



FusionSolar[®]

Residential & Commercial Smart PV Solution

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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

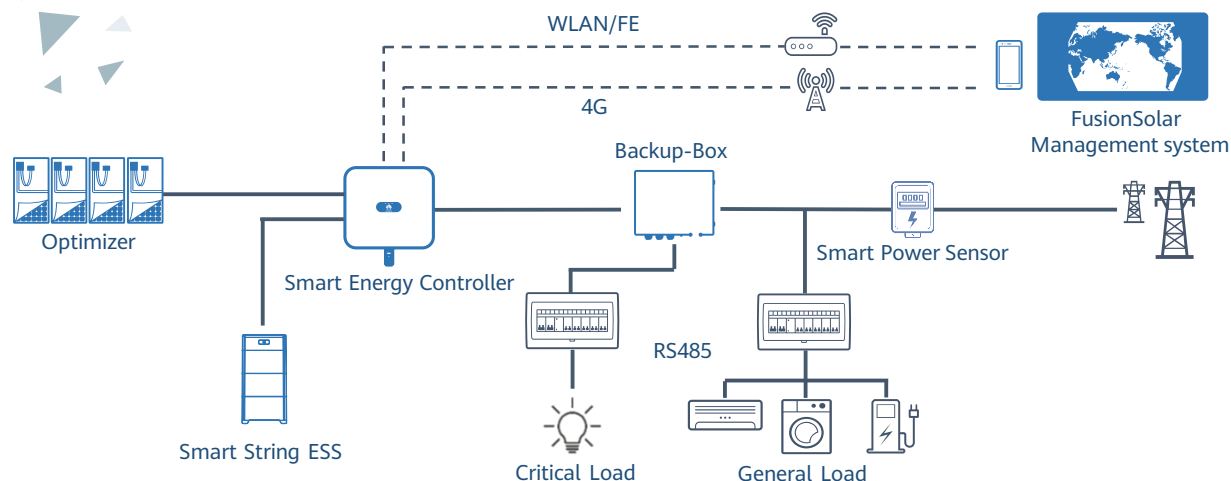


Fortune Global 500
44



R&D Investment
2

Residential PV Solution



Active Safety

AI Powered Active Arcing Protection

Pinpoint Arc Fault Positioning

Higher Yields

Up to 30% More Energy by Optimizers

2x POWER Battery Ready with More Energy

Better Experience

One-Fits-All Optimizer, Easier Business

Module Auto-Mapping within 5 sec



Smart Energy Controller



Active Safety

AI Powered
Active Arcing Protection



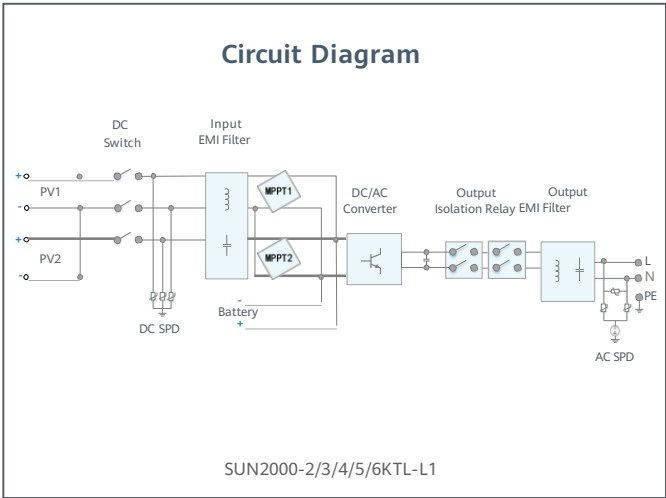
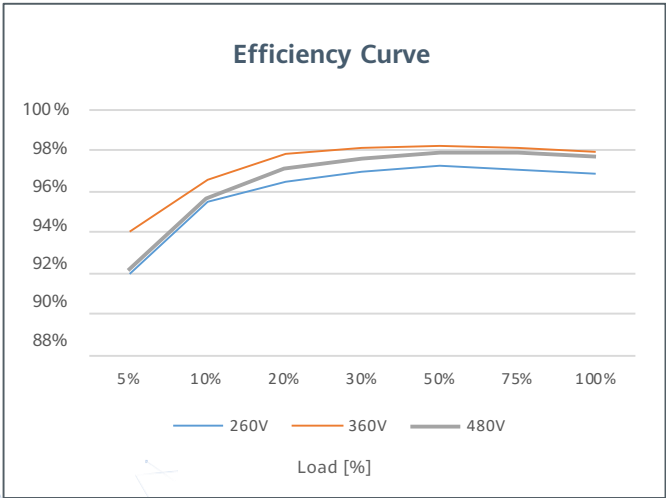
Higher Yields

Up to 30% More
Energy with Optimizer



2x POWER Battery Ready

5KWAC Output plus
5KW Battery Charge



SUN2000-2/3/4/5/6KTL-L1

Technical Specification

Technical Specification	SUN2000 -2KTL-L1	SUN2000 -3KTL-L1	SUN2000 -4KTL-L1	SUN2000 -5KTL-L1	SUN2000 -6KTL-L1 ¹
Efficiency					
Max. efficiency	98.2 %	98.3 %	98.4 %	98.4 %	98.4 %
European weighted efficiency	96.7 %	97.3 %	97.5 %	97.8 %	97.8 %
Input (PV)					
Recommended max. PV power ²	3,000 Wp	4,500 Wp	6,000 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. number of inputs	2				
Input (DC Battery)					
Compatible Battery	LG Chem RESU 7H_R / 10H_R				
Operating voltage range	350 ~ 450 Vdc				
Max operating current	10 A @7H_R / 15 A @10H_R				
Max charge power	3,500 W @7H_R / 5,000 W @10H_R				
Max discharge Power @7H_R	2,200 W	3,300 W	3,500 W	3,500 W	3,500 W
Max discharge Power @10H_R	2,200 W	3,300 W	4,400 W	5,000 W	5,000 W
HUAWEI Smart ESS Battery 5kWh – 30kWh ¹					
Compatible Battery					
Operating voltage range	350 ~ 560 Vdc				
Max operating current	15 A				
Max charge Power	5,000 W ⁴				
Max discharge Power	2,200 W	3,300 W	4,400 W	5,000 W	5,000 W
Output					
Grid connection	Single phase				
Rated output power	2,000 W	3,000 W	4,000 W	5,000 W ⁵	6,000 W
Max. apparent power	2,200 VA	3,300 VA	4,400 VA	5,500 VA ⁷	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	20 A	25 A ⁸	27.3 A
Adjustable power factor	0.8 leading ... 0.8lagging				
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				
Optimizer Compatibility					
DC MBUS compatible optimizer	SUN2000-450W-P				
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, NOM, LAPEM				

*1 Available in 2020 Q3.

*2 Inverter max input PV power is 10,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.

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

*4 2,500 W @ 5kWh HUAWEI ESS battery

*5 AS4777.2: 4999W. *6 VDE-AR-N 4105: 4600VA / AS4777.2: 4999VA. *7. AS4777.2: 4999VA. *8. AS4777.2: 21.7A.

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Smart Energy Controller



Higher Yields

Max. Efficiency
Up to 98.4%



Better Experience

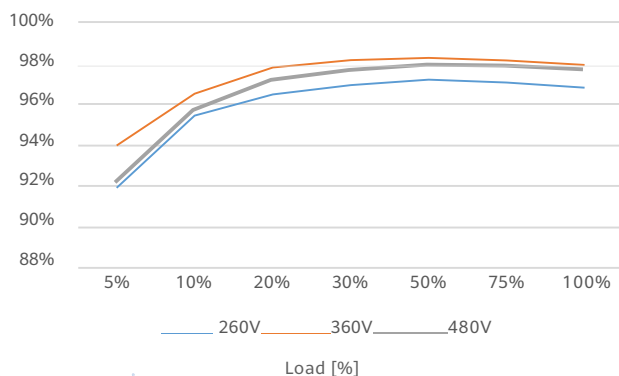
Small & Light
Only 12kg



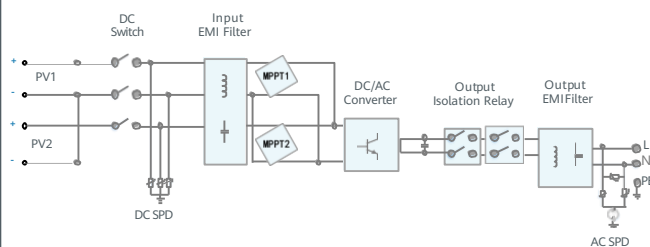
Safe & Reliable

Fully Sealed design
With IP65

Efficiency Curve



Circuit Diagram



SUN600-5/6KTL-L0

Technical Specification

Technical Specification	SUN600-5KTL-L0	SUN600-6KTL-L0
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Efficiency		
Max. efficiency	98.4 %	97.8%
European weighted efficiency	97.8 %	97.2%

Input (PV)		
Recommended max. PV power	6,900 Wp	7,500 Wp
Max. input voltage	600 V	
Start-up voltage	100 V	
MPPT operating voltage range	90 V ~ 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. number of inputs	2	

Output		
Grid connection	Single phase	
Rated output power	5,000 W ¹	6,000 W
Rated apparent output power	5,500 VA ¹	6,000 VA
Rated output voltage	220 Vac / 230 Vac / 240 Vac	
Rated AC grid frequency	50 Hz / 60 Hz	
Max. output current	25 A ¹	27.3 A
Adjustable power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	≤ 3 %	

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	
Active Arcing Protection	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	

Standard Compliance (more available upon request)		
Safety	EN/IEC 62109-1, EN/IEC 62109-2, IEC 63027	
Grid connection standards	IEC-61727-60Hz	

Smart Energy Controller



Active Safety

AI Powered
Active Arcing Protection



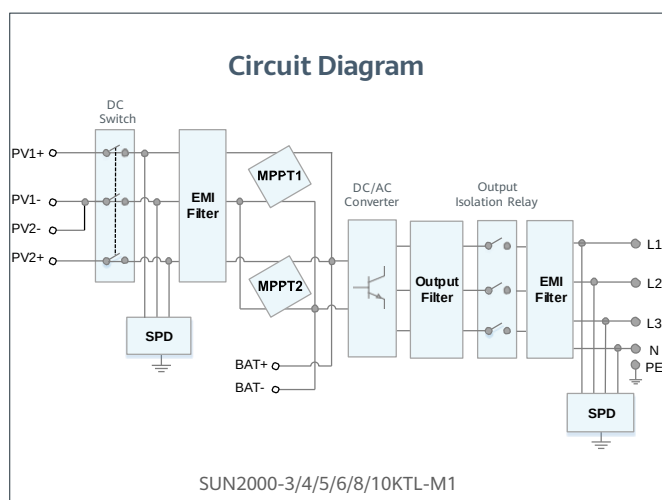
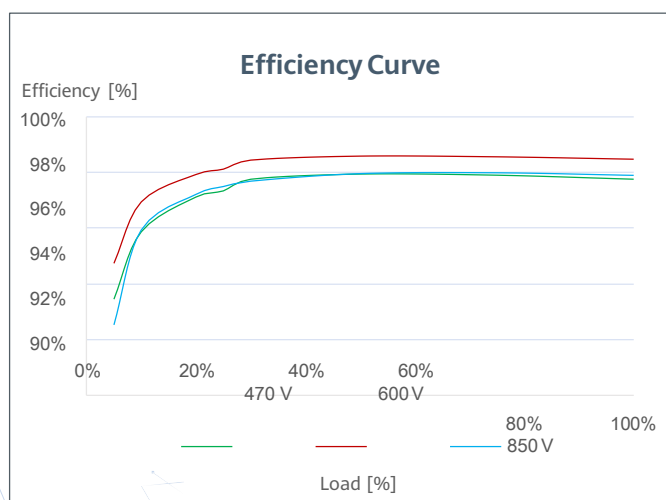
Higher Yields

Up to 30% More Energy
with Optimizer



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported



SUN2000-3/4/5/6/8/10KTL-M1

Technical Specification

Technical Specification	SUN2000-3KTL-M1	SUN2000-4KTL-M1	SUN2000-5KTL-M1	SUN2000-6KTL-M1	SUN2000-8KTL-M1	SUN2000-10KTL-M1
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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	11 A					
Max. short-circuit current	15 A					
Number of MPP trackers	2					
Max. number of inputs	2					

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	3,000 W	4,000 W	5,000 W	6,000 W	8,000 W	10,000 W

Output

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 %					
Backup power output	Yes (via Backup Box-B1)					

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
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; 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

Optimizer Compatibility

DC MBUS compatible optimizer	SUN2000-450W-P
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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 2.0

^{*1} Inverter max input PV power is 20,000 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} 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).

Smart Energy Controller

SUN2000-3-10KTL-M1 (High Current Version)



Active Safety

AI Powered
Active Arcing Protection



Higher Yields

Up to 30% More Energy
with Optimizer ¹



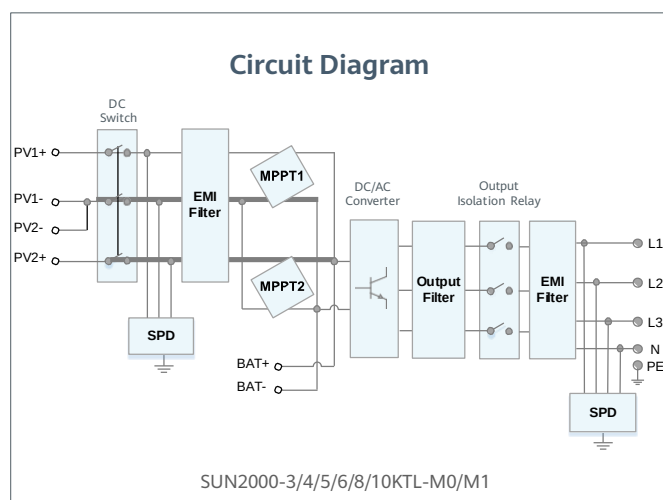
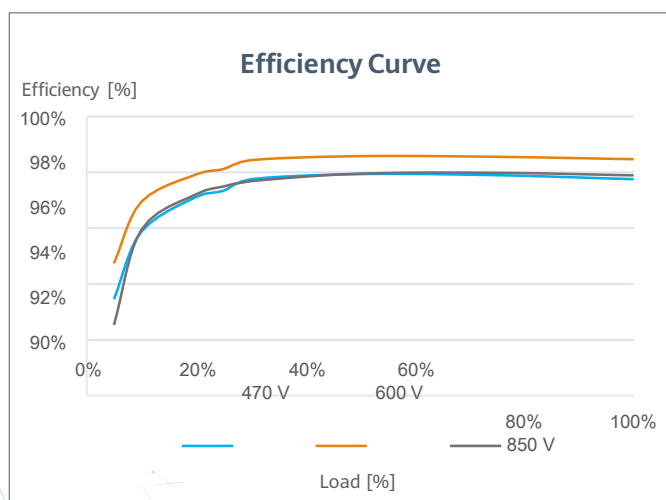
Battery Ready

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

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-P, 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 power optimizers.

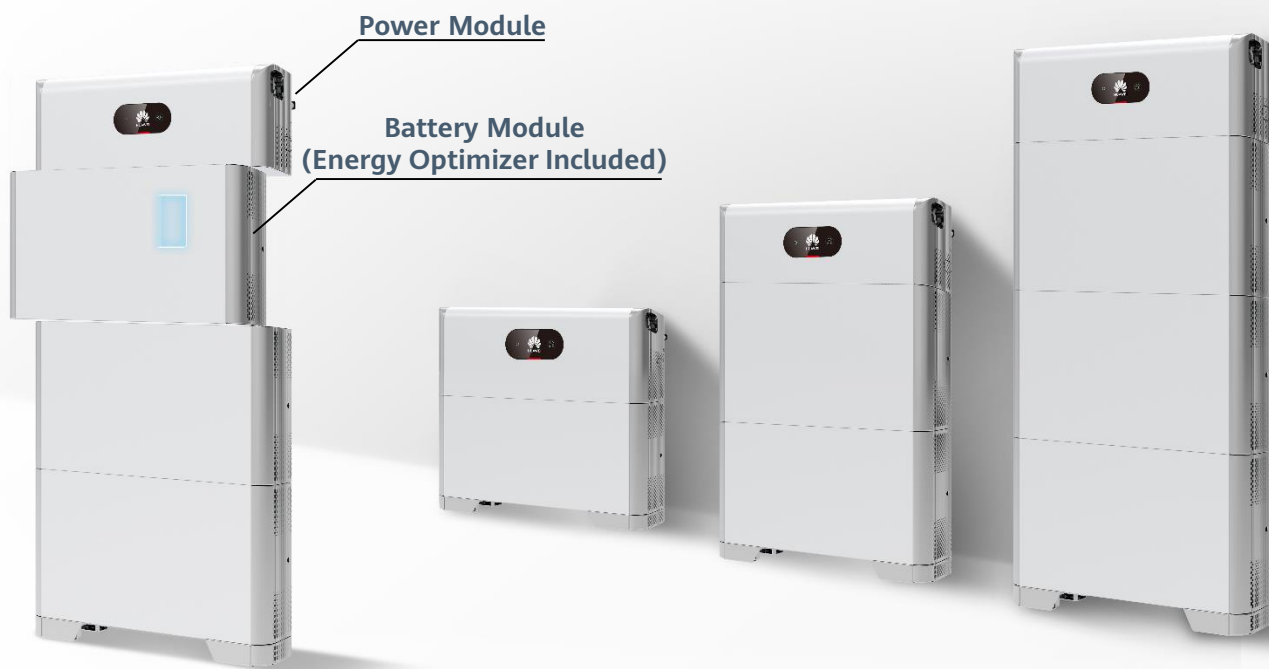
*2 The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.

*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.

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

Lithium Iron Phosphate (LFP) Cell



Easy Installation

12 kg Power Module
50 kg Battery Module



Quick Commissioning

Automatically Detected in App

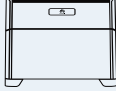


Perfect Compatibility

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, 10 s	7 kW, 10 s	7 kW, 10 s
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)

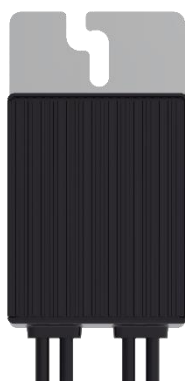
General Specification			
Dimension (W*D*H)	670 * 150 * 600 mm (26.4 * 5.9 * 23.6 inch)	670 * 150 * 960 mm (26.4 * 5.9 * 37.8 inch)	670 * 150 * 1320 mm (26.4 * 5.9 * 60.0 inch)
Weight (Floor stand toolkit included)	63.8 kg (140.7 lb)	113.8 kg (250.9 lb)	163.8 kg (361.1 lb)
Power module dimension (W*D*H)	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)		
Installation	Floor stand (standard), Wall mount (optional)		
Operating temperature	-20°C ~ + 55°C (-4°F ~ 131°F) ²		
Operating altitude	0 - 4,000 m (13,123 ft.) (Derating above 2,000 m)		
Environment	Indoor / Outdoor		
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 ⁴ , 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

Ordering and Deliverable Part	
Product ordering model ⁵	LUNA2000-5KW-C0, LUNA2000-5-E0, LUNA2000 Wall Mounting Bracket

- Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25°C
- Charge/discharge derating occurs when the operating temperature from -20°C to 5 °C & 45 °C to 55 °C.
- Refer to battery warranty letter for conditional application.
- Storage system is ordered and delivered in the form of power module and battery module separately with corresponding quantity.

Smart PV Optimizer



One-Fits-All Optimizer
Easier Business



<5s Module Auto-Mapping



Arc Fault Pinpoint
Positioning Along PV Cable

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)	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			
Shutdown output voltage per optimizer ³	0 V			
Shutdown output impedance per optimizer	1k ohm ± 10 %			
Communication				
Communication Method	MBUS			
Standard Compliance				
Safety	IEC62109-1 (class II safety)			
RoHS	Yes			
General Data				
Dimension (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	MC4			
Input wire length	0.15m			
Output connector	MC4			
Output wire length	1.3 m (4.3 ft.) ⁵			
Operating temperature / humidity range	-40 °C ~ 85 °C ⁵ / 0 %RH ~ 100 %RH			
Degree of protection	IP68			
Compatible product	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, SUN2000-30/36/40KTL-M3			
Long String Design (Full Optimizer)	SUN2000-2-6KTL-L1	SUN2000-3-10KTL-M1	SUN2000-12-20KTL-M2	SUN2000-30-40KTL-M3
Minimum optimizer number per string ⁶	4	6	6	6
Maximum optimizer number per string	25	35	35	25
Maximum DC power per string	6,000 W	10,000 W	12,000 W	12,000 W

^{*1} In the STC environment, The rated power of the module shall not exceed 1.05 times of the optimizer rated input power.

^{*2} Power optimizer is bypassed in the string connected to an operating inverter when it fails to work

^{*3} Power optimizer output 0Vdc when disconnecting to the inverter or inverter is shutdown.

^{*4} Allow PV module frame installation / extruded aluminum profile installation

^{*5} Fits PV module in landscape and portrait installation.

^{*6} Require standard 60 cells module to meet the inverter minimum startup voltage

^{*7} Full power capability refers to online smart design tool.

Backup Box



Simple

Automatic detection & switchover



Reliable

Provide reliable backup power

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 Power Sensor



Accurate

Class 1 measurement accuracy



Simple & Easy

LCD display, easy to set and check

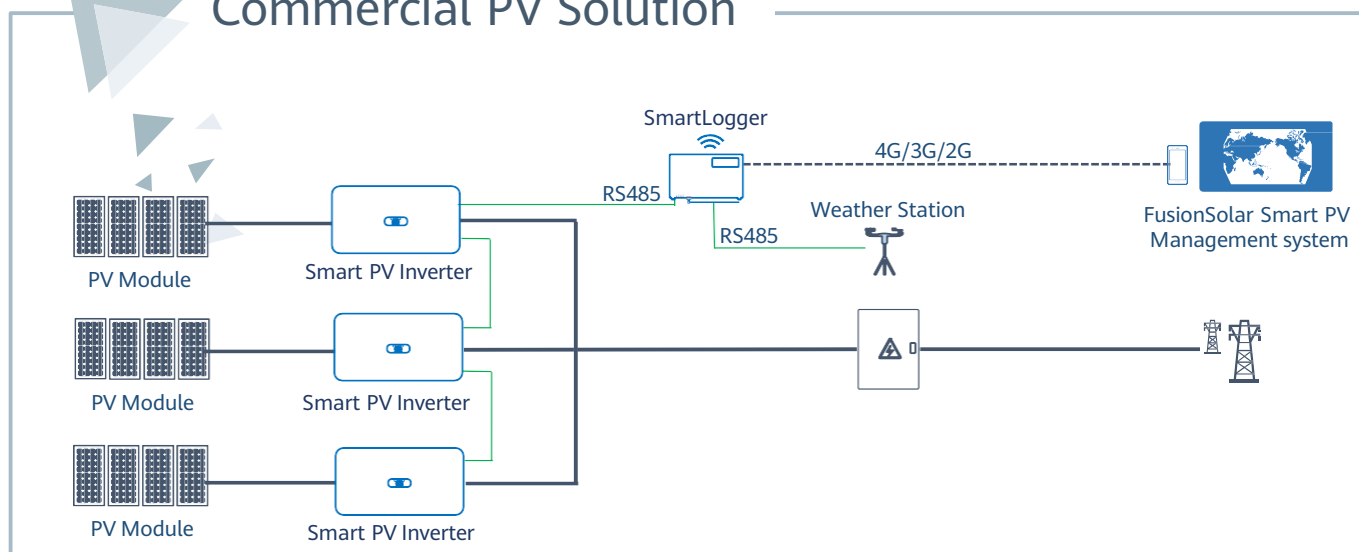


Energy Efficient

Overall power consumption ≤ 1 W

Technical Specification	DDSU666-H	DTSU666-H	DTSU666-H 250A/50mA
General Data			
Dimension (H x W x D)	100 x 36 x 65.5 mm (3.9 x 1.4 x 2.6 inch)	100 x 72 x 65.5 mm (3.9 x 2.8 x 2.6 inch)	100 x 72 x 65.5 mm (3.9 x 2.8 x 2.6 inch)
Mounting type	DIN35 Rail		
Weight (including cables)	0.804 kg (1.77 lb)	1.32 kg (2.91 lb)	1.32 kg (2.91 lb)
Power Supply			
Power grid type	1P2W	3P4W	3P4W/3P3W
Input voltage (phase voltage)	176 Vac ~ 288 Vac		
Power consumption	≤ 0.8 W	≤ 1 W	≤ 1 W
Measurement Range			
Line voltage	/	304 Vac ~ 499 Vac	304 Vac ~ 499 Vac
Phase voltage	176 Vac ~ 288 Vac		
Current	0 ~ 100 A	0 ~ 100 A	0 ~ 250 A
Measurement Accuracy			
Voltage	±0.5 %		
Current / 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 ~ 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 100A / 40mA (5 m / 16.4 ft.) 	3 CT 100A / 40mA (5m / 16.4 ft.) 	3 CT 250A / 50mA (5m / 16.4 ft.) 

Commercial PV Solution



Active Safety

AI Powered Active Arcing Protection

C&I Tailored Enhanced Arcing Protection

Higher Yields

2 Strings per MPPT, More Energy Yields

Built-in PID Recovery, Secure Better Module Performance

Maintenance Free

No Fuse & Other Quick-wear Parts, Inverter Touch Free

Online Smart I-V Curve Diagnosis, Module Touch Free



SUN2000-12/15/17/20KTL-M2 Smart String Inverter



Active Safety

AI Powered Arcing Protection



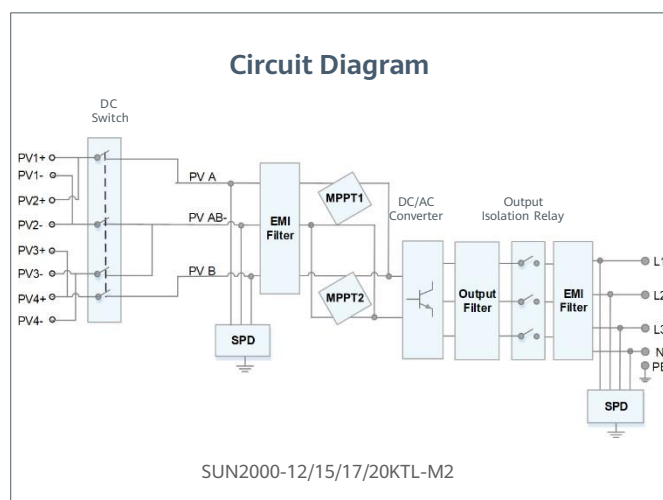
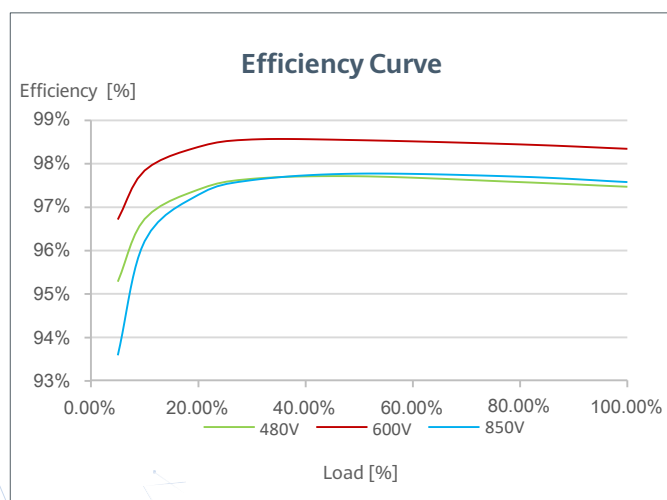
Higher Yields

Up to 30% More Energy with Optimizer



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported



SUN2000-12/15/17/20KTL-M2

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	22 A (two string)/14.5 A (single string)			
Max. short-circuit current	30 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 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	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

Optimizer Compatibility

DC MBUS compatible optimizer	SUN2000-450W-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 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 PV Controller

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



Active Safety

AI Powered Arcing Protection



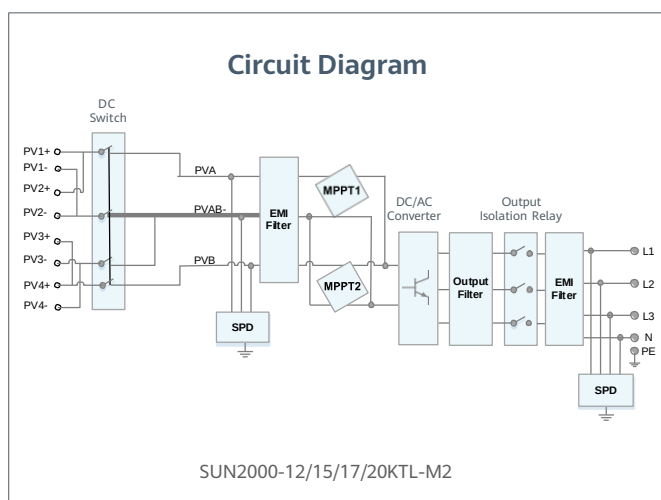
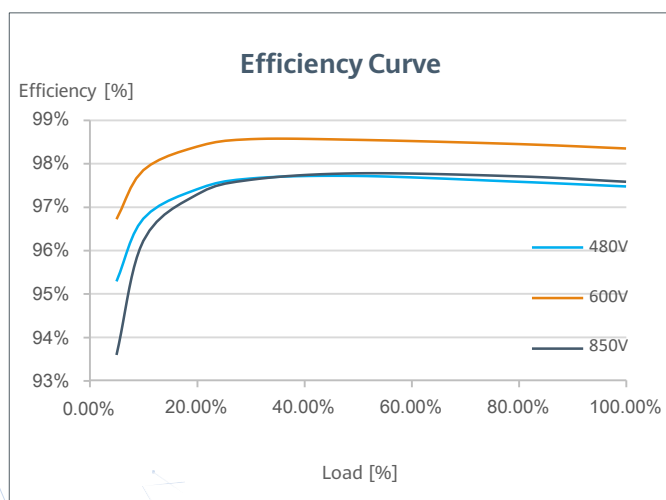
Higher Yields

Up to 30% More Energy with Optimizer



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported



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 (two string)/18 A (single string) 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-P, 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

SUN2000-20KTL-M3 Smart String Inverter



Smart

8 strings intelligent monitoring



Efficient

Max. efficiency 97.6%



Safe

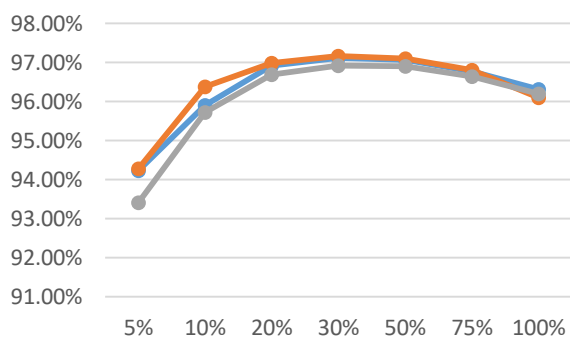
Fuse free design



Reliable

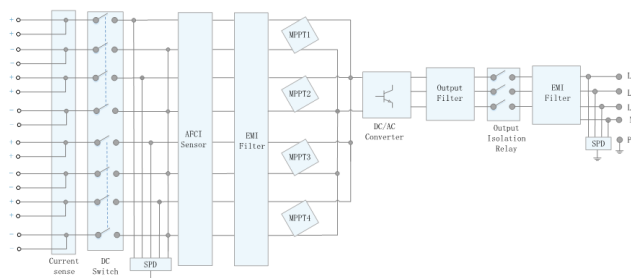
Type II surge arresters for DC & AC

Efficiency Curve



SUN2000-20KTL-M3

Circuit Diagram



SUN2000-20KTL-M3

Technical Specification

Technical Specification		SUN2000-20KTL-M3
Efficiency		
Max. Efficiency		97.1%
European Efficiency		96.7%
Input		
Recommended Max. PV Power		30,000 Wp
Max. Input Voltage ¹		800 V
Max. Current per MPPT		26 A
Max. Short Circuit Current per MPPT		40 A
Start Voltage		200 V
MPPT Operating Voltage Range ²		200 V ~ 750V
Rated Input Voltage		360 V
Number of Inputs		8
Number of MPP Trackers		4
Output		
Rated AC Active Power		20,000 W
Max. AC Apparent Power		22,000 VA
Max. AC Active Power (cosφ=1)		22,000 W
Rated Output Voltage		127 Vac / 220 Vac, 3W/N+PE
Rated AC Grid Frequency		50 Hz / 60Hz
Rated Output Current		52.5 A / 220 Vac
Max. Output Current		58.0 A / 220 Vac
Adjustable Power Factor Range		0.8 LG ... 0.8 LD
Max. Total Harmonic Distortion		<3%
Protection		
Input-side Disconnection Device		Yes
Anti-islanding Protection		Yes
AC Overcurrent Protection		Yes
DC Reverse-polarity Protection		Yes
PV-array String Fault Monitoring		Yes
DC Surge Arrester		Type II
AC Surge Arrester		Type II
DC Insulation Resistance Detection		Yes
Residual Current Monitoring Unit		Yes
Arc Fault Protection		Yes
Ripple Receiver Control		Yes
Integrated PID Recovery ³		Yes
Communication		
Display		LED Indicators, Integrated WLAN + FusionSolar APP
RS485		Yes
Smart Dongle		WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional)
Monitoring BUS (MBUS)		Yes (Isolation Transformer required)
General Data		
Dimensions (W x H x D)		640 x 530 x 270 mm (25.2 x 20.9 x 10.6 inch)
Weight (with mounting plate)		43 kg (94.8 lb)
Nosie Level		< 46 dB
Operating Temperature Range		-25 ~ + 60 °C (Derating above 45 °C @ Rated output power)
Cooling Method		Natural Convection
Max. Operating Altitude		0 - 4,000 m (Derating above 3000 m)
Relative Humidity		0% RH ~ 100% RH
Protection Degree		IP 66
Topology		Transformerless
Nighttime Power Consumption		≤ 5.5W
Optimizer Compatibility		
DC MBUS Compatible Optimizer		SUN2000-450W-P
Standard Compliance (more available upon request)		
Safety		EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 60068, IEC 61683
Grid Connection Standards		IEC 61727

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

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

3. SUN2000-30~40KTL-M3 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), N-type (nPERT, HIT)

SUN2000-30/36/40KTL-M3 Smart String Inverter



Smart

8 strings intelligent monitoring



Efficient

Max. efficiency 98.7%



Safe

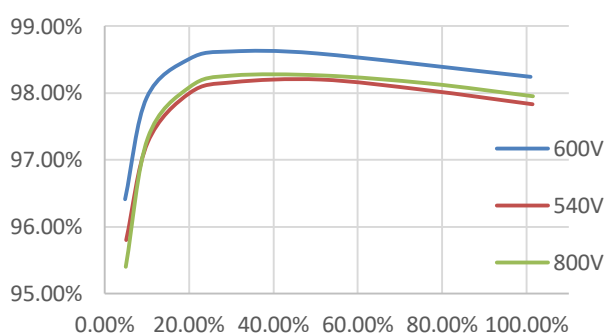
Fuse free design



Reliable

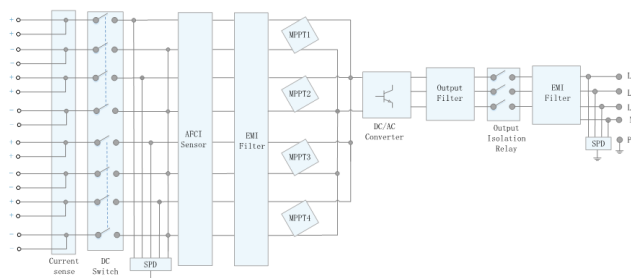
Type II surge arresters for DC & AC

Efficiency Curve



SUN2000-30/36/40KTL-M3

Circuit Diagram



SUN2000-30/36/40KTL-M3

Technical Specification

Technical Specification	SUN2000-30KTL-M3	SUN2000-36KTL-M3	SUN2000-40KTL-M3
Efficiency			
Max. Efficiency	98.7%		
European Efficiency	98.4%		
Input			
Max. Input Voltage ¹	1,100 V		
Max. Current per MPPT	26 A (two string)/20 A (single string)		
Max. Short Circuit Current per MPPT	40 A		
Start Voltage	200 V		
MPPT Operating Voltage Range ²	200 V ~ 1000 V		
Rated Input Voltage	600 V		
Number of Inputs	8		
Number of MPP Trackers	4		
Output			
Rated AC Active Power	30,000 W	36,000 W	40,000 W
Max. AC Apparent Power	33,000 VA	40,000 VA	44,000 VA
Rated Output Voltage	380 Vac / 400 Vac / 440Vac / 480 Vac, 3W/N+PE		
Rated AC Grid Frequency	50 Hz / 60 Hz		
Rated Output Current	43.3 A	52.0 A	57.8 A
Max. Output Current	47.9 A	58.0 A	63.8 A
Adjustable Power Factor Range	0.8 LG ... 0.8 LD		
Max. Total Harmonic Distortion	< 3%		
Protection			
Input-side Disconnection Device	Yes		
Anti-islanding Protection	Yes		
AC Overcurrent Protection	Yes		
DC Reverse-polarity Protection	Yes		
PV-array String Fault Monitoring	Yes		
DC Surge Arrester	Yes		
AC Surge Arrester	Yes		
DC Insulation Resistance Detection	Yes		
Residual Current Monitoring Unit	Yes		
Arc Fault Protection	Yes		
Ripple Receiver Control	Yes		
Integrated PID Recovery ³	Yes		
Communication			
Display	LED Indicators, Integrated WLAN + FusionSolar APP		
RS485	Yes		
Smart Dongle	WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional)		
Monitoring BUS (MBUS)	Yes (Isolation Transformer required)		
General Data			
Dimensions (W x H x D)	640 x 530 x 270 mm (25.2 x 20.9 x 10.6 inch)		
Weight (with mounting plate)	43 kg (94.8 lb)		
Nosie Level	< 46 dB		
Operating Temperature Range	-25 ~ + 60 °C (-13 °F ~ 140 °F)		
Cooling Method	Natural Convection		
Max. Operating Altitude	0 - 4,000 m (13,123 ft.)		
Relative Humidity	0% RH ~ 100% RH		
DC Connector	Staubli MC4		
AC Connector	Waterproof Connector + OT/DT Terminal		
Protection Degree	IP 66		
Topology	Transformerless		
Nighttime Power Consumption	≤ 5.5W		
Optimizer Compatibility			
DC MBUS Compatible Optimizer	SUN2000-450W-P		
Standard Compliance (more available upon request)			
Safety	EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 60068, IEC 61683		
Grid Connection Standards	IEC 61727, VDE-AR-N4105, VDE 0126-1-1, BDEW, G59/3, UTE C 15-712-1, CEI 0-16, CEI 0-21, RD 661, RD 1699, P.O. 12.3,RD 413, EN-50438-Turkey, EN-50438-Ireland, C10/11, MEA, Resolution No.7, NRS 097-2-1 AS/NZS 4777.2, DEWA		

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

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

3. SUN2000-30~40KTL-M3 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), N-type (nPERT, HIT)

SUN2000-33KTL-A Smart String Inverter



Smart

8 strings intelligent monitoring



Efficient

Max. efficiency 98.6%



Safe

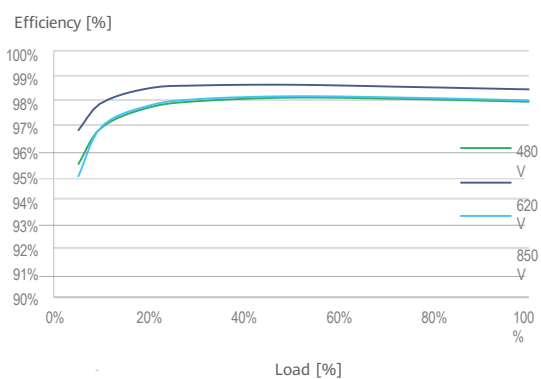
Fuse free design



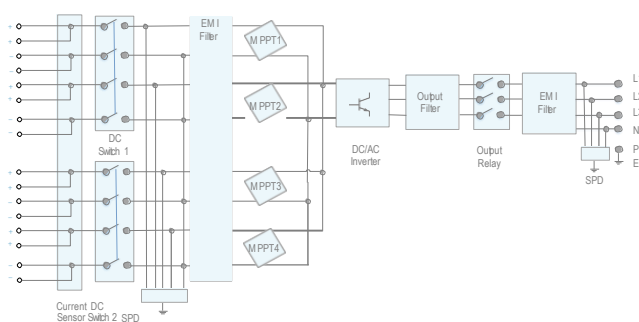
Reliable

Type II surge arresters for DC & AC

Efficiency Curve



Circuit Diagram



SUN2000-33KTL-A

SUN2000-33KTL-A

Technical Specification

Technical Specification	SUN2000-33KTL-A
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Efficiency	
Max. Efficiency	98.6%
European Efficiency	98.4%

Input	
Max. Input Voltage	1,100 V
Max. Current per MPPT	22 A
Max. Short Circuit Current per MPPT	30 A
Start Voltage	250 V
MPPT Operating Voltage Range	200 V ~ 1,000 V
Rated Input Voltage	620 V
Number of Inputs	8
Number of MPP Trackers	4

Output	
Rated AC Active Power	30,000 W
Max. AC Apparent Power	33,000 VA
Max. AC Active Power ($\cos\phi=1$)	30,000 W ²
Rated Output Voltage	230 V / 400 V, 3W + N + PE;
Rated AC Grid Frequency	50 Hz / 60 Hz
Rated Output Current	43.3 A
Max. Output Current	48 A
Adjustable Power Factor Range	0.8 leading... 0.8 lagging
Max. Total Harmonic Distortion	< 3%

Protection	
Input-side Disconnection Device	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
DC Surge Arrester	Type II
AC Surge Arrester	Type II
DC Insulation Resistance Detection	Yes
Residual Current Monitoring Unit	Yes

Communication	
Display	LED Indicators, Bluetooth/WLAN + APP
RS485	Yes
USB	Yes
Monitoring BUS (MBUS)	Yes

General Data	
Dimensions (W x H x D)	930 x 550 x 283 mm (36.6 x 21.7 x 11.1 inch)
Weight (with mounting plate)	62 kg (136.7 lb.)
Operating Temperature Range	-25 °C ~ 60 °C (-13°F ~ 140°F)
Cooling Method	Natural Convection
Max. Operating Altitude	4,000 m (13,123 ft.)
Relative Humidity	0 ~ 100%
DC Connector	Amphenol Helios H4
AC Connector	Waterproof PG Terminal + OT Connector
Protection Degree	IP65
Topology	Transformerless
Nighttime Power Consumption	< 2.5 W

Standard Compliance	
Safety	EN 62109-1/-2, IEC 62109-1/-2
Grid Code	ABNT, IEC 61727, IEC 62116, VDE-AR-N-4105, VDE 0126-1-1, BDEW, G59/3, UTE C 15-712-1, CEI 0-16, CEI 0-21, RD 661, RD 1699, P.O. 12.3, RD 413, C10/11, EN 50438-Turkey

*1 Only available for Brazil in Latin America region.

*2 The maximum active power is determined by PQ mode setting. If PQ mode 1 is selected, the maximum active power equals the maximum apparent power. If PQ mode 2 is selected, the maximum active power equals the rated active power.

SUN2000-36KTL Smart String Inverter



Smart

8 strings intelligent monitoring



Efficient

Max. efficiency 98.6%



Safe

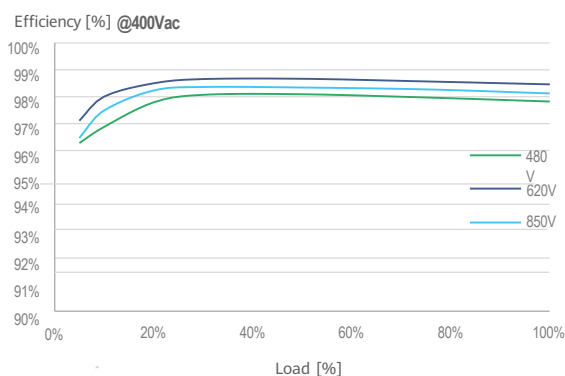
Fuse free design



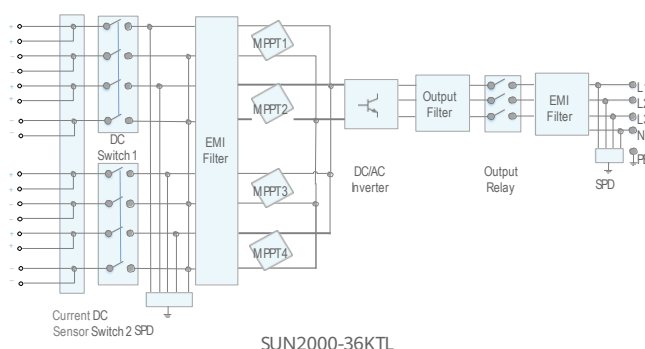
Reliable

Type II surge arresters for DC & AC

Efficiency Curve



Circuit Diagram



SUN2000-36KTL

Technical Specification

Technical Specification	SUN2000-36KTL
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Efficiency	
Max. Efficiency	98.6%
European Efficiency	98.4%

Input	
Max. Input Voltage	1,100 V
Max. Current per MPPT	22 A
Max. Short Circuit Current per MPPT	30 A
Start Voltage	250 V
MPPT Operating Voltage Range	200 V ~ 1,000 V
Rated Input Voltage	620 V
Number of Inputs	8
Number of MPP Trackers	4

Output	
Rated AC Active Power	36,000 W
Max. AC Apparent Power	40,000 VA
Max. AC Active Power (cosφ=1)	Default 40,000 W; 36,000 W optional in settings
Rated Output Voltage	220 V / 380 V, 230 V / 400 V / 480 V, default 3W + N + PE; 3W + PE optional in settings 277 V / 480 V, 3W + PE (only for Central Latin America)
Rated AC Grid Frequency	50 Hz / 60 Hz
Rated Output Current	54.6 A @380 V, 52.2 A @400 V, 43.4 A @480V
Max. Output Current	60.8 A @380 V, 57.8 A @400 V, 48.2 A @480V
Adjustable Power Factor Range	0.8 leading... 0.8 lagging
Max. Total Harmonic Distortion	< 3%

Protection	
Input-side Disconnection Device	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
DC Surge Arrester	Type II
AC Surge Arrester	Type II
DC Insulation Resistance Detection	Yes
Residual Current Monitoring Unit	Yes

Communication	
Display	LED Indicators, Bluetooth/WLAN + APP
RS485	Yes
USB	Yes
Monitoring BUS (MBUS)	Yes

General Data	
Dimensions (W x H x D)	930 x 550 x 283 mm (36.6 x 21.7 x 11.1 inch)
Weight (with mounting plate)	62 kg (136.7 lb.)
Operating Temperature Range	-25°C ~ 60°C (-13°F ~ 140°F)
Cooling Method	Natural Convection
Max. Operating Altitude	4,000 m (13,123 ft.)
Relative Humidity	0 ~ 100%
DC Connector	Amphenol Helios H4
AC Connector	Cable Gland + OT Terminal
Protection Degree	IP65
Topology	Transformerless
Nighttime Power Consumption	< 2.5 W

Standard Compliance	
Safety	EN 62109-1/-2, IEC 62109-1/-2
Grid Code	ABNT, IEC 61727, IEC 62116, VDE-AR-N4105, VDE 0126-1-1, BDEW, G59/3, UTE C 15-712-1, CEI 0-16, CEI 0-21, RD 661, RD 1699, P.O. 12.3, RD 413, EN-50438-Turkey, EN-50438-Ireland, C10/11, MEA, PEA, Resolution No.7, NRS 097-2-1, DEWA, AS/NZS 4777.2, EN 50530, IEC 60068, IEC 61683

SUN2000-60KTL-M0

Smart String Inverter



6
MPP Trackers



98.9% (@480V)
Max. Efficiency



String-level
Management



Smart I-V Curve
Diagnosis Supported



Residual Current
Monitoring Integrated



Fuse Free
Design



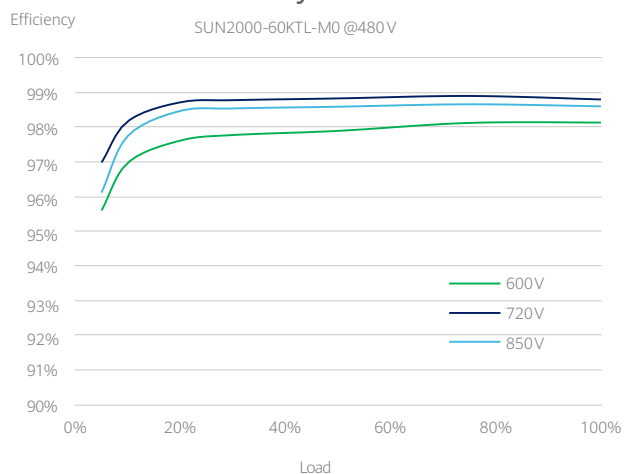
Surge Arresters for
DC & AC



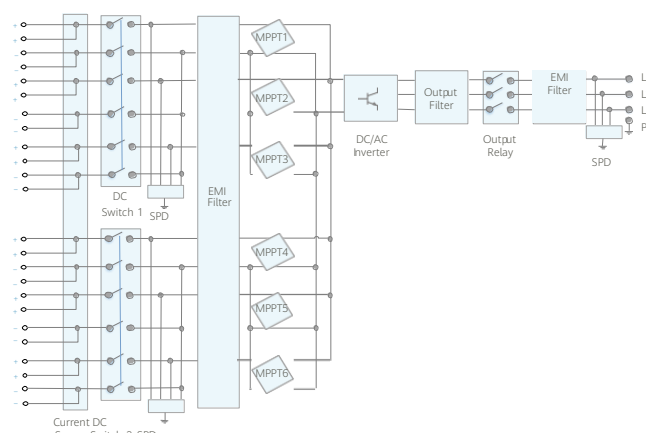
IP65
Protection

Efficiency Curve

SUN2000-60KTL-M0 @480V



Circuit Diagram



Technical Specifications

Efficiency	
Max. Efficiency	98.9% @480 V, 98.7% @380 V / 400 V
European Efficiency	98.7% @480 V, 98.5% @380 V / 400 V
Input	
Max. Input Voltage	1,100 V
Max. Current per MPPT	22 A (two string)/18 A (single string)
Max. Short Circuit Current per MPPT	30 A
Start Voltage	200 V
MPPT Operating Voltage Range	200 V ~ 1,000 V
Rated Input Voltage	720 V @480 Vac, 600 V @380 Vac / 400 Vac
Number of Inputs	12
Number of MPPT trackers	6
Output	
Rated AC Active Power	60,000 W
Max. AC Apparent Power	66,000 VA
Max. AC Active Power (cosφ=1)	66,000 W
Rated Output Voltage	480 V / 400 V / 380 V, 3W+(N)+PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Rated Output Current	72.2 A @480 V, 86.7 A @400 V, 91.2 A @380 V
Max. Output Current	79.4 A @480 V, 95.3 A @400 V, 100 A @380 V
Adjustable Power Factor Range	0.8 LG ... 0.8 LD
Max. Total Harmonic Distortion	< 3%
Protection	
Input-side Disconnection Device	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
DC Surge Arrester	Type II
AC Surge Arrester	Type II
DC Insulation Resistance Detection	Yes
Residual Current Monitoring Unit	Yes
Communication	
Display	LED Indicators, Bluetooth + APP
USB	Yes
RS485	Yes
Power Line Communication (PLC)	Yes
General	
Dimensions (W x H x D)	1,075 x 555 x 300 mm (42.3 x 21.9 x 11.8 inch)
Weight (with mounting plate)	74 kg (163.1 lb.)
Operating Temperature Range	-25°C ~ 60°C (-13°F ~ 140°F)
Cooling Method	Natural Convection
Max. Operating Altitude	4,000 m (13,123 ft.)
Relative Humidity	0 ~ 100%
DC Connector	Amphenol Helios H4
AC Connector	Waterproof PG Connector + OT Terminal
Protection Degree	IP65
Topology	Transformerless
Standard Compliance (more available upon request)	
Certificate	EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 60068, IEC 61683
Grid Code	IEC 61727, ABNT NBR 16149, ABNT NBR 16150, ABNT NBR IEC 62116, AS/NZS 4777.2

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
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 1.3inch)
Weight	90 g (0.2 lb.)
Degree of protection	IP65
Power consumption (typical)	2.5 W
Operation Mode	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	
Supported Master Inverter Model	SUN2000-3/4/5/6/8/10KTL-M1 SUN2000-12/15/17/20KTL-M1

¹: 3rd-party management system shall match the communication protocol with Huawei Smart Dongle.

Smart Dongle-4G



Smart

2G, 3G, 4G communication ¹
Support 3rd-party monitoring system ²



Simple

Plug & Play
Support max. 10 devices



Reliable

IP65
Support auto reconnection

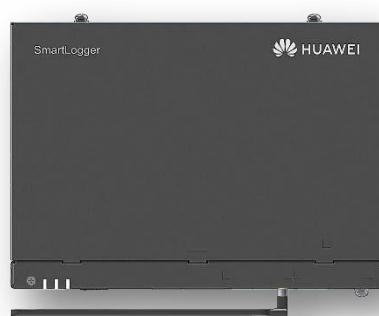
Technical Specification	SDongleA-03-AU
General Data	
Max. Devices Supported	10
Max. Inverters Supported	10
Connection interface	USB
Installation	Plug-and-play
Indicator	LED Indicator
Dimensions (W * H * D)	130 x 48 x 33 mm (5.1 x 1.9 x 1.3 inch)
Weight	90 g (0.2 lb.)
Degree of protection	IP65
Power consumption (typical)	3.5 W
Wireless Parameter	
Sim card type	mini-sim (15 mm*25 mm)
Supported standards & frequencies	4G: FDD-LTE / TDD-LTE 3G: WCDMA / HSDPA / HSUPA / HSPA+ 2G: GSM / GPRS / EDGE ³
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	RCM
Inverter Compatibility	
Inverter model	SUN2000-12/15/17/20KTL-M2 SUN2000-60KTL-M0

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.

3: For recommended carriers list and details on supported frequencies, please contact local distributors.

SmartLogger3000A



Smart

Smart zero export control design



Simple

Easy to install onsite



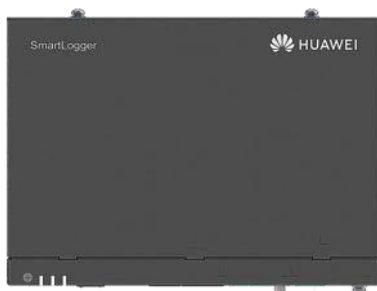
Reliable

Safety by lightning protection module

Technical Specification		SmartLogger3000A01AU
Device Management		
Max. Number of Manageable Devices		80
Communication Interface		
WAN		WAN x 1, 10 / 100 / 1000 Mbps
LAN		LAN x 1, 10 / 100 / 1000 Mbps
RS485		COM x 3, 1200 / 2400 / 4800 / 9600 / 19200 / 115200 bps, 1000 m
2G / 3G / 4G ¹		LTE(FDD): B1 / B2 / B3 / B4 / B5 / B7 / B8 / B28 LTE(TDD): B40 WCDMA: B1 / B2 / B5 / B8 GSM: B2 / B3 / B5 / B8 ²
Digital / Analog Input / Output		DI x 4, DO x 2, AI x 4
Active DO		12V, 100mA (connection with relay, sensor)
Communication Protocol		
Ethernet		Modbus-TCP, IEC 60870-5-104
RS485		Modbus-RTU, IEC 60870-5-103 (standard), DL / T645
Interaction		
LED		LED Indicator x 3 – RUN, ALM, 4G
WEB		Embedded Web
USB		USB 2.0 x 1
APP		Communication by WLAN for Commissioning
Environment		
Operating Temperature Range		-40°C ~ 60°C (-40°F ~ 140°F)
Storage Temperature		-40°C ~ 70°C (-40°F ~ 158°F)
Relative Humidity (Non-condensing)		5% ~ 95%
Max. Operating Altitude		4,000 m (13,123 ft.)
Electrical		
AC Power Supply		100 V ~ 240 V, 50 Hz / 60 Hz
DC Power Supply		12V / 24 V
Power Consumption		Typical 8 W, Max. 15 W
Mechanical		
Dimensions (W x H x D)		225 x 160 x 44 mm (8.9 x 6.3 x 1.7 inch, without mounting ears and antenna)
Weight		2 kg (4.4 lb.)
Protection Degree		IP20
Installation Options		Wall Mounting, DIN Rail Mounting, Tabletop Mounting

1-When putting inside metal box, extended antenna will be needed.

2-For recommended carriers list and details on supported frequencies, please contact local distributors.



Smart

Smart zero export control design



Simple

Easy to install onsite

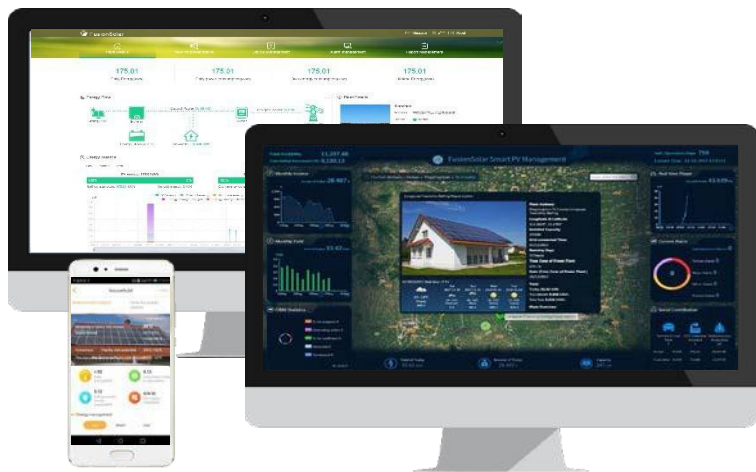


Reliable

Safety by lightning protection module

Technical Specification		SmartLogger3000A00GL
Device Management		
Max. Number of Manageable Devices		80
Communication Interface		
WAN		WAN x 1, 10 / 100 / 1000 Mbps
LAN		LAN x 1, 10 / 100 / 1000 Mbps
RS485		COM x 3, 1200 / 2400 / 4800 / 9600 / 19200 / 115200 bps, 1000 m
Digital / Analog Input / Output		DI x 4, DO x 2, AI x 4
Active DO		12V, 100mA (connection with relay, sensor)
Communication Protocol		
Ethernet		Modbus-TCP, IEC 60870-5-104
RS485		Modbus-RTU, IEC 60870-5-103 (standard), DL / T645
Interaction		
LED		LED Indicator x 3 – RUN, ALM, 4G
WEB		Embedded Web
USB		USB 2.0 x 1
APP		Communication by WLAN for Commissioning
Environment		
Operating Temperature Range		-40°C ~ 60°C (-40°F ~ 140°F)
Storage Temperature		-40°C ~ 70°C (-40°F ~ 158°F)
Relative Humidity (Non-condensing)		5% ~ 95%
Max. Operating Altitude		4,000 m (13,123 ft.)
Electrical		
AC Power Supply		100 V ~ 240 V, 50 Hz / 60 Hz
DC Power Supply		12V / 24 V
Power Consumption		Typical 8 W, Max. 15 W
Mechanical		
Dimensions (W x H x D)		225 x 160 x 44 mm (8.9 x 6.3 x 1.7 inch, without mounting ears and antenna)
Weight		2 kg (4.4 lb.)
Protection Degree		IP20
Installation Options		Wall Mounting, DIN Rail Mounting, Tabletop Mounting

FusionSolar Smart PV Management System



Simple & Swift

- Simple commissioning by APP
- Auto-detection of system equipment
- Registering your plant by scanning any device



Convenient & Reliable

- Energy flow illustration
- Real-time data at anytime from anywhere
- Performance data back-up



Improved O&M Experience

- Physical & logical module layout
- Module-level performance management*
- Smart I-V Diagnosis

*Full optimizer solution with Smart PV Safety Box required

Feature List		WEB	APP
Basic Feature	Swift Installation & Registration	●	●
	Data Collection	●	
	Dashboard	●	●
	Energy Flow	●	●
	Energy Generation & Consumption	●	●
	Device Management	●	●
	Report Management	●	●
	Alarm Management	●	●
	System Configuration	●	
Advanced Feature	Intelligent O&M	○	
	Mobile O&M	○	○
	Proactive Diagnosis	○	○
	Smart I-V Curve Diagnosis	○	○

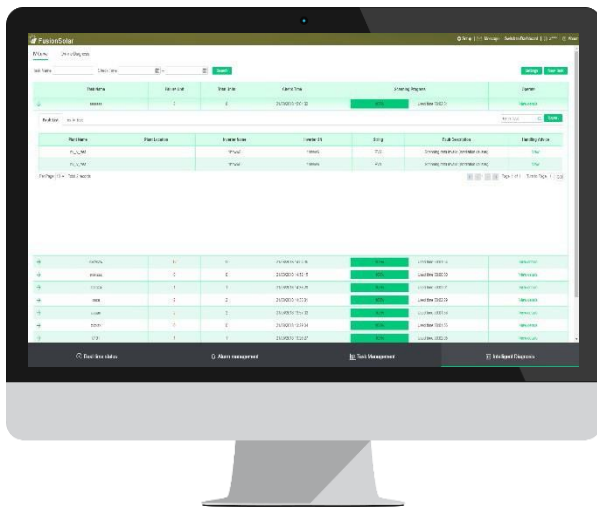
● Basic

○ Optional

Smart I-V Curve Diagnosis



Smart I-V Curve Diagnosis is able to carry out online I-V curve analysis on entire strings with advanced diagnosis algorithm. The scanning would help to find out and identify the strings with low performance or faults, which would help to achieve proactive maintenance, higher O&M efficiency and lower operation cost.



Smart

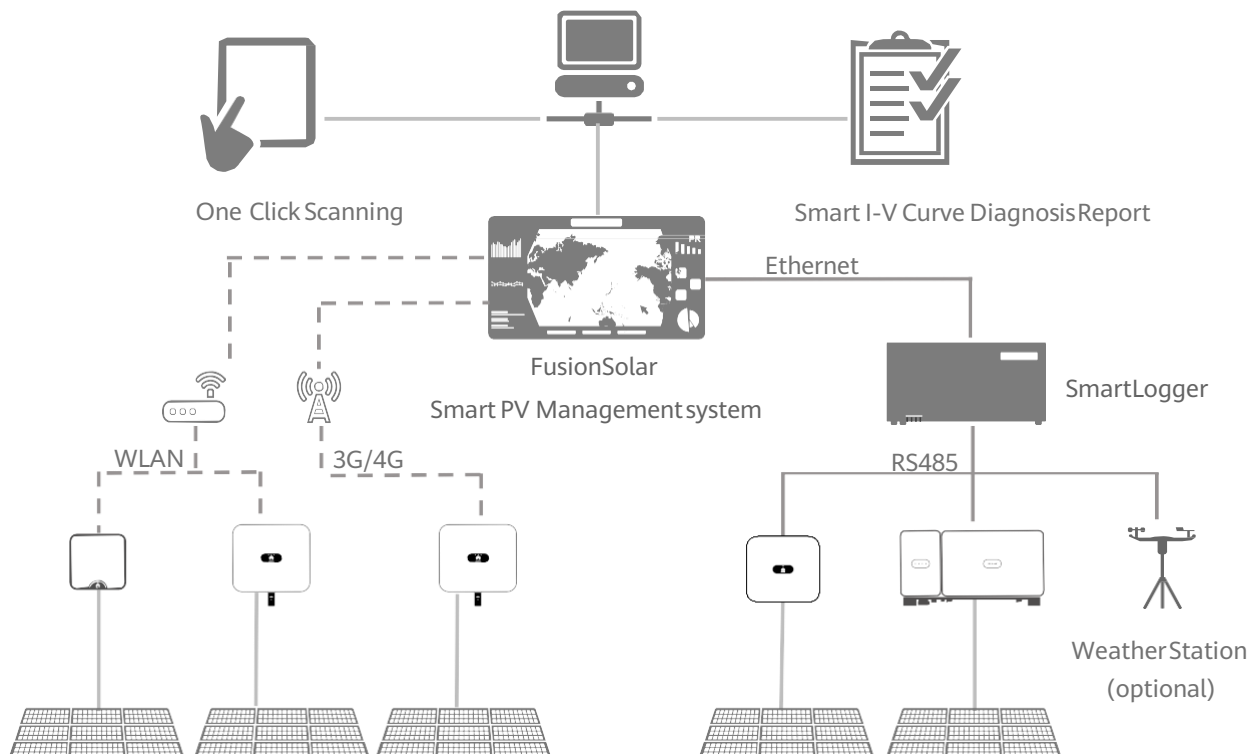
- Support plant-level, array-level and inverter-level analysis and diagnosis
- Automatically identify different failure types and provide recovery suggestion



Efficient

- One-click scanning without onsite experts or equipment
- Online I-V curve scanning on entire strings of 5 MW plant within 5min
- Automatic report generation of 5 MW plant within 15min

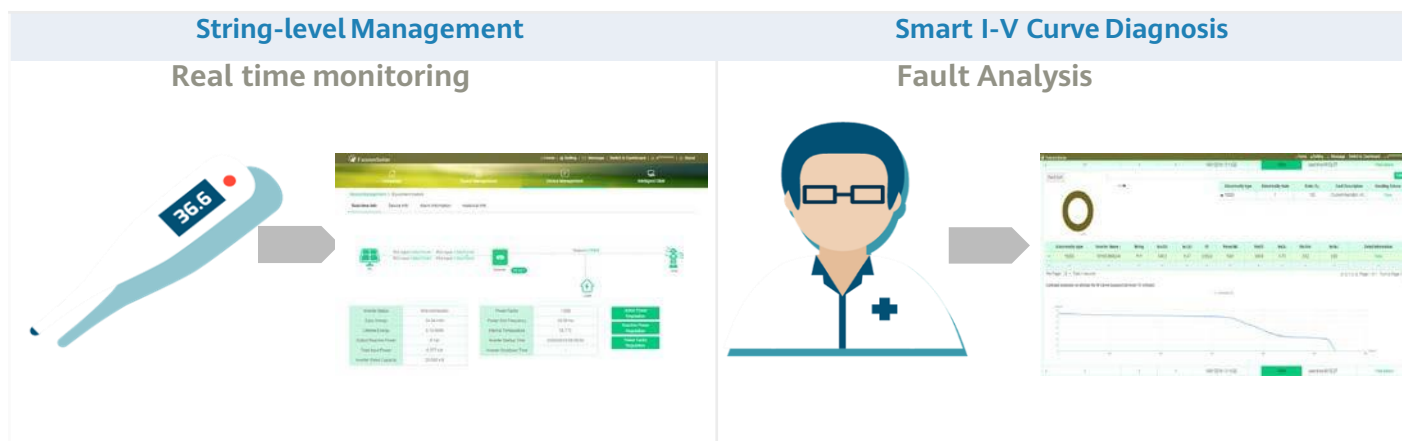
Network



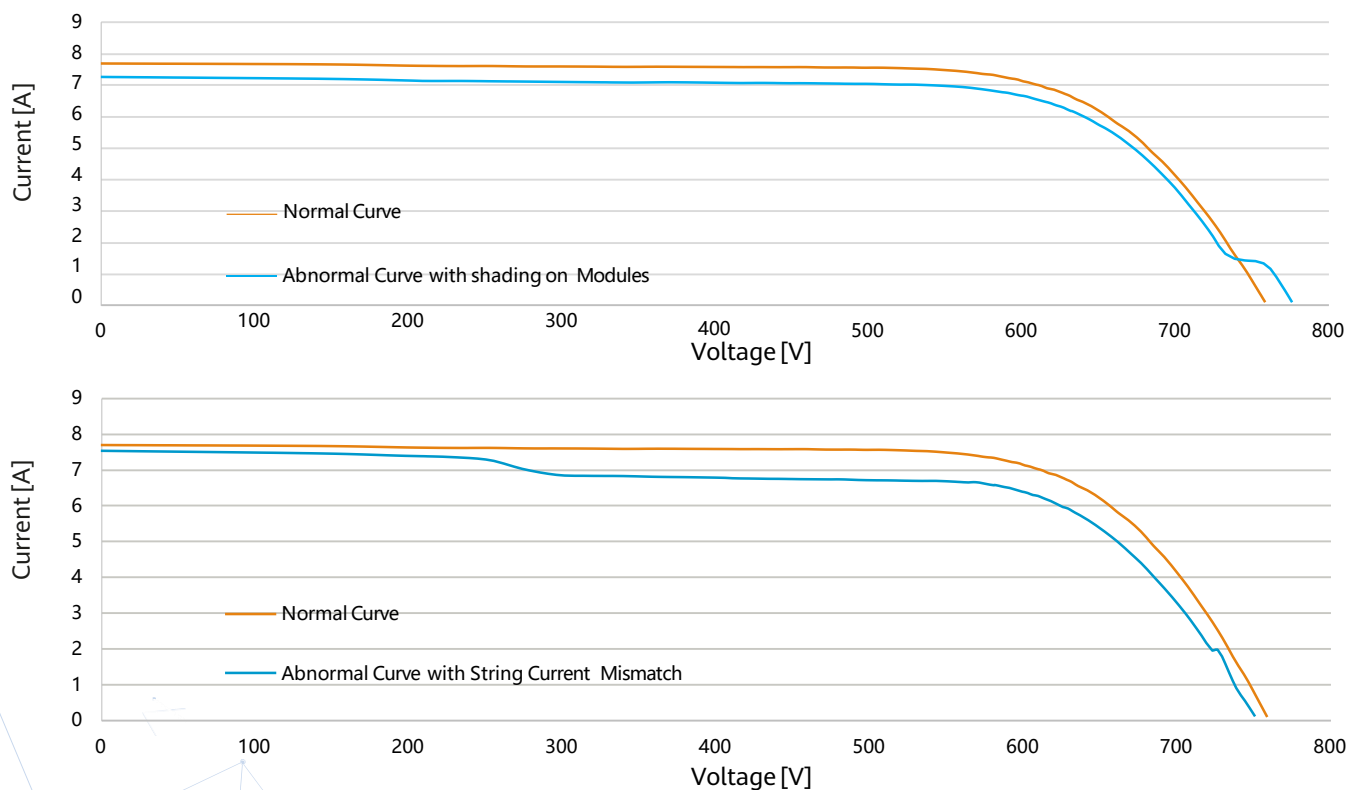
Smart I-V Curve Diagnosis

Technical Specifications	Smart I-V Curve Diagnosis
Smart PV Inverter*	SUN2000L-2/3/4/5KTL, SUN2000-12/15/20KTL-M0, SUN2000-33KTL-A/36KTL, SUN2000-60KTL-M0
Communication	SmartLogger2000, SmartLogger1000A, SmartLogger1000, Smart Dongle
Management System	FusionSolar Smart PV Management System, NetEco1000s
Scanning Time	< 1s (1 string)
Sampling Points per I-V Curve	128
Certification	 TÜV

* I-V curve diagnosis is not supported when inverter is connected with power optimizer.



String I-V Curve Comparison





4kW

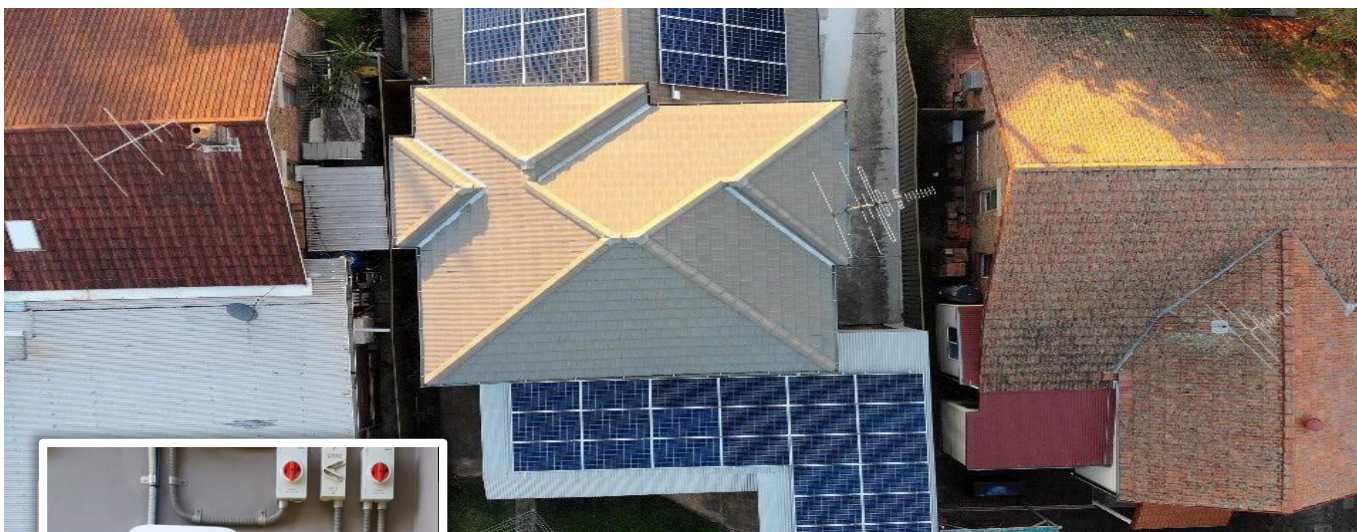
Residential PV System in Waregem, Belgium

System Configuration

- 18 × 295Wp modules
- 6 × 375W optimizers
- SUN2000L-4KTL, WLAN
- Smart PV safety box

COD
May, 2018

Distributor
Wattkraft



8kW

Residential Energy System in Sydney, Australia

System Configuration

- 36 × 270Wp modules
- 24 × 375W optimizers
- SUN2000L-3KTL & -5KTL
- LG Chem RESU10H Type R

COD
Dec, 2017

Distributor
ASC



10kW

Residential Energy System in NSW, Australia

System Configuration

- 32 × 310Wp modules
- 2 × SUN2000L-5KTL
- WLAN Communication

COD

Jan, 2019

Retailer

JT Solar



5kW

Residential PV System in NSW, Australia

System Configuration

- 18 × 310Wp modules
- 1 × SUN2000L-5KTL
- WLAN Communication

COD

Jan, 2019

Retailer

JT Solar



4.32kW

Residential PV System in Brazil

System Configuration

- 12 × 360Wp modules
- 1 × SUN2000L-4KTL
- WLAN communication

COD

Nov, 2018



5kW

Residential PV System in Hong Kong, China

System Configuration

- SUN2000L-5KTL

COD

Nov, 2018



15kW

Residential PV System in NSW, Australia

System Configuration

- 37 × 310Wp Longi modules, 12 × existed old modules
- 3 × SUN2000L-5KTL
- WLAN communication

COD
Feb, 2019

Retailer
JT Solar



33kW

Residential PV System in Hanadacho Chokushi, Japan

System Configuration

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

COD
April, 2018

Distributor
DMM.com



1.12MW

Distributed PV System in Dandenong, Australia

System Configuration

- 4000 x Jinko 305Wp modules
- 34 x SUN2000-33KTL
- SmartLogger1000

COD
2019



550kWp

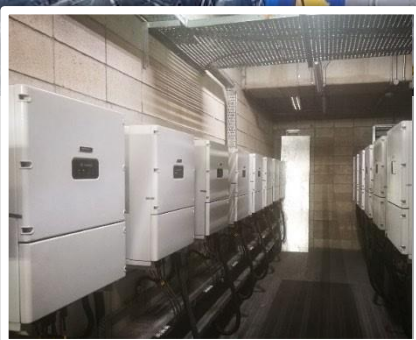
Commercial PV Project in NSW, Australia

System Configuration

- 1679 x 320Wp Jinko modules
- 17 x SUN2000-33KTL

COD
May, 2018

Distributor
Megawatt Power



1MWp

Distributed PV System in Kuala Lumpur, Malaysia

System Configuration

- SUN2000-36KTL

COD

Mar, 2016



2.8MWp

Distributed PV System in Singapore Changi Airport

System Configuration

- SUN2000-36KTL

COD

Dec, 2016



85.8KWp

Distributed PV System in Brazil

System Configuration

- 264 x 325Wp modules
- 2 x SUN2000-36KTL

COD

Feb, 2018



260KWp

Distributed PV System in Brazil

System Configuration

- 788 x 330Wp modules
- 4 x SUN2000-36KTL

COD

Mar, 2018



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