

<sup>3</sup> Any DC input voltage beyond the operating voltage range may result in inverter improper operating.

<sup>4</sup> C10 / 11: 10,000 VA

<sup>5</sup> 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).

<sup>6</sup> <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



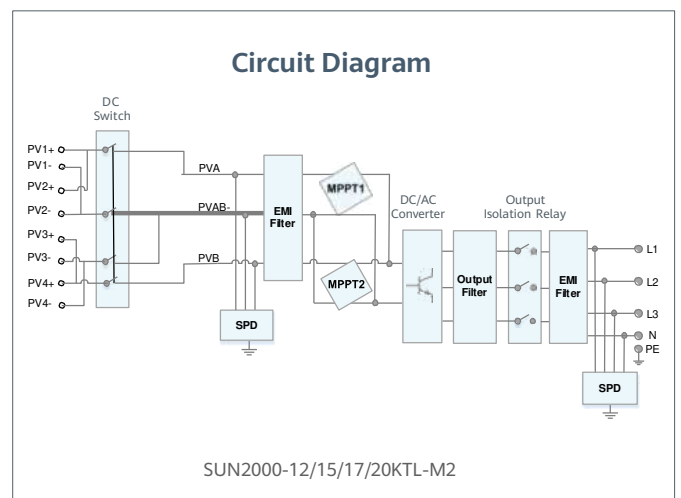
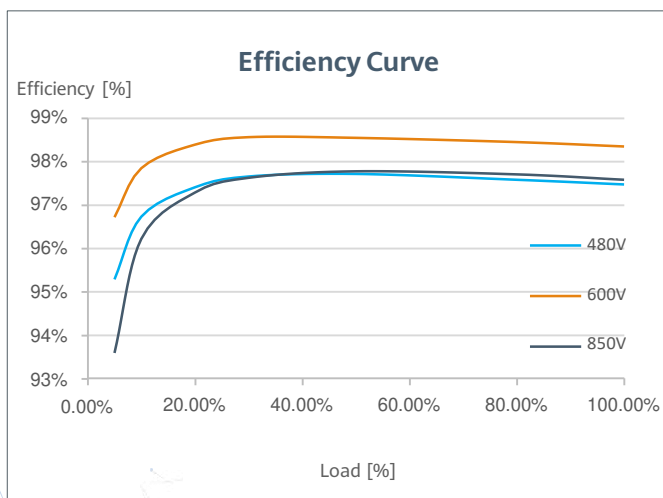
## Higher Yields

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 <sup>1</sup>	18,000 Wp	22,500 Wp	25,500 Wp	30,000 Wp
Max. input voltage <sup>2</sup>	1,080 V			
Operating voltage range <sup>3</sup>	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) <sup>4</sup>			
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 <sup>5</sup>	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 <sup>6</sup>

## 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

<sup>1</sup> Inverter max input PV power is 40,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.

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

<sup>3</sup> Any DC input voltage beyond the operating voltage range may result in inverter improper operating.

<sup>4</sup> 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)

<sup>5</sup> 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)

<sup>6</sup> <10W when PID recovery function is activated

<sup>7</sup> 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



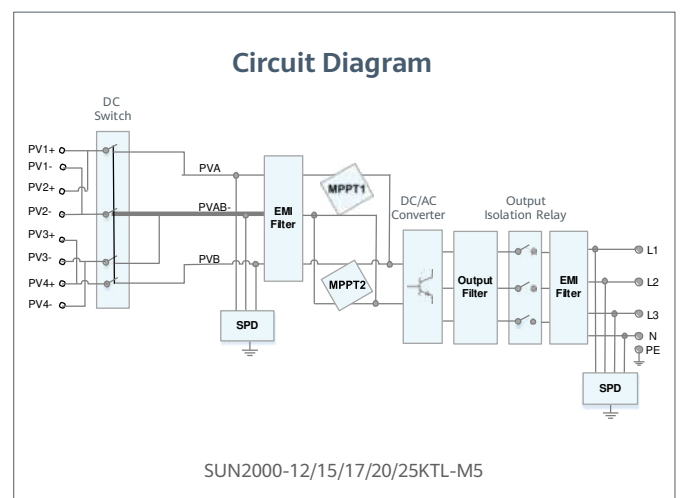
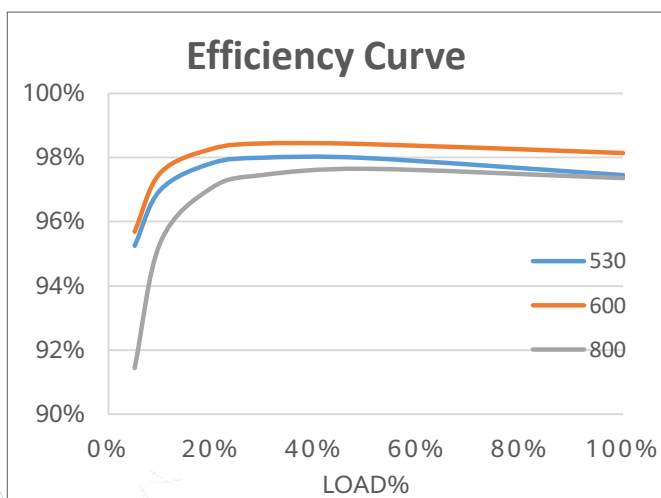
## Higher Yields

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 <sup>1</sup>	18,000 Wp	22,500 Wp	25,500 Wp	30,000 Wp	37,500 Wp
Max. input voltage <sup>2</sup>	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 <sup>3</sup>	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 <sup>4</sup>	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

<sup>1</sup> Inverter max input PV power is 40,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.

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

<sup>3</sup> Any DC input voltage beyond the operating voltage range may result in inverter improper operating.

<sup>4</sup> 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



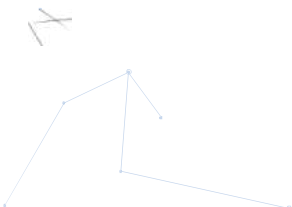
## Quick Commissioning

Automatically Detected in App



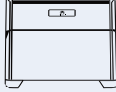


## Perfect Compatibility

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 <sup>1</sup>	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 (361.1 lb)
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) <sup>2</sup>		
Installation	Floor stand (standard), Wall mount (optional)		
Operating temperature	-20°C ~ + 55°C (-4°F ~ 131°F) <sup>3</sup>		
Max. operating altitude	4,000 m (13,123 ft.) (Derating above 2,000 m)		
Environment	Outdoor <sup>4</sup> (*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 <sup>5</sup> , 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 <sup>6</sup>	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 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		
<b>Input</b>				
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			
<b>Output</b>				
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			
<b>Communication</b>				
Communication Method	MBUS			
<b>Standard Compliance</b>				
Safety	IEC62109-1 (class II safety)			
RoHS	Yes			
Fire Safety	VDE-AR-E 2100-712:2018-12			
<b>General Data</b>				
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			
<b>PV System Design 6</b>				
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.

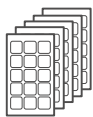
\*3 Once the power optimizer stops working, its output voltage remains 0Vdc.

\*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



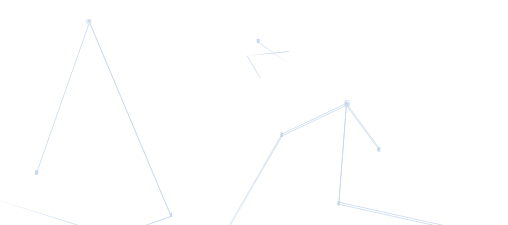
Identify Inefficient PV Module  
Effectively



1V Safe Voltage Shutdown  
Friendly to Inspection

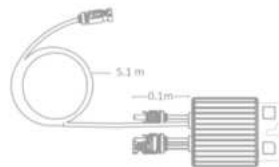


Pinpointing Open-circuit Fault  
for Quick Troubleshooting



Technical Specification	MERC-1100W-P	MERC-1300W-P					
<b>Input</b>							
Rated Input DC Power <sup>1</sup>	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						
<b>Output</b>							
Maximum Output Voltage	80 V						
Maximum Output Current	22 A						
Output Bypass <sup>2</sup>	Yes						
Safety Output Voltage per Optimizer <sup>3</sup>	1 V						
<b>Standard Compliance</b>							
Safety	IEC62109-1 (class II safety)						
RoHS	Yes						
<b>General Data</b>							
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 <sup>4</sup>						
Input Connector	Staubli MC4						
Input Wire Length	0.1 m (+/-) (short-input-cable version) <sup>5</sup>						
Output Connector	Staubli MC4						
Output Wire Length	0.1 m (+), 5.1 m (-) (short-input-cable version) <sup>5</sup>						
Operating Temperature	-40 °C ~ +85 °C <sup>6</sup>						
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						
<b>PV System Design <sup>7/8/9</sup></b>	<b>SUN2000-12~20KTL-M2</b>	<b>SUN2000-12~25KTL-M5</b>	<b>SUN2000-30~40KTL-M3</b>	<b>SUN2000-50KTL-M3</b>			
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.



Single Phase

# 7.4

 kW/32 A

SCharger-7KS-S0

Three Phase

# 22

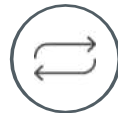
 kW/32 A

SCharger-22KT-S0



## PV Power Preferred

Power Your Car with Solar  
Make EV Even Greener



## Automatic Phase Switch <sup>1</sup>

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



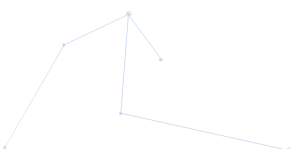
## All on a Single APP

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



## 3-Step Installation

Fast Installation in 16 Minutes  
Wiring-free Maintenance

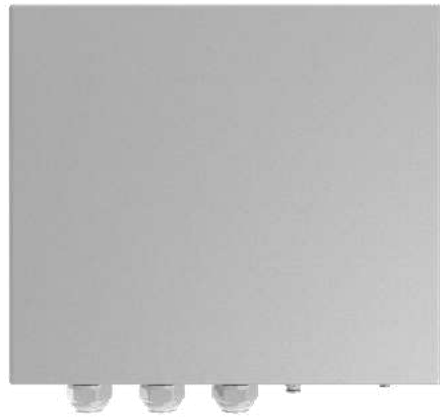


# Smart Charger Technical Specifications

Technical Specification	SCharger-7KS-S0	SCharger-22KT-S0
<b>Inputs and Outputs</b>		
Charge power (configurable)	1.4 kW to 7.4 kW	1.4 kW <sup>2</sup> 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 <sup>2</sup>	
Network types	TN, TT, IT	TN, TT
<b>User Interface &amp; Communications</b>		
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	
<b>Protection</b>		
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	
<b>General Specifications</b>		
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	
<b>Standards Compliance (More Available Upon Request)</b>		
Standard	EN 61851-1 2019, IEC 62955:2018, IEC 61008-1 2010, IEC/EN 62196-1	
<b>Others</b>		
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

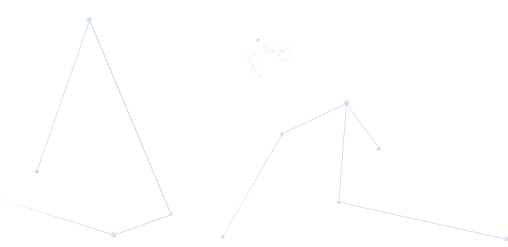
Battery reloading from sun in backup mode



## Black start

Restart the system after battery shutdown

Technical Specification	Backup Box-B0	Backup Box-B1
<b>AC Output (On grid)</b>		
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
<b>AC Output (Backup)</b>		
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	
<b>AC Input (Inverter)</b>		
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
<b>General Specification</b>		
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 <sup>1</sup>



## 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
----------------	---

<sup>1</sup>: 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 <sup>1</sup>

Support 3rd-party monitoring system <sup>2</sup>



## Simple

Plug & Play

WLAN-AP for local deploying <sup>3</sup>



## Reliable

IP65

Support auto reconnection

Technical Specification	SDongleB-06-EU	SDongleB-06-AU	SDongleB-06-NH
-------------------------	----------------	----------------	----------------

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 <sup>4</sup>	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  $\leq 1.5$  W

Technical Specification	SmartPS-100A-S0	SmartPS-80AI-T0
<b>General Data</b>		
Dimension (W × H × D)	36 x 100 x 65.5 mm	72 x 100 x 80 mm
Mounting type	DIN35 Rail	
Weight (including cables)	$\leq 0.85$ kg	$\leq 0.99$ kg
Height requirement of cabinet	$\geq 52$ mm	$\geq 62$ mm
<b>Power Supply</b>		
Power grid type	1P2W	3P4W/3P3W
Input voltage (line voltage)	176 ~ 288 Vac	90 ~ 500 Vac
Power consumption	$\leq 0.8$ W	$\leq 1.5$ W
<b>Measurement Range</b>		
Line voltage	/	90 ~ 1000 Vac (> 500 with external PT <sup>1</sup> )
Phase voltage	176 ~ 288 Vac	52~577 Vac
Current	0 ~ 100 A	0 ~ 80 A(>80 with external CTs <sup>2</sup> )
<b>Measurement Accuracy</b>		
Voltage / Current	$\pm 0.5$ %	
Power / Energy	$\pm 1$ %	
Frequency	$\pm 0.01$ Hz	
<b>Communication</b>		
Interface	RS485	
Baud rate	4800/9600/19200/115200 (Default 9600bps)	
Communication protocol	Modbus-RTU	
<b>Environment</b>		
Operating temperature range	-25 °C ~ 60 °C	
Storage temperature range	-40 °C ~ 70 °C	
Operating humidity	5 %RH ~ 95 %RH (non-condensing)	
<b>Others</b>		
Accessories	RS485 Cable (10 m / 33 ft.)	/
	1 CT 100 A/40 mA (5 m) 	/

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

# Smart Home Energy Management

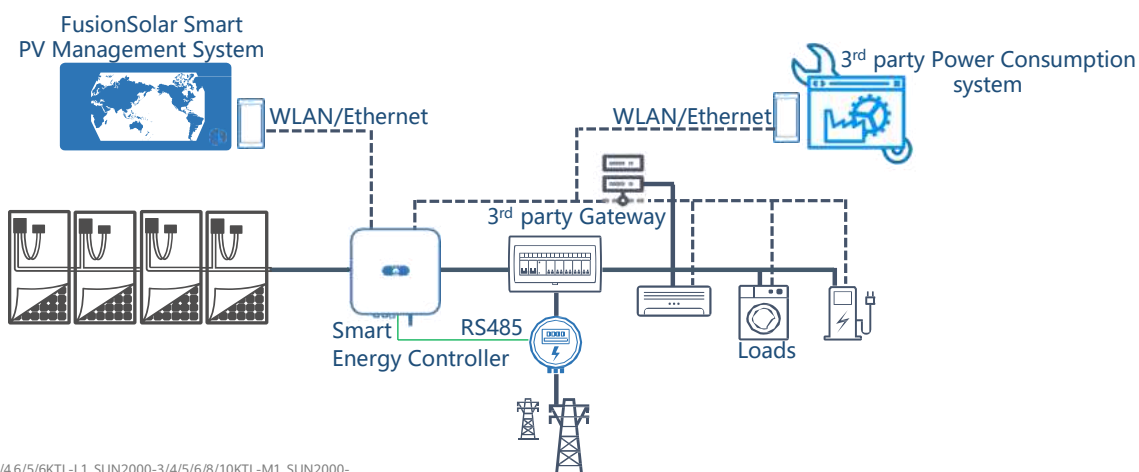


**Powerful Ecosystem**  
Expanding supported partners



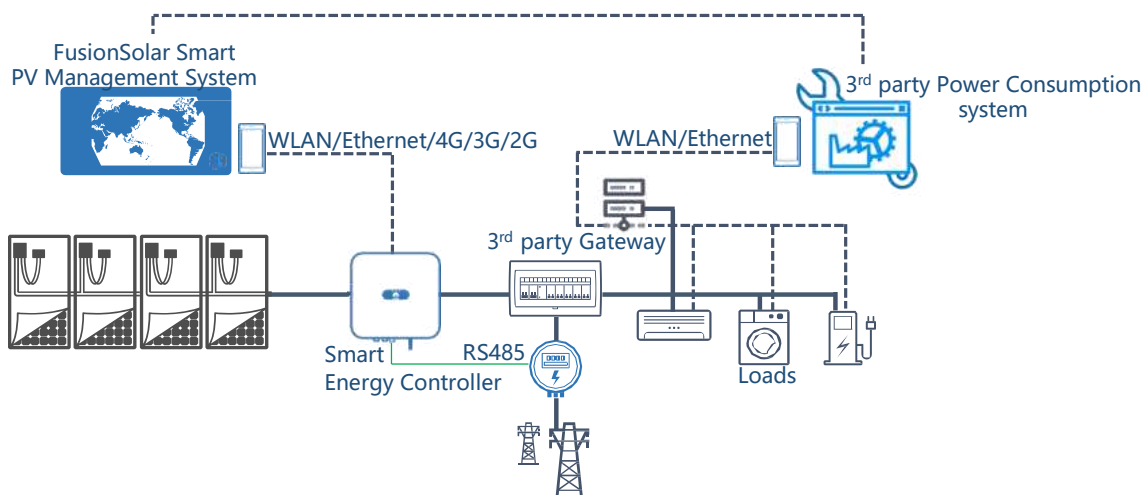
**AI Management**  
Higher Self-consumption Rate

## Local Communication













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

## Cloud Open API



# Smart Home Energy Management



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



## 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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