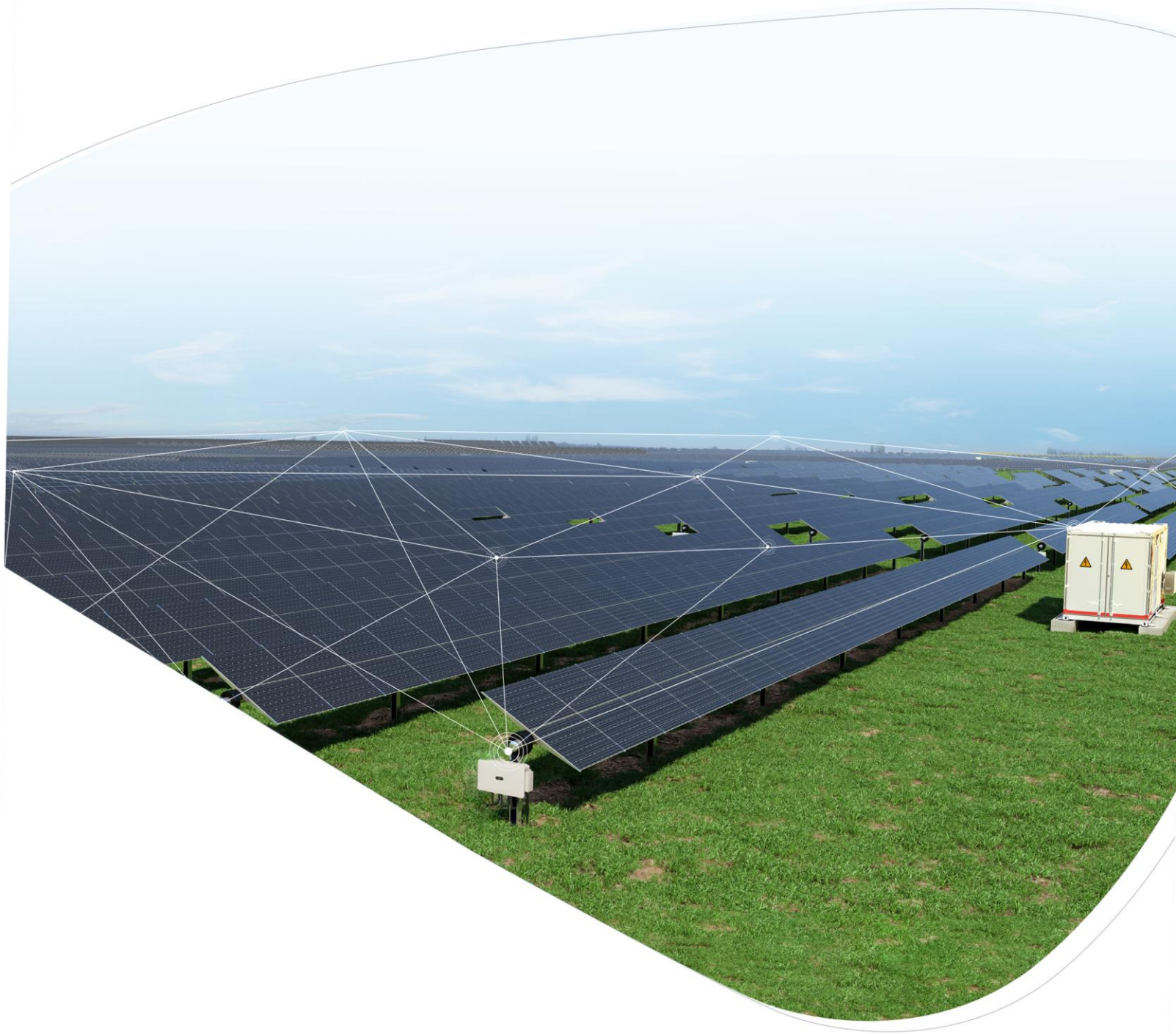




FusionSolar Smart PV Solution

SOLAR.HUAWEI.COM



Updated by : 18-02-2025



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

207,000+



R&D Personnel

55.4%



Countries

170+



Best Global Brands

86



R&D Investment

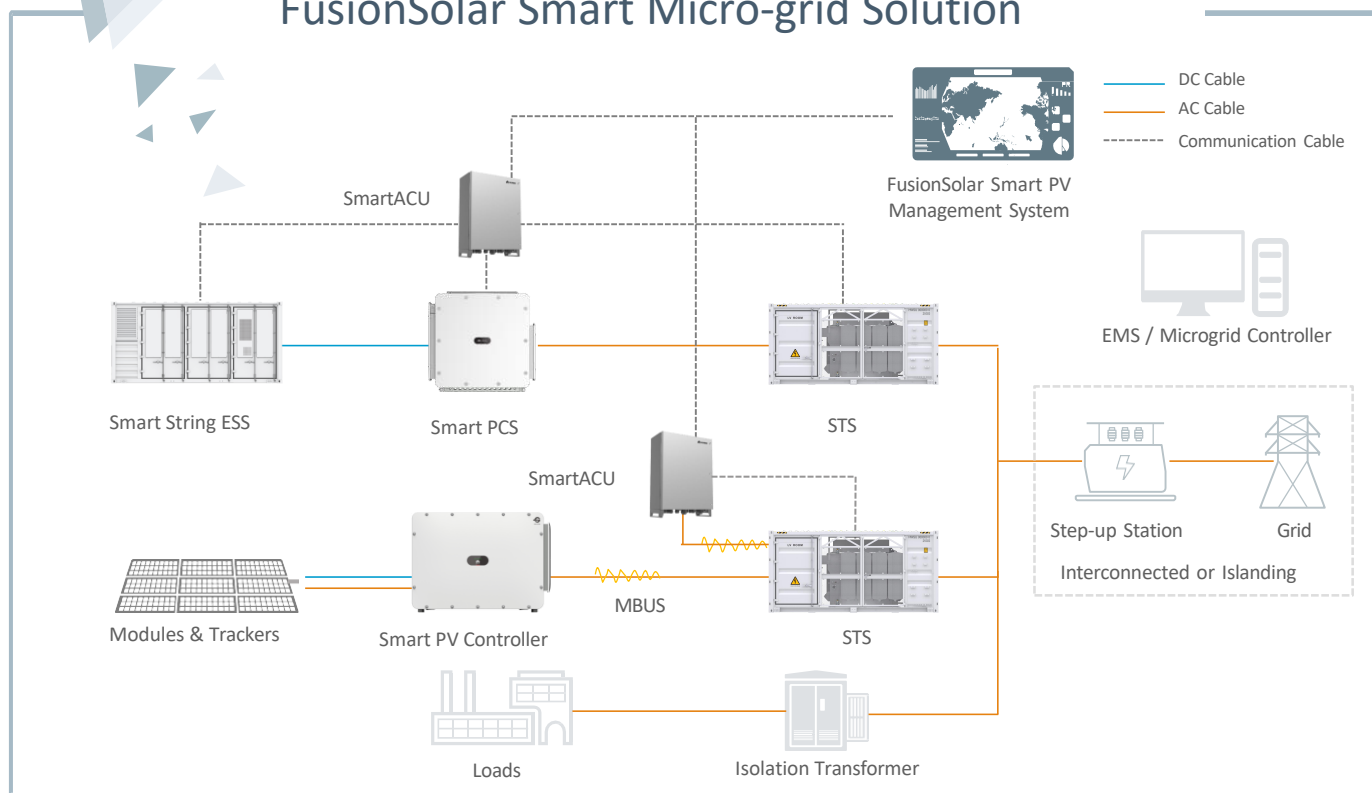
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Most Innovative
Companies

8

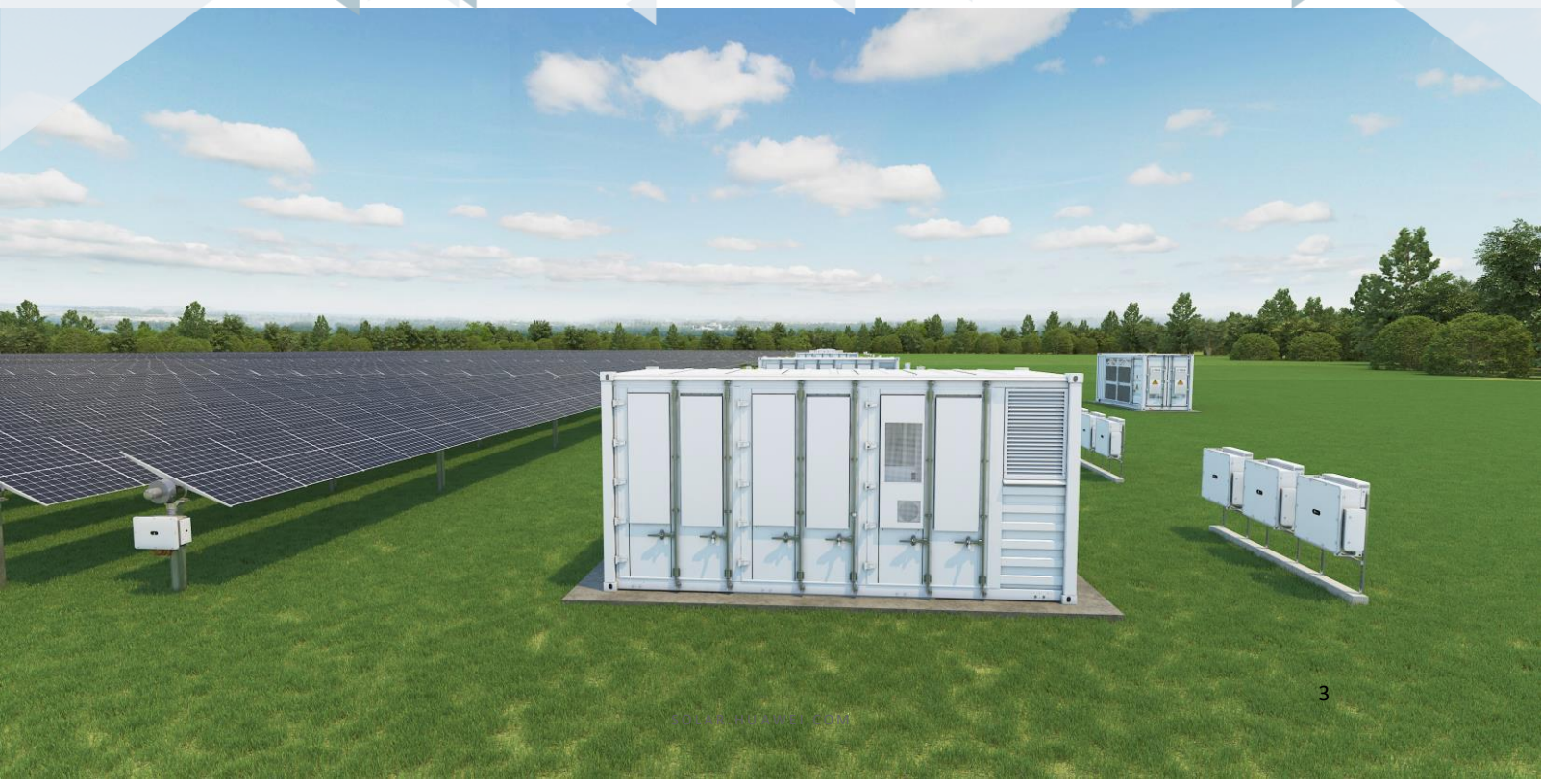
FusionSolar Smart Micro-grid Solution



Higher Resilience

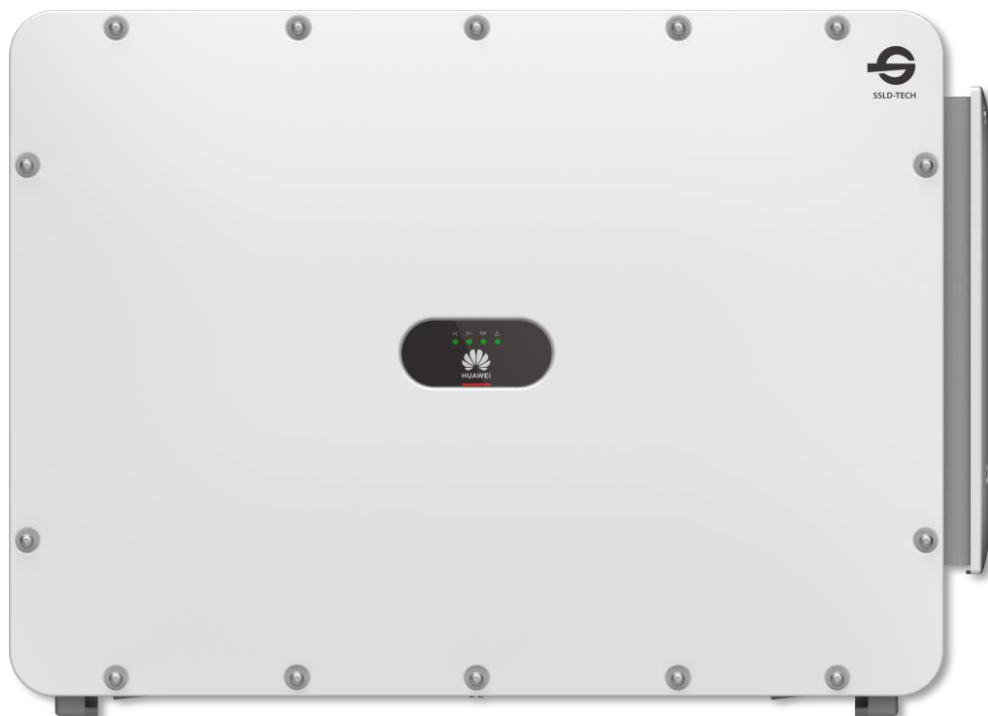
Optimal LCOE

Proactive Safety



SUN2000-330KTL-H1

Smart PV Controller



Max. Efficiency
≥ 99.0%



Smart Connector-level
Detection (SCLD)



Smart Self-cleaning
Fan (SSCF)



IP66
Protection



MBUS
Supported



Smart String-level
Disconnection (SSLD)

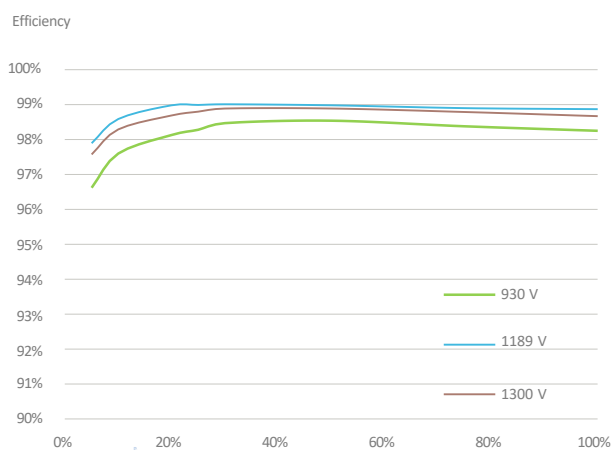


Smart IV Curve Diagnosis
Supported

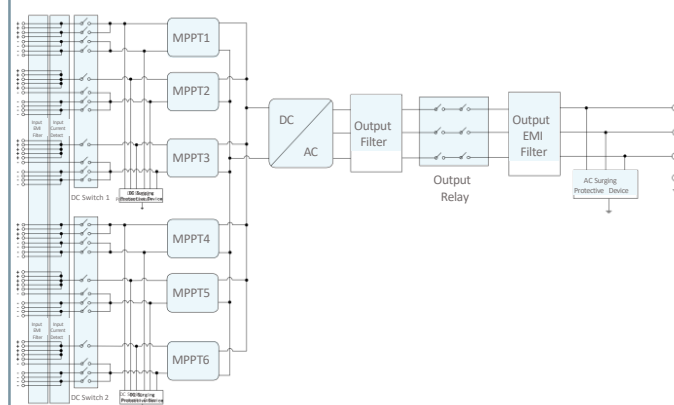


Surge Arresters for
DC & AC

Efficiency Curve



Circuit Diagram



Technical Specifications

Efficiency		
Max. Efficiency		≥ 99.0%
European Efficiency		≥ 98.8%
Input		
Max. Input Voltage		1,500 V
Number of MPP Trackers		6
Max. Current per MPPT		65 A
Max. Short Circuit Current per MPPT		115 A
Max. PV Inputs per MPPT		4/5/5/4/5/5
Start Voltage		550 V
MPPT Operating Voltage Range		500 V ~ 1,500 V
Nominal Input Voltage		1,080 V
Output		
Nominal AC Active Power		300,000 W @ 40°C
Max. AC Apparent Power		330,000 VA
Max. AC Active Power (cosφ=1)		330,000 W
Nominal Output Voltage		800 V, 3W + PE
Rated AC Grid Frequency		50 Hz / 60 Hz
Nominal Output Current		216.6 A
Max. Output Current		238.2 A
Adjustable Power Factor Range		0.8 LG ... 0.8 LD
Total Harmonic Distortion		THDi < 1% (Rated)
Protection		
Smart String-level Disconnection (SSLD)		Yes
Smart Connector-level Detection (SCLD)		Yes
AC Overcurrent Protection		Yes
DC Reverse-polarity Protection		Yes
PV-array String Fault Detection		Yes
DC Surge Arrester		Type II
AC Surge Arrester		Type II
DC Insulation Resistance Detection		Yes
Residual Current Detection Unit		Yes
Communication		
Display		LED Indicators, WLAN + APP
USB		Yes
MBUS		Yes
RS485		Yes
General		
Dimensions (W x H x D)		1,048 x 732 x 395 mm
Weight (with mounting plate)		≤ 112 kg
Operating Temperature Range		-25°C ~ 60°C
Cooling Method		Smart Air Cooling
Max. Operating Altitude without Derating		4,000 m
Relative Humidity		0 ~ 100% (Non-condensing)
DC Connector		Amphenol HH4SMM4TMSPA / HH4SFM4TMSPA
AC Connector		Support OT / DT Terminal (Max. 400 mm²)
Protection Degree		IP 66
Anti-corrosion Protection		C5-Medium
Topology		Transformerless
Standards Compliance		
IEC 62109-1/-2, IEC 62920, IEC 60947-2, EN 50549-2, IEC 61683, etc.		

LUNA2000-213KTL-H0

Smart PCS



Max. Efficiency 99%



Modular Design



IP66 Protection



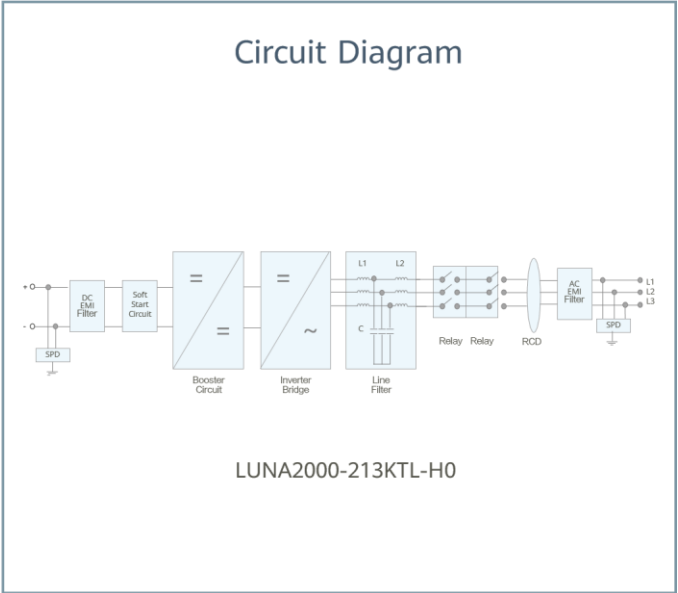
Build-in Intelligent
Active Breaking Device



Dual-stage
Architecture



Smart Grid
Forming
Algorithm



1 - Applies to LUNA2000-4472 series models.

Technical Specifications

Efficiency	
Max. Efficiency	99.01%
DC Side	
Rated DC Voltage	1,331 V
Max. DC Voltage	1,500 V
Operating DC Voltage Range	800 V ~ 1,500 V
Rated Power Operating Voltage Range	1100V-1500V
Max. DC Current	218.5 A
Max. Number of Inputs	1
AC Side	
Rated AC Active Power	213,000 W @40°C; 192,000 W @50°C
Max. Apparent Power	236,400 VA
Rated AC Voltage	800 V
Rated AC Grid Frequency	50 Hz / 60 Hz
Max. AC Current	170.6 A
Adjustable Power Factor Range	-1 ... +1
Max. Total Harmonic Distortion	THD _i ≤ 1.5% (Rated)
Protection	
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
Insulation Resistance Detection	Yes
Residual Current Protection	Yes
DC Surge Protection	Type II
AC Surge Protection	Type II
Communication	
Display	LED Indicators, WLAN + APP
USB	Yes
Communication Protocol	Ethernet, CAN
General	
Dimension (W x H x D)	875 x 865 x 365 mm
Weight	≤ 110 kg
Operating Temperature Range	-25°C ~ 60°C
Cooling Method	Smart Air Cooling
Max. Operating Altitude without Derating	4,700 m
Relative Humidity	0 ~ 100% (Non-condensing)
DC Connector	OT / DT Terminal
AC Connector	OT / DT Terminal
Protection Degree	IP66
Anti-corrosion Degree	C5-Medium
Topology	Transformerless
Standards Compliance	
GB/T 34120, GB/T 34133, IEC/EN62477-1, etc.	

1: Compatible Type II protection class according to IEC / EN 61643-11

LUNA2000-200KTL-H1

Smart PCS



Max. Efficiency 99%



Modular Design



IP66 Protection



Surge Arresters for
DC & AC

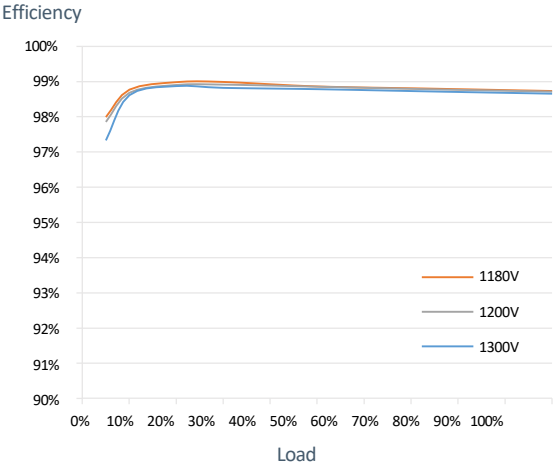


Ethernet
Communication

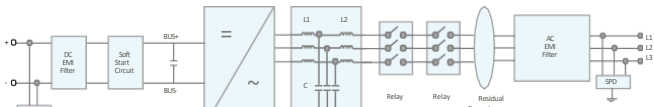


Grid Forming
Black Start

Efficiency Curve



Circuit Diagram



LUNA2000-200KTL-H1

LUNA2000-200KTL-H1

Technical Specifications

Efficiency	
Max. Efficiency	99.0%
DC Side	
Rated DC Voltage	1,180 V
Max. DC Voltage	1,500 V
Operating DC Voltage Range	1,180 V ~ 1,500 V
Max. DC Current	207.6 A
Max. Number of Inputs	1
AC Side(Interconnected)	
Rated AC Active Power	200,000 W @40°C
Rated AC Voltage	800 Vac, 3W + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Max. AC Current	173.2 A
Adjustable Power Factor Range	-1 ... +1
Max. Total Harmonic Distortion	THD _i < 1% (Rated)
AC Side(Islanding)	
Rated AC Voltage	800 Vac, 3W + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Max. AC Current	173.2 A
Max. Total Harmonic Distortion	THD _u < 1.5 % (Rated, Linear Loads)
Standalone Operation / Black Start	Yes
Unbalance Operation	Yes (With Transformer)
Protection	
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
Insulation Resistance Detection	Yes
Residual Current Protection	Yes
DC Surge Protection ¹	Type II
AC Surge Protection ¹	Type II
Communication	
Display	LED Indicators, WLAN + APP
USB	Yes
Ethernet	Yes
General	
Dimensions (W x H x D)	875 x 820 x 365 mm
Weight	< 99 kg
Operating Temperature Range	-25°C ~ 60°C
Cooling Method	Smart Air Cooling
Max. Operating Altitude without Derating	4,000 m
Relative Humidity	0 ~ 100% (Non-condensing)
DC Connector	OT/DT Terminal
AC Connector	OT/DT Terminal
Protection Degree	IP66
Anti-corrosion Protection	C5-Medium
Topology	Transformerless
Standards Compliance	
RoHS, IEC 62477-1, IEC 61000-6-2, IEC 61683, VDE 4120, EN 50549, etc.	

1: Compatible Type II protection class according to IEC / EN 61643-11

LUNA2000-4472-2S Series Smart String ESS



**All-architecture
Safety**



**All-scenario
Grid forming**



**All-lifecycle
Cost-effectiveness**



**All-rounder
Digitalization**

Battery Container	
Model	LUNA2000-4472-2S
DC Rated Voltage	1,331.2 V
DC Max. Voltage	1,500 V
Nominal Energy Capacity	4,472 kWh
Charge & Discharge Rate	≤ 0.5 C
Rated Power	2,236 kW
Dimension (W x H x D)	6,058 x 2,896 x 2,438 mm
Weight	≤ 42 t
Operation Temperature Range	-30° C ~ 55° C
Storage Temperature Range	-40° C ~ 60° C
Relative Humidity	0 ~ 100% (Non-condensing)
Max. Operating Altitude	4,700 m
Cooling Method	Liquid Cooling
Fire Suppression System	Water Sprinkler, NOVEC 1230 (Optional)
Communication Interface	Ethernet / SFP
Communication Protocol	Modbus TCP
Protection Degree	IP55
Anti-corrosion Degree	C5-Medium
Standards Compliance	
RoHS, IEC62477-1, IEC62040-1, IEC61000-6-2, IEC62933-5-2, UL9540A, IEC62619, UN38.3, etc.	
Battery Pack	
Cell Material	LFP
Number of Cell	104
Nominal Capacity	280 Ah / 93.18 kWh
Protection Degree	IP65
Weight	≤700 kg
Dimensions (W x H x D)	785 x 249 x 2135 mm

LUNA2000-2.0MWH Series Smart String ESS



More Energy



Optimal Investment



Simple O&M



Safe & Reliable

Battery Container			
Model	LUNA2000-2.0MWH-4H1	LUNA2000-2.0MWH-2H1	LUNA2000-2.0MWH-1H1
DC Rated Voltage	1,250 V		
DC Max. Voltage	1,500 V		
Nominal Energy Capacity	2,032 kWh		
Charge & Discharge Rate	≤ 0.25 C	≤ 0.5 C	≤ 1 C
Rated Power	169.5 kW * 3	338.7 kW * 3	338.7 kW * 6
Container Configuration (W x H x D)	6,058 x 2,896 x 2,438 mm		
Container Weight	≤ 30 t		
Operation Temperature Range	-30°C ~ 55°C		
Storage Temperature Range	-40°C ~ 60°C		
Relative Humidity	0 ~ 100% (Non-condensing)		
Max. Operating Altitude	4,000 m		
Cooling Method	Smart Air Cooling		
Configuration of HVAC	2 HVACs	4 HVACs	6 HVACs
Fire Suppression Agent	FM-200 or Novec 1230™		
Communication Interface	Ethernet / SFP		
Communication Protocol	Modbus TCP / IEC104		
Protection Degree	IP55		
Anti-corrosion Protection	C5-Medium		
Black Start	Yes		
Standards Compliance			
RoHS6, IEC62477-1, IEC62040-1, IEC61000-6-2, EN55011, UL9540A, IEC62619, UN3536, etc.			

LUNA2000-1.0MWH-1H1

Smart String ESS



More Energy



Optimal Investment



Simple O&M



Safe & Reliable

Battery Container	
Model	LUNA2000-1.0MWH-1H1
DC Rated Voltage	1,250 V
DC Max. Voltage	1,500 V
Nominal Energy Capacity	1,016 kWh
Charge & Discharge Rate	≤ 1 C
Rated Power	338.7 kW * 3
Container Configuration (W x H x D)	6,058 x 2,896 x 2,438 mm
Container Weight	≤ 20 t
Operation Temperature Range	-30°C ~ 55°C
Storage Temperature Range	-40°C ~ 60°C
Relative Humidity	0 ~ 100% (Non-condensing)
Max. Operating Altitude	4,000 m
Cooling Method	Smart Air Cooling
Configuration of HVAC	3 HVACs
Fire Suppression Agent	FM-200 or Novec 1230™
Communication Interface	Ethernet / SFP
Communication Protocol	Modbus TCP / IEC 104
Protection Degree	IP55
Anti-corrosion Protection	C5-Medium
Black Start	Yes
Standards Compliance	
RoHS, IEC62477-1, IEC62040-1, IEC61000-6-2, EN55011, UL9540A, IEC62619, UN3536, etc.	

Smart String ESS

Battery Pack & Smart Rack Controller



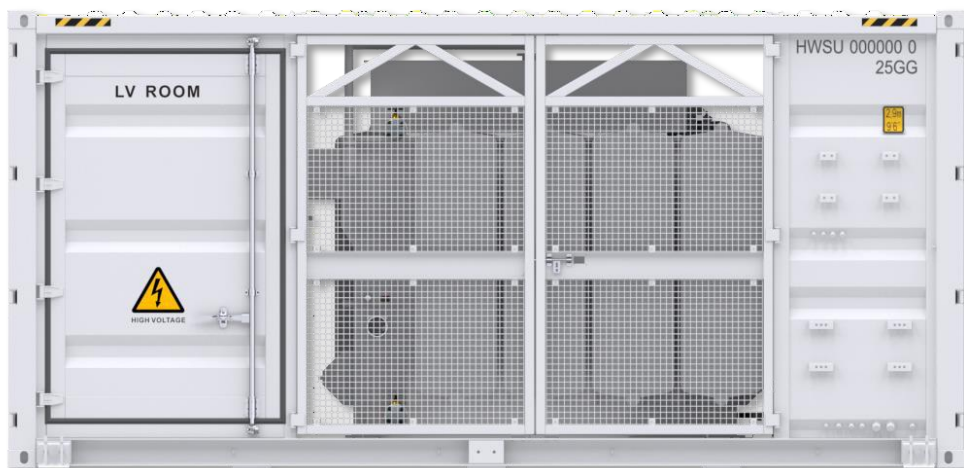
Battery Pack	
General	
Cell Material	LFP
Pack Configuration	18S 1P
Rated Voltage	57.6 V
Nominal Capacity	280 Ah / 16.13 kWh
Supported Charge & Discharge Rate	≤ 1 C
Weight	≤ 140 kg
Dimensions (W x H x D)	442 x 307 x 660 mm



Smart Rack Controller	
Battery Side	
Rated Voltage	1,209.6 V
Operating Voltage Range	40 V ~ 1,400 V
Rated Power Voltage Range	1,075 V ~ 1,320 V
Min. Start Voltage	350 V
Bus Side	
Max. DC Voltage	1,500 V
Rated Voltage	1,250 V
Rated Current	275.2 A
Rated Power	344,000 W
General	
Dimensions (W x H x D)	600 x 270 x 820 mm
Weight	≤ 90 kg
Cooling Method	Smart Air Cooling
Protection Degree	IP66

JUPITER-9000K/6000K/3000K-H1

Smart Transformer Station



Simple

Prefabricated and Pre-tested, No Internal Cabling Needed Onsite
Compact 20' HC Container Design for Easy Transportation



Efficient

High Efficiency Transformer for Higher Yields
Lower Self-consumption for Higher Yields



Smart

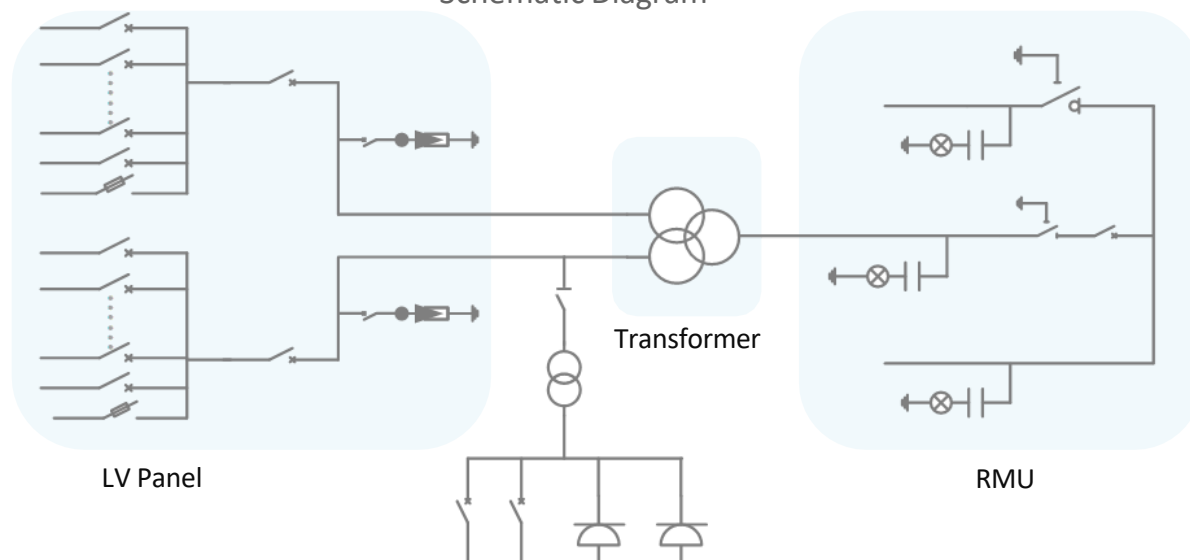
Real-time Detection of Transformer, LV Panel and RMU High
Precision Sensor of LV Electricity Parameters Remote Control
of ACB and MV Circuit Breaker



Reliable

Robust Design against Harsh Environments Optimal
Cooling Design for High Availability and Easy O&M Comprehensive
Tests from Components, Device to Solution

Schematic Diagram



JUPITER-9000K/6000K/3000K-H1

Technical Specifications

Technical Specifications	JUPITER-9000K-H1	JUPITER-6000K-H1	JUPITER-3000K-H1
Input			
Available Inverters	SUN2000-330KTL-H1		
Max. LV AC Inputs	30	22	11
AC Power	9,000 kVA @40°C ¹	6,600 kVA @40°C ¹	3,300 kVA @40°C ¹
Rated Input Voltage	800 V		
LV Panel Segregation	Form 2b		
LV Main Switches	ACB (4,000 A, 2 x 1 pcs)	ACB (2,900 A, 2 x 1 pcs)	ACB (2,900 A, 1 x 1 pcs)
LV Main Switches for SUN2000-330KTL	MCCB (400 A, 2 x 15 pcs)	MCCB (400 A, 2 x 11 pcs)	MCCB (400 A, 11 pcs)
Output			
Rated Output Voltage	10~35 kV ²		
Frequency	50 Hz or 60 Hz		
Transformer Type	Oil-immersed, Conservator Type		
Transformer Cooling Type	ONAN		
Transformer Tappings	± 2 x 2.5%		
Transformer Oil Type	Mineral Oil (PCB Free)		
Transformer Vector Group	Dy11-y11	Dy11	
Transformer Min. Peak Efficiency Index	Tier 1 or Tier 2 In Accordance with EN 50588-1		
RMU Type	SF ₆ Gas Insulated		
RMU Transformer Protection Unit	MV Vacuum Circuit Breaker Unit		
RMU Cable Incoming / Outgoing Unit	Direct Cable Unit or Cable Load Break Switch Unit		
Auxiliary Transformer	Dry Type Transformer, 5 kVA, Single-phase, li0		
Output Voltage of Auxiliary Transformer	230 / 127 Vac		
Protection			
Transformer Detection & Protection	Oil Level, Oil Temperature, Oil Pressure and Buchholz		
Protection Degree of MV & LV Room	IP 54		
Internal Arcing Fault of STS	IAC A 20 kA 1s		
MV Relay Protection	50/51, 50N/51N		
LV Overvoltage Protection	Type I+II		
Anti-corrosion Protection	C5-Medium		
Feature			
2 kVA UPS	Optional ³		
MV Surge Arrester for Transformer	Optional ³		
General			
Dimensions (W x H x D)	6,058 x 2,896 x 2,438 mm (20’ HC ISO Container)		
Weight	< 28 t	< 23 t	< 15 t
Operating Temperature Range	-25°C ~ 60°C ⁴		
Relative Humidity	0% ~ 95% (Non-condensing)		
Max. Operating Altitude	1,000 m ⁵		
MV-LV AC Connections	Prewired and Pretested, No Internal Cabling Onsite		
LV & MV Room Cooling	Smart Cooling without Air-across for Higher Availability		
Communication	Modbus TCP, Preconfigured with SmartACU2000D		
Standards Compliance			
IEC 62271-202, EN 50588-1, IEC 60076, IEC 62271-200, IEC 61439-1			

1 - More detailed AC power of STS, please refer to the de-rating curve.

2 - Rated output voltage from 10 kV to 35 kV, more available upon request

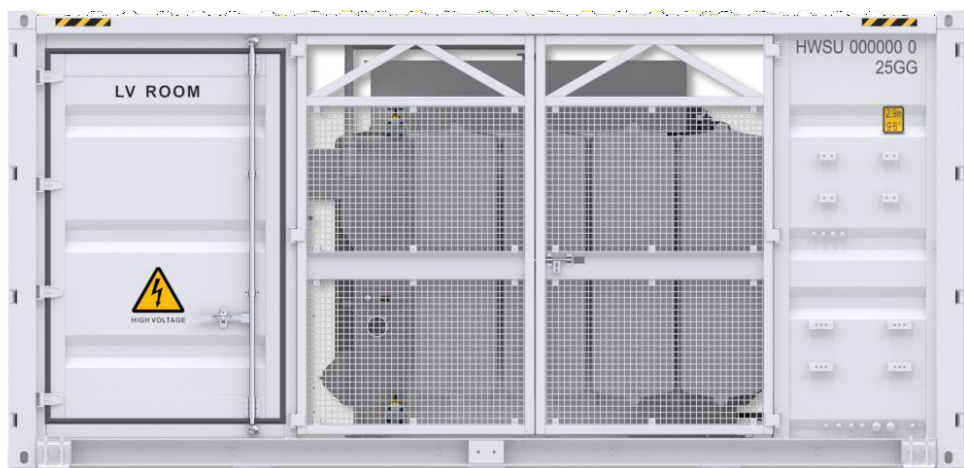
3 - Extra expense needed for optional features which standard product doesn't contain, more options upon request.

4 - When ambient temperature ≥55°C, awning shall be equipped for STS on site by customer.

5 - For higher operating altitude, please consult with Huawei.

JUPITER-9000K-H0 / STS-6000K/3000K-H1

Smart Transformer Station



Simple

Prefabricated and Pre-tested, No Internal Cabling Needed Onsite
Compact 20' HC Container Design for Easy Transportation



Efficient

High Efficiency Transformer for Higher Yields
Lower Self-consumption for Higher Yields



Smart

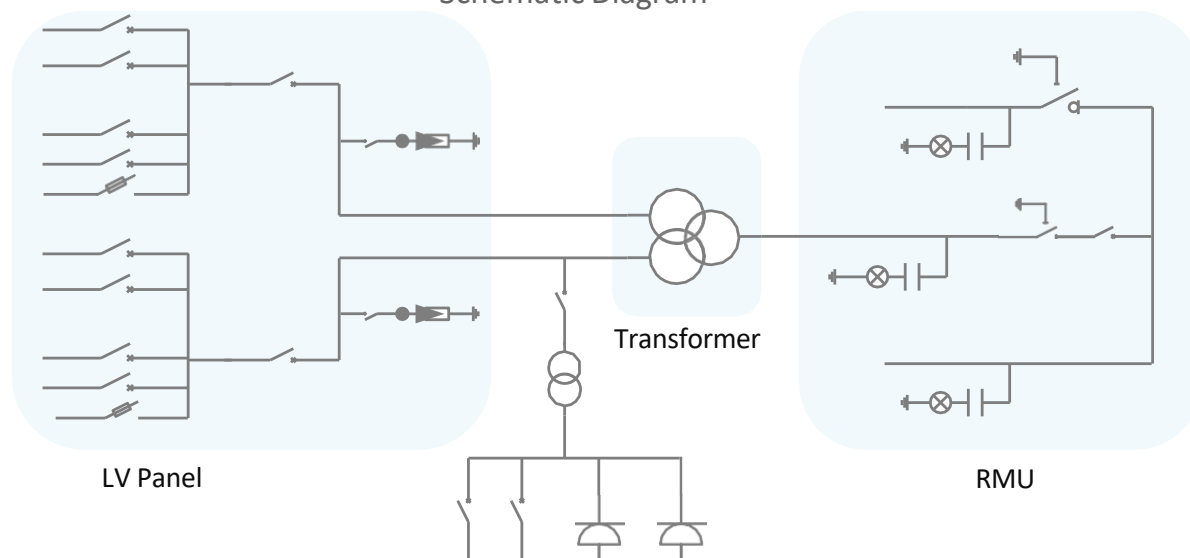
Real-time Detection of Transformer, LV Panel and RMU High
Precision Sensor of LV Electricity Parameters Remote Control
of ACB and MV Circuit Breaker



Reliable

Robust Design against Harsh Environments Optimal
Cooling Design for High Availability and Easy O&M Comprehensive
Tests from Components, Device to Solution

Schematic Diagram



Technical Specifications

Technical Specifications	JUPITER-9000K-H0	STS-6000K-H1	STS-3000K-H1
Input			
Available Inverters	SUN2000-215KTL / LUNA2000-200KTL		
Max. LV AC Inputs	44	34	17
AC Power	9,000 kVA @40°C ¹	6,800 kVA @40°C ¹	3,400 kVA @40°C ¹
Rated Input Voltage	800 V		
LV Panel Segregation	Form 2b		
LV Main Switches	ACB (4,000 A, 2 x 1 pcs)	ACB (2,900 A, 2 x 1 pcs)	ACB (2,900 A, 1 pcs)
LV Main Switches for SUN2000-215KTL	MCCB (250 A, 2 x 22 pcs)	MCCB (250 A, 2 x 17 pcs)	MCCB (250 A, 17 pcs)
Output			
Rated Output Voltage	10~35 kV ²		
Frequency	50 Hz / 60 Hz		
Transformer Type	Oil-immersed, Conservator Type		
Transformer Cooling Type	ONAN		
Transformer Tappings	± 2 x 2.5%		
Transformer Oil Type	Mineral Oil (PCB Free)		
Transformer Vector Group	Dy11-y11	Dy11	
Transformer Min. Peak Efficiency Index	Tier 1 or Tier 2 In Accordance with EN 50588-1		
RMU Type	SF ₆ Gas Insulated		
RMU Transformer Protection Unit	MV Vacuum Circuit Breaker Unit		
RMU Cable Incoming / Outgoing Unit	Direct Cable Unit or Cable Load Break Switch Unit		
Auxiliary Transformer	Dry Type Transformer, 5 kVA, Single-phase, II0	Dry Type Transformer, 5 kVA, Three-phase, Dyn11	
Output Voltage of Auxiliary Transformer	230 / 127 Vac	400 / 230 Vac or 220 / 127 Vac	
Protection			
Transformer Detection & Protection	Oil Level, Oil Temperature, Oil Pressure and Buchholz		
Protection Degree of MV & LV Room	IP 54		
Internal Arcing Fault of STS	IAC A 20 kA 1s		
MV Relay Protection	50/51, 50N/51N		
LV Overvoltage Protection	Type I-II		
Anti-corrosion Protection	C5-Medium		
Features			
2 kVA UPS	Optional ³		
MV Surge Arrester for MV VCB	Optional ³		
General			
Dimensions (W x H x D)	6,058 x 2,896 x 2,438 mm (20’ HC Container)		
Weight	< 28 t	< 22 t	< 15 t
Operating Temperature Range	-25°C ~ 60°C ⁴		
Relative Humidity	0% ~ 95% (Non-condensing)		
Max. Operating Altitude	1,000 m ⁵		
MV-LV AC Connections	Prewired and Pretested, No Internal Cabling Onsite		
LV & MV Room Cooling	Smart Cooling without Air-across for Higher Availability		
Communication	Modbus TCP, Preconfigured with SmartACU2000D	Modbus RTU, Preconfigured with SmartACU2000D	
Standards Compliance			
IEC 62271-202, EN 50588-1, IEC 60076, IEC 62271-200, IEC 61439-1			

¹ - More detailed AC power of STS, please refer to the de-rating curve.

² - Rated output voltage from 10 kV to 35 kV, more available upon request

³ - Extra expense needed for optional features which standard product doesn't contain, more options upon request.

⁴ -When ambient temperature ≥55°C, awning shall be equipped for STS on site by customer. ⁵ - For higher operating altitude, please consult with Huawei.

DCBOX-9/5-H0

DC LV Panel



Electrical	
Applicable Smart String ESS	LUNA2000-2.0MWH-1H1
Max. Input Voltage	1,500 V
Nominal Input Voltage	1,200 V
Max. Branch Current for Battery Rack Side	321 A
Max. Branch Current for PCS Side	193 A
Number of DC Circuit Breaker	14
Max. Input Number of Battery Rack	9
Max. Input Number of PCS	5
Max. Convergence Capacity	5 x 193 A
Protection	
DC Overcurrent Protection	Yes
Environment	
Operating Temperature Range	-30°C ~ 60°C
Relative Humidity	0 ~ 100% (Non-condensing)
Max. Operating Altitude	4,000 m
General	
Cable Entries	Top in for PCS & Bottom in for Battery Rack
Dimensions (W x H x D)	2,040 x 1,415 x 975 mm
Weight (Without Smart PCS)	≤ 750 kg
DC Connector / AC Connector	OT Terminal
Protection Degree	IP55
Installation Options	Grounding

Model: SPPC2000

Smart Power Plant Controller



SPPC2000



POC PT/CT direct sampling



PV&ESS Synergy



Fast Power Response



Power Oscillation Damping

Technical Specifications	SPPC2000-A01		SPPC2000-A02	
Device Management				
Networking Mode	Active/Standby and Master-Slave Control Mode			
Features				
Active Power Control	System-level 30ms-40ms Dynamic Reactive Power Response			
Frequency Control (P-F)	P-F Curve Control			
Reactive Power Control (Q or PF)	Reactive Power Control with Dynamic or Fixed Q/PF Setpoints			
Voltage Control (Q-U)	Q-U Curve Control			
Smart Reactive Power Compensation	System Level Dynamic Reactive Power Response Based on Inverter/Converter			
Ramp Control (Power)	Control the Active/Reactive Power Up and Down Ramp Rates			
Cooperative Control of PV and ESS	Yes			
Power Oscillation Damping (POD)	Oscillation Suppression Range (0.1~2.5 Hz)			
Waveform Recording Function	Supports Instantaneous Value (0.5ms) and rms Value Recording of Current and Voltage			
Time Synchronization Function	Supports IRIGB (≤ 1 ms) and Other Time Synchronization Protocols (e.g., NTP)			
Breaker Status Acquisition and Control	Control Substations Disconnection and Connection			
Simulation Model	PSSE, DigSILENT, PSCAD			
PT/CT Sampling current	1A	5A		
Communication Interface				
Ethernet	6 + 2			
Optical Ethernet	SFP x 2, 100 / 1,000 Mbps			
RS485	COM x 4			
Current/Voltage Sampling	6U + 6I			
CAN	2			
Communication Protocol	Modbus-TCP, IEC60870-5-104, GOOSE			
Interaction				
WEB	Yes			
HMI	Smart PV Management System / Smart Energy Management System			
General				
Dual Power Supply	AC: 90 V ~ 264 V, 47 Hz ~ 63 Hz, DC: 110 V ± 10%, 220 V ± 10%			
DC/AC Surge Arrester	Type II			
Dimensions (H x L x W)	1000 x 650 x 650 mm (Without Base)			
Weight	≤ 80 kg (Without Pallet and Optional Components)			
Operating Temperature Range	-25℃ ~ 60℃			
Relative Humidity	0% ~ 100% (Non-condensing)			
Max. Operating Altitude	4,000 m			
Protection Degree	IP55			
Anti-corrosion Protection	C5-Medium			
Installation Options	Floor Mounting, Wall Mounting (Optional)			

DTS-200K-D0

Distribution Transformer



Electrical	
AC Power	210 kVA@ 400 Vac / 4 kVA@ 110 Vac
Rated Input Voltage	800 Vac
Max. Input Current at Nominal Voltage	151.6 A
Rated Output Voltage	400V (3P) / 110V (1P)
Rated Frequency	50 / 60 Hz
Transformer Type	Dry Type
Transformer Cooling Type	AF
Transformer Vectoring Group	Dyn11yn11
Transformer Tappings	$\pm 2 \times 2.5\%$
Transformer Winding	Al
Transformer Insulation Class	H
Transformer Impedance (at 145°C)	4% ($\pm 10\%$) @50Hz / 4.8% ($\pm 10\%$) @60Hz
Transformer No-load Loss	≤ 500 W (+15%)
Transformer Load Loss	$\leq 3,044$ W (+15%)
Cablings	
Number of outputs	Five MCCBs, each connected to two outputs
Cabling mode	Routed in and out from the bottom
Protection	
Protection Degree	IP 55
LV SPD	Type II
Transformer Protection	Transformer Temperature Protection
Environment	
Operating Temperature Range	- 30°C ~ 55°C
Relative Humidity	0% ~ 95% (Non-condensing)
Max. Operating Altitude	4,000 m
General	
Dimensions (W x H x D)	900 x 2,100 x 1,200 mm
Weight	< 1.3 t
Communication Mode	Dry Contacts
Cooling Type	Smart Cooling without Air-across for Higher Availability
Standards Compliance	
IEC 60076, IEC 61439	

SmartACU2000D Smart Array Controller



With SmartPID2000 Module



Smart

Support one-click commissioning



Without SmartPID2000 Module



Simple

SmartPID2000 & Smartlogger3000B pre-installed
with multiple interfaces



Reliable

Industrial-level application and high reliability

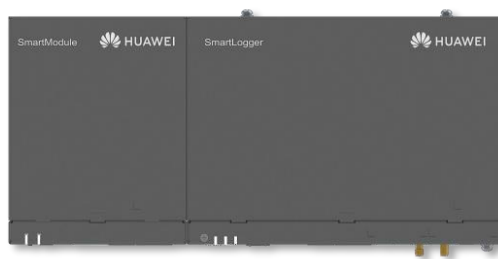
Technical Specifications	SmartACU2000D-D-08	SmartACU2000D-D-09	SmartACU2000D-D-10	SmartACU2000D-D-11
Configuration				
SmartLogger	SmartLogger3000B x 1			
SmartModule1000A	Optional		Standard with 1	
RS485	COM x 6, 1,200 / 2,400 / 4,800 / 9,600 / 19,200 / 115,200 bps			
Number of MBUS Module ¹	1	1	2	2
Number of SmartPID2000	0	1	2	2
Switch with 4*SFP and 8*100 / 1,000 Mbps	Optional with 1			Standard with 2
Environment				
Operating Temperature Range	-40° C ~ 60° C			
Relative Humidity	0% ~ 100% (Non-condensing)			
Max. Operating Altitude	4,000 m			
Electrical				
AC Input Voltage for Cabinet	100 V ~ 240 V, L / N (L)+ PE			
AC Input Voltage for MBUS	380 V ~ 800 V, 3Ph			
AC Input Voltage for PID	380 V ~ 800 V, 3Ph + FE (Functional Earth)			
AC Input Frequency	50 Hz / 60 Hz			
Power Supply	Standard: 12 V DC			
Mechanical				
Cable Entries	Bottom in & out			
Maintenance	Front			
Dimensions (W x H x D)	640mm×770mm×365mm	880mm×770mm×369mm		
Weight	33kg	54kg	64kg	66kg
Protection Degree	IP65			
Installation Options	Wall Mounting, Rack Mounting, Pole Mounting			

¹ Compatible with communication mode of PLC (Power Line Communication).

SmartLogger3000B



Without SmartModule1000A



With SmartModule1000A



Smart

Connecting up to 150 inverters,
One-click commissioning



Simple

Deployment wizard allowed, including
parameters configuration, devices connection



Reliable

Safety improvement
by lightning protection module

Technical Specifications	SmartLogger3000B	SmartLogger3000B with SmartModule1000A
Device Management		
Max. Manageable Devices	200	
Max. Manageable Smart PV Controllers ¹	150	
Max. Manageable Smart PCS / Smart String ESS ¹	44 / 24	
Communication Interface		
WAN	WAN x 1, 10 / 100 / 1,000 Mbps	
LAN	LAN x 1, 10 / 100 / 1,000 Mbps	LAN x 3, 10 / 100 / 1,000 Mbps
Optical Ethernet	SFP x 2, 100 / 1,000 Mbps	
MBUS	MBUS x 1, 115.2 kbps, Compatible with PLC	
RS485	COM x 3	COM x 6
Digital / Analog Input / Output	DI x 4, DO x 2, AI x 4	DI x 8, DO x 2, AI x 7
PT100 / PT1000	0	2
Active DO	12 V, 100 mA (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	LED Indicator x 5
WEB	Embedded Web	
USB	USB 2.0 x 1	
APP	Communication by WLAN for commissioning	
Environment		
Operating Temperature Range	-40°C ~ 60°C	
Storage Temperature Range	-40°C ~ 70°C	
Relative Humidity	5% ~ 95% (Non-condensing)	
Max. Operating Altitude	4,000 m	
Electrical		
Power Adapter	AC input: 100 V ~ 240 V, 50 Hz / 60 Hz; DC output: 12 V, 2 A	
DC Power Supply	24 V, 0.8 A	
Power Consumption	Typical 9 W, Max. 15 W	Typical 10 W, Max. 18 W
Mechanical		
Dimensions (W x H x D, without mounting ears)	225 x 160 x 44 mm	350 x 160 x 44 mm
Weight	2 kg	3 kg
Protection Degree	IP20	
Installation Options	Wall Mounting, DIN Rail Mounting, Tabletop Mounting	

¹ – One smartlogger supports max. manageable devices for either smart PV controller or Smart string ESS in one power block.

SmartPID2000 Module Inside Smart Array Controller



The SmartPID2000 Module is installed in the SmartACU2000D cabinet to reduce the negative effect of the Potential Induced Degradation (PID), and support continuous DC & AC insulation detection with optional SmartIMD.



Smart

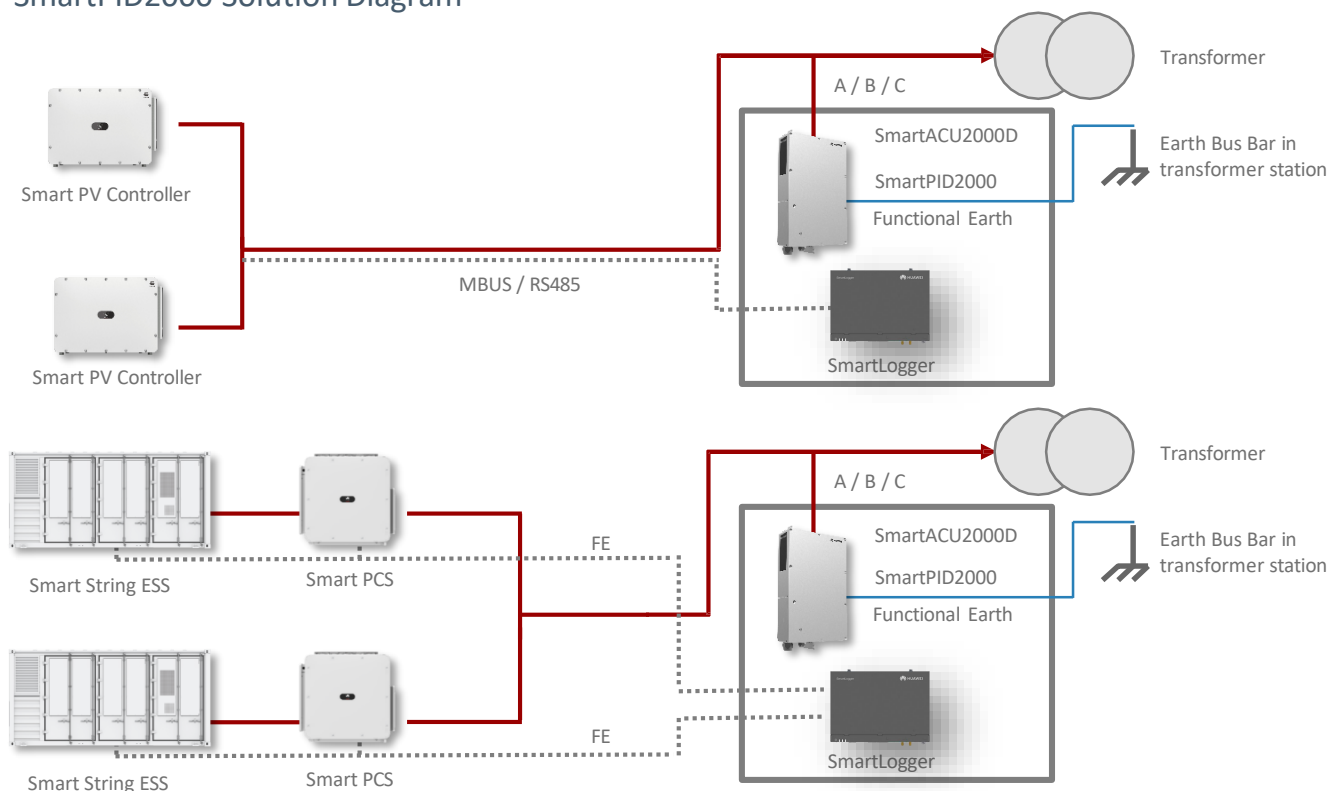
Data read and software upgrade through USB or the embedded Web



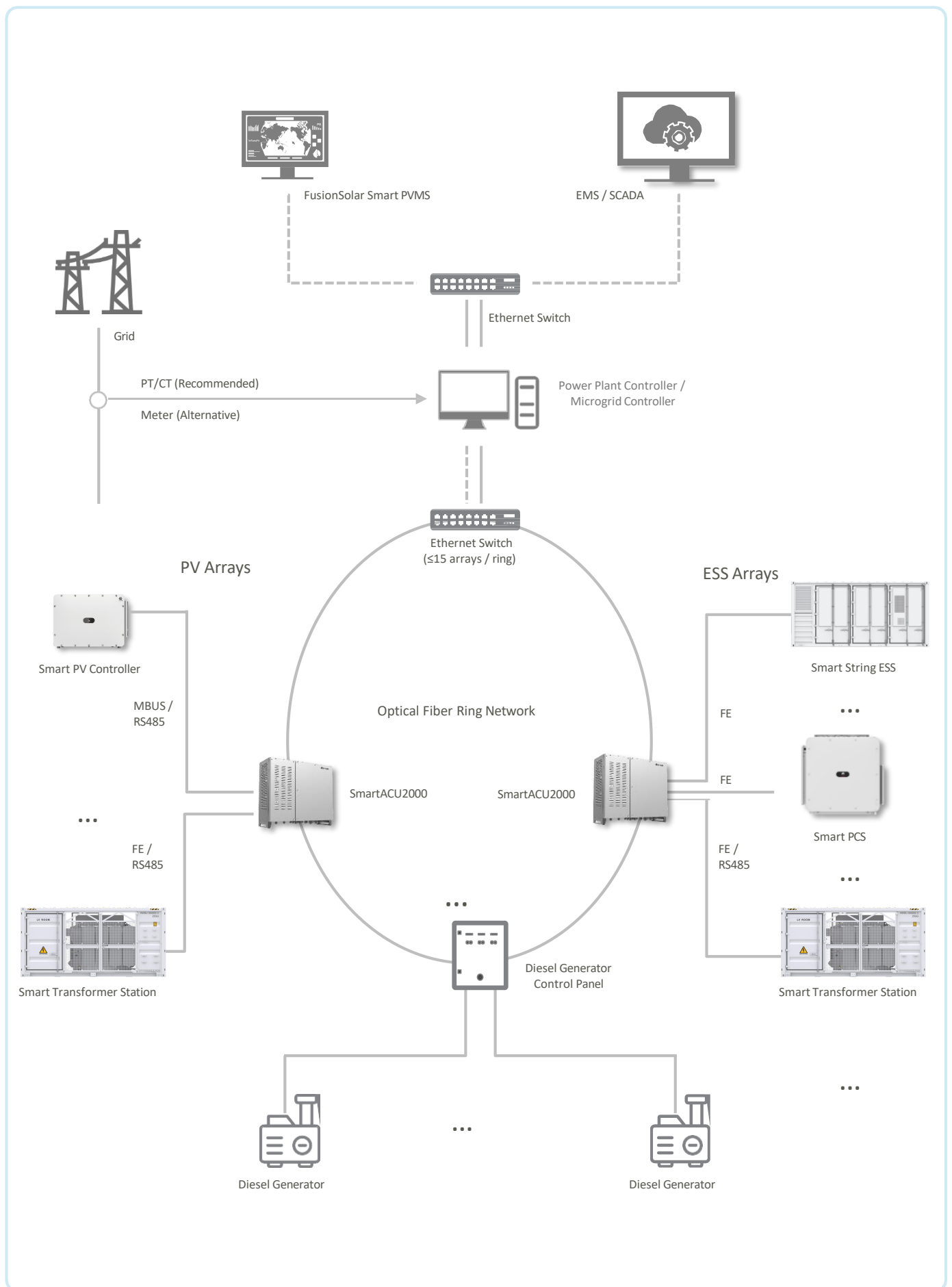
Safe & Reliable

Anti-PID with higher safety by injecting LV AC voltage to earth
Continuous DC & AC insulation detection with optional SmartIMD

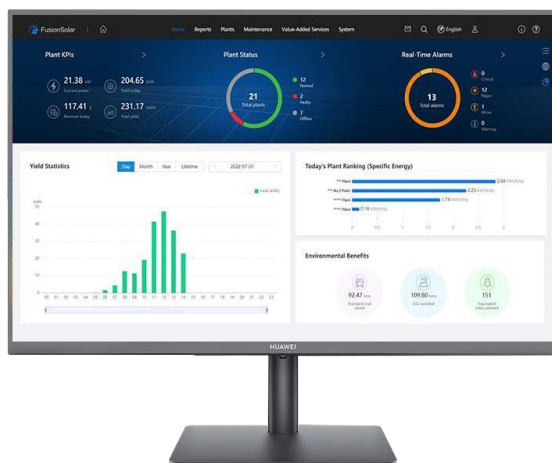
SmartPID2000 Solution Diagram



- Note:
- 1 - The SmartPID module could ONLY be deployed in utility scenarios where the LV sides of transformer stations are IT system.
 - 2 - The SmartPID module must work with FusionSolar SmartLoggers and smart PV controllers / smart PCS.



Smart PV Management System



Refined

- Multi-level management, from plant-level to string / battery cell-level



Efficient

- Alarm classification and precise handling advice
- Realtime status of plant per APP



Safe

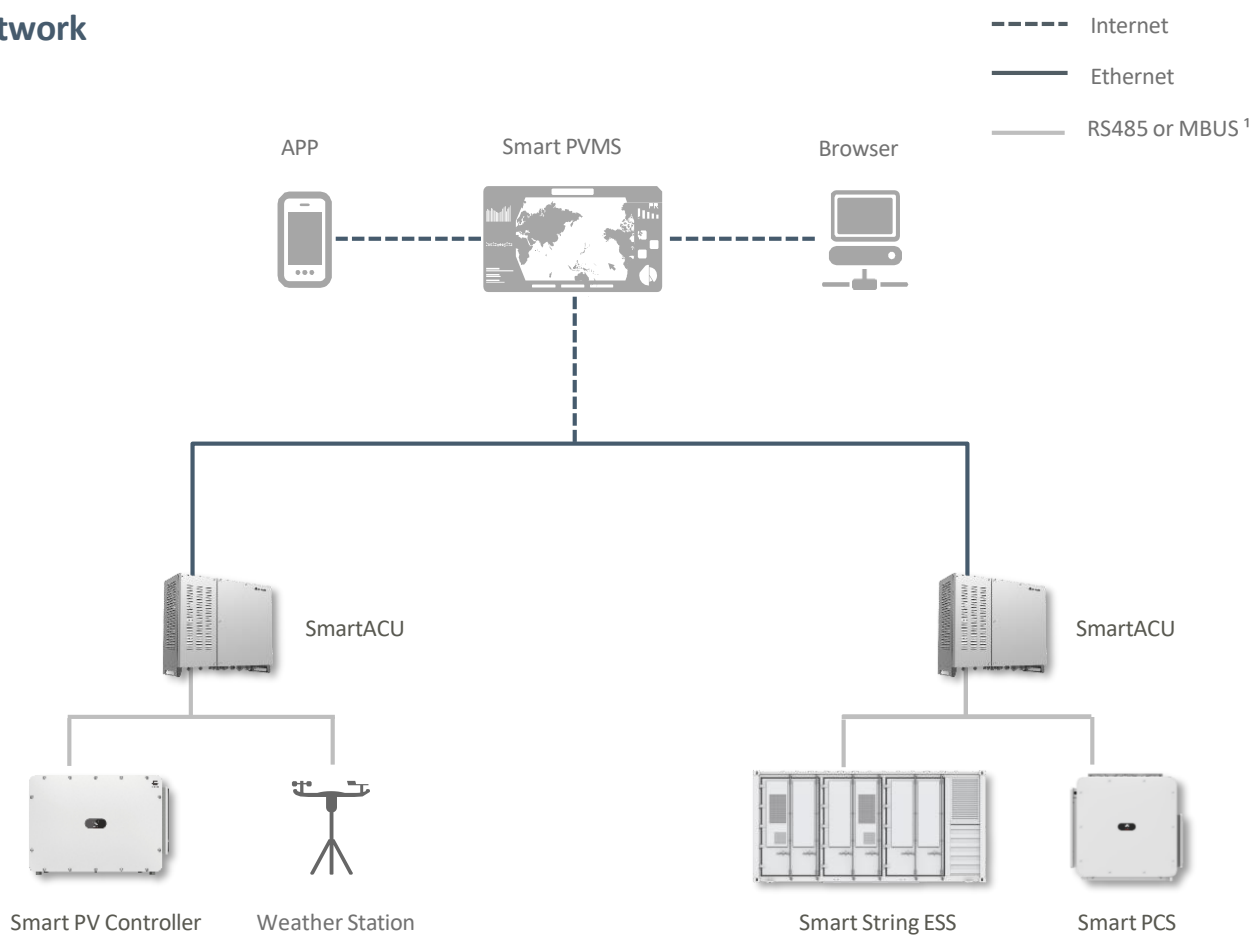
- ESS Early warning of thermal runaway, minimizing the risk



Friendly

- Unified management of plant
- 3D View of ESS

Network



1 - Compatible with communication mode of PLC (Power Line Communication).

Smart PV Plant Management System



Refined

Multi-level management, from plant-level to string/battery cell-level



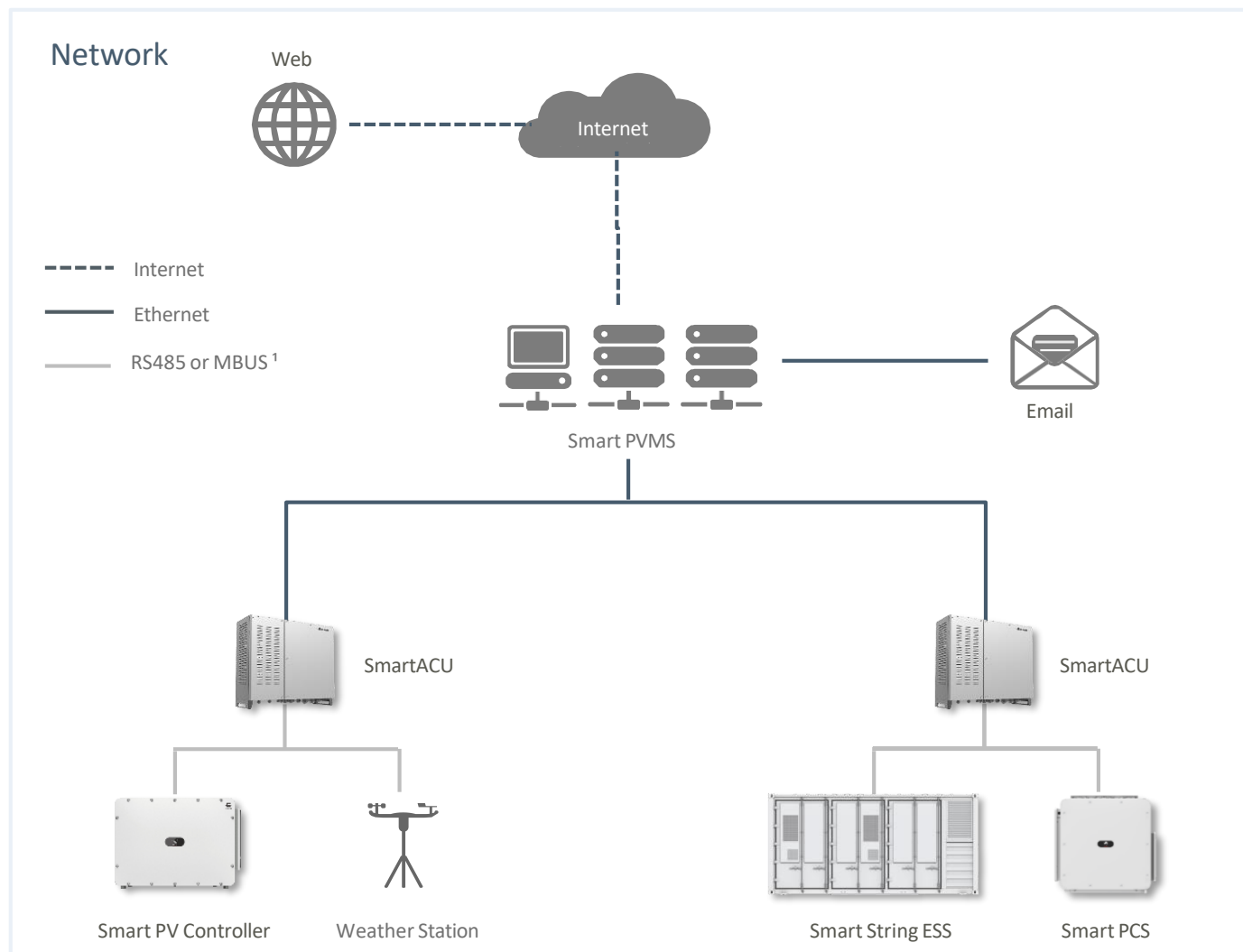
Efficient

Quick location of abnormal strings
Fault alarms via E-mail



Simple

Quick Construction
3D View of ESS



1 - Compatible with communication mode of PLC (Power Line Communication).

Smart PVMS Server Standard Version



10000 Equivalent devices supported



Software pre-installation, saving installation time by 70%



3D View of BESS
Easier and faster fault location

Technical Specification	FusionServer Pro 2288X V5 H22X-05
Max. Devices Supported	10,000 equivalent devices
Form Factor	2U rack server
Processors	2 * Intel Xeon Silver 4208 (2.1 GHz / 8-Core / 11 MB)
Memory	2 * 32 GB DDR4 RDIMM, ECC
Internal Storage	2 * 1.2 TB, SAS 2.5" HDD, 10,000 RPM
Operating System	Euler OS
Database	Gauss DB
RAID Support	RAID 1
Network Ports	Two PCIe NICs, each supporting four GE electrical ports
Power Supply Units	2 hot-swappable PSUs, 1+1 redundancy
Power Supply	Input: 100-240 V _{AC} / 11~5.5 A ; 240 V _{DC} / 5 A
Fan Modules	4 hot-swappable counter-rotating fan modules, N+1 redundancy
Operating Temperature	5°C ~ 40°C
Dimensions (H x W x D)	86.1 x 447 x 748 mm
Weight	29 kg
Standards Compliance	CE, UL, FCC, CCC, RoHS, etc.

Smart PVMS Server Premium Version



30000 Equivalent devices supported



Software pre-installation, saving installation time by 70%



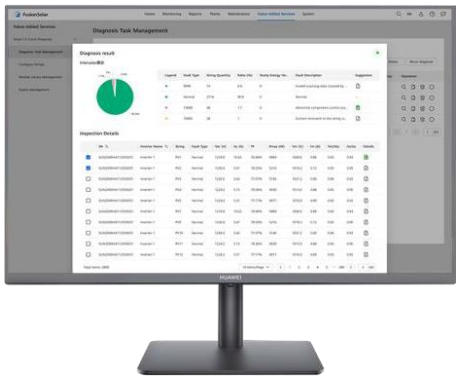
3D View of BESS
Easier and faster fault location

Technical Specification	FusionServer Pro 2288X V5
Max. Devices Supported	30,000 equivalent devices
Form Factor	2U rack server
Processors	2 * Intel Xeon Gold 5218 (2.3 GHz / 16-Core / 22 MB)
Memory	4 * 32 GB DDR4 RDIMM, ECC
Internal Storage	2 * 1.2 TB + 8 * 1.8 TB, SAS 2.5" HDD, 10,000 RPM
Operating System	Euler OS
Database	Gauss DB
RAID Support	RAID 1, RAID 10
Network Ports	Two PCIe NICs, each supporting four GE electrical ports
Power Supply Units	2 hot-swappable PSUs, 1+1 redundancy
Power Supply	Input: 100-240 V _{AC} / 11~5.5 A ; 240 V _{DC} / 5 A
Fan Modules	4 hot-swappable counter-rotating fan modules, N+1 redundancy
Operating Temperature	5°C ~ 40°C
Dimensions (H x W x D)	86.1 x 447 x 748 mm
Weight	30 kg
Standards Compliance	CE, UL, FCC, CCC, RoHS, etc.

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 malfunction, which would help to achieve proactive maintenance, higher O&M efficiency and lower operation cost.



Smart

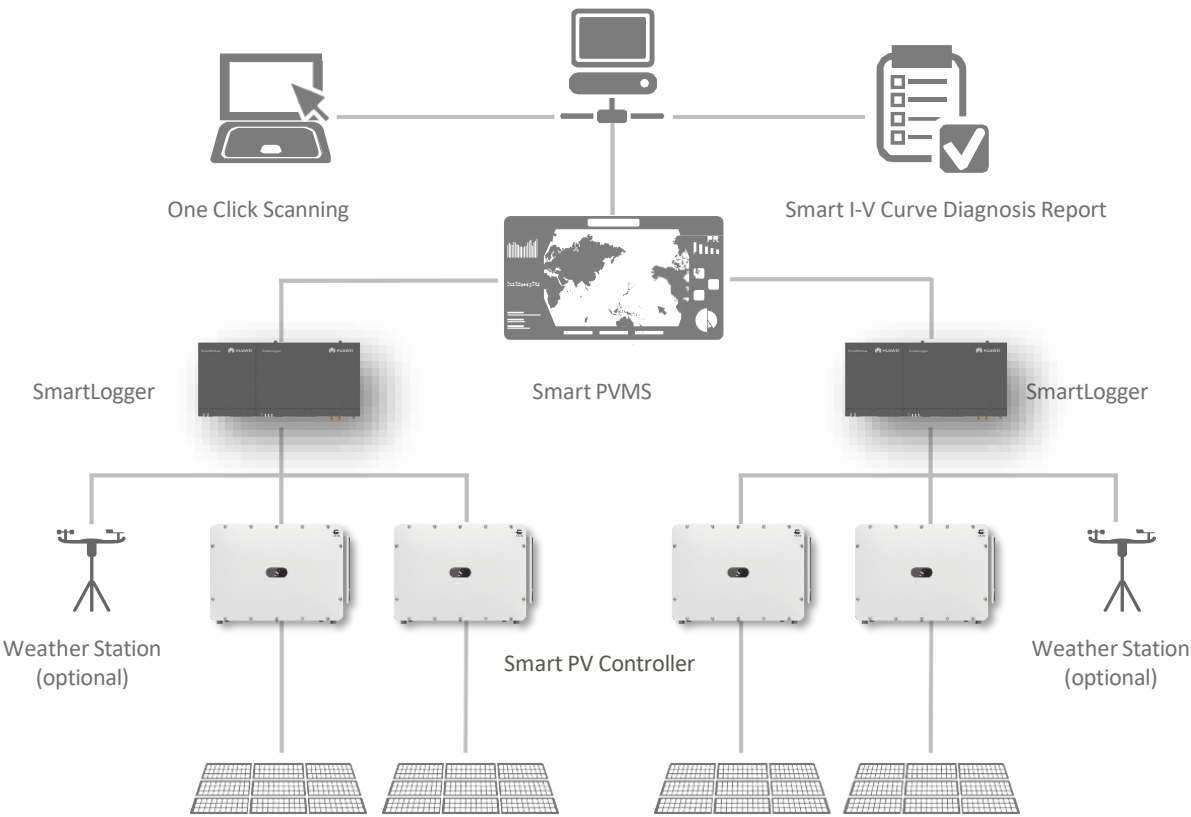
- Plant-level, array-level and device-level analysis and diagnosis
- Scheduled scanning and proactive presentations of reports
- Automatically identify different failure type and provide recovery suggestion
- Export of ROI estimation reports and assist in accurate O&M



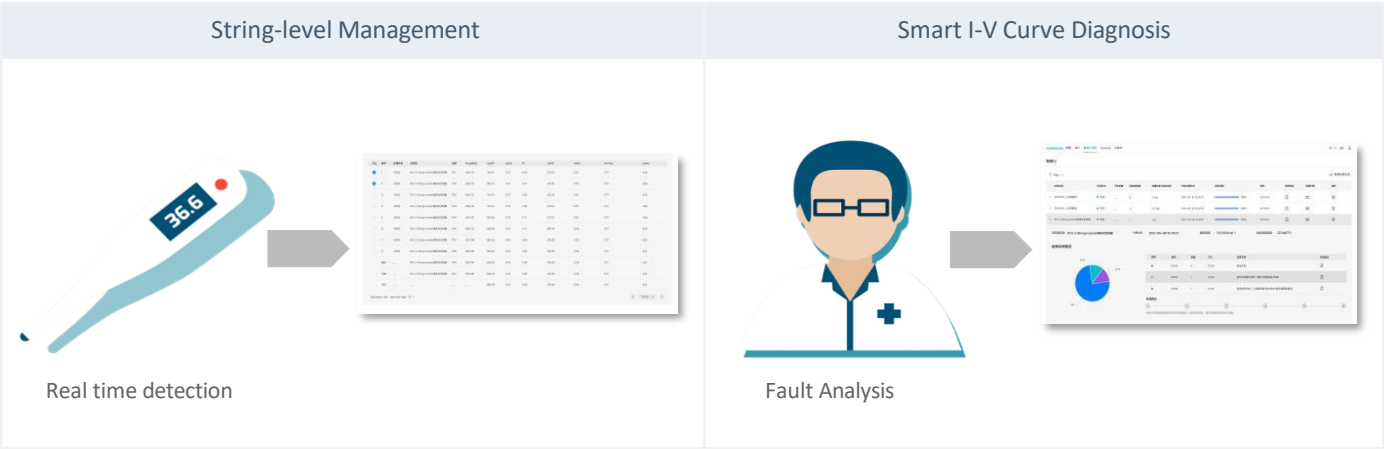
Efficient

- One-click scanning without onsite experts or equipment
- Online I-V curve scanning on all strings
- Identification rate, recurrence rate cause identification accuracy > 90%

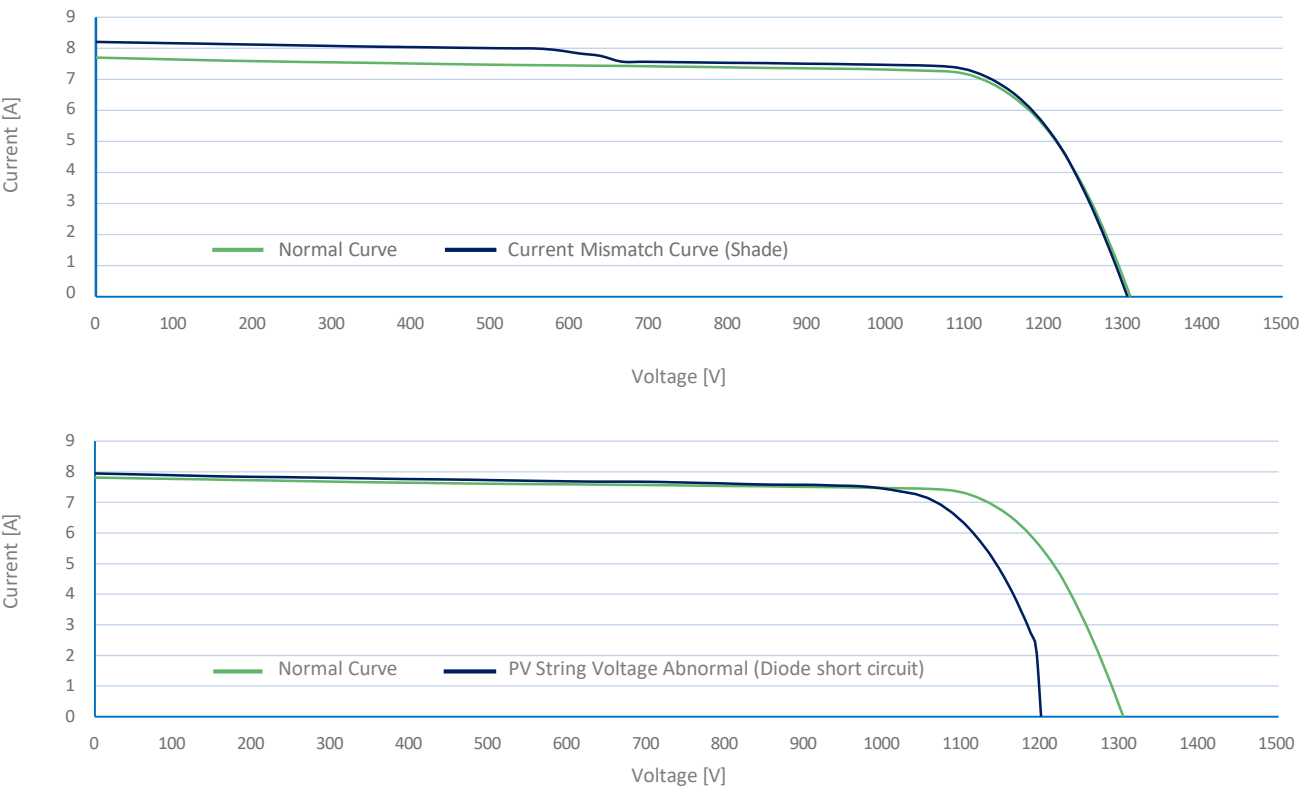
Network Structure



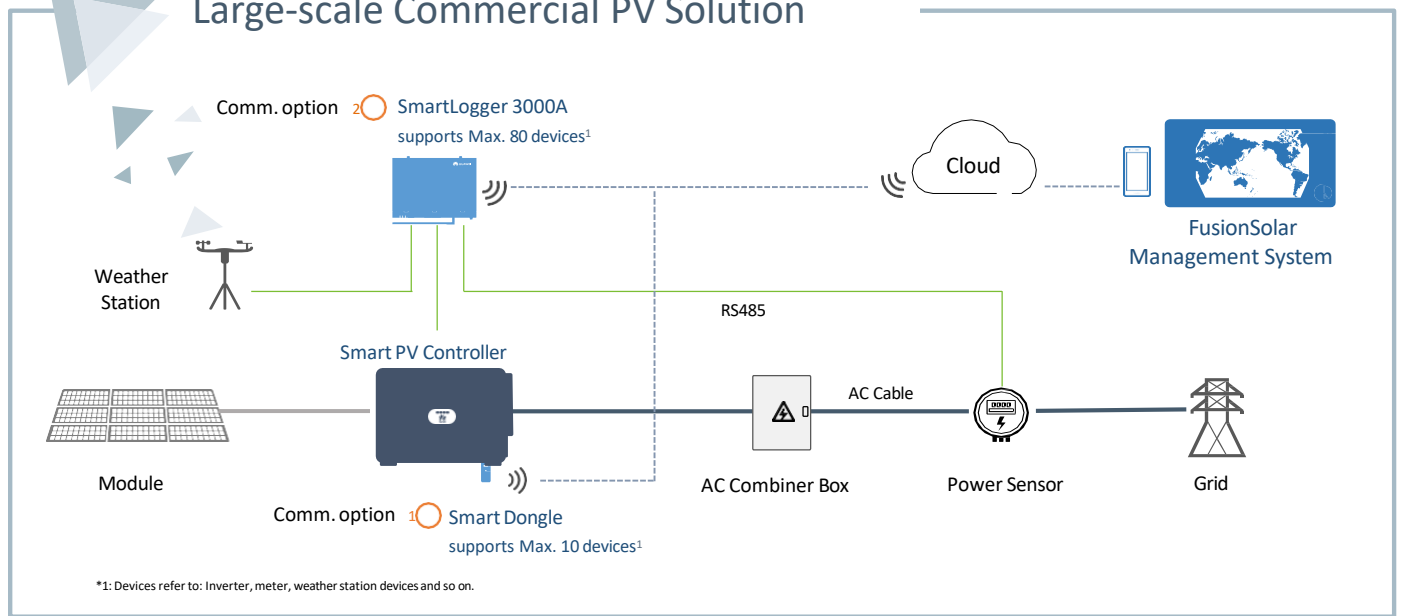
Technical Specifications	
Smart String Inverter	SUN2000-330KTL-H1, SUN2000-330KTL-H2, SUN2000-215KTL-H0 ...
Data Logger	SmartLogger2000
Management System	Smart PVMS
Scanning Time	~ 1s per string
Sampling Points per I-V Curve	128
Voltage Accuracy	0.5%rdg. + 1dgt. (rdg.>5, dgt.= 0.3)
Current Accuracy	0.5%rdg. + 2dgt. (rdg.>0.3, dgt.= 0.006)
Smart I-V Curve Diagnosis has been verified by TÜV	



String I-V Curve Comparison



Large-scale Commercial PV Solution



Safe & Reliable

Fuse-free design for superior safety

Natural cooling fully sealed design for better reliability

Higher Yields

Multi-MPPT to reduce string mismatch

Max. Efficiency 98.7% for higher yields

Smart O&M

String-level monitoring for fast trouble-shooting

One click I-V curve diagnosis making unhealthy modules visible



SUN2000-150KTL-MG0

Smart PV Controller



Arc Fault Protection

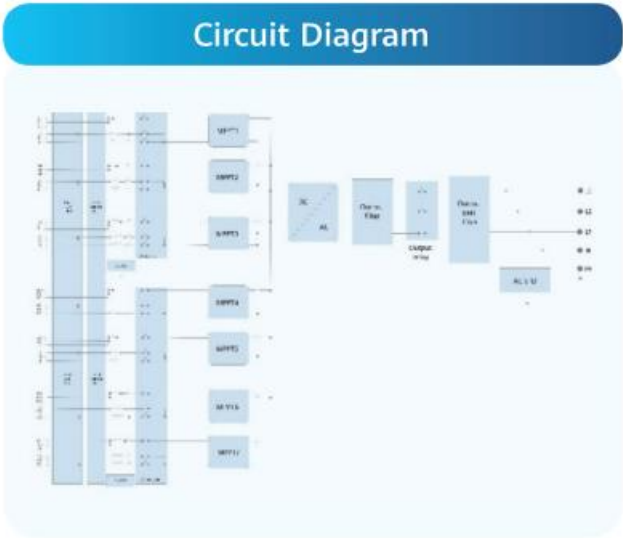
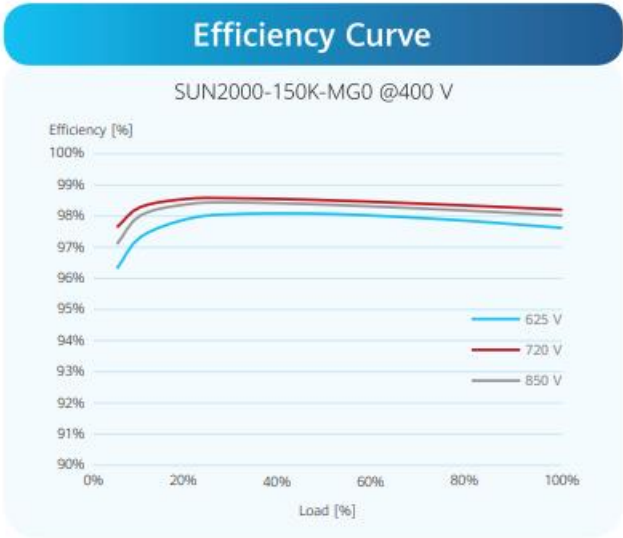
PV Ground-Fault Protection

PID Recovery

Smart String Level Disconnecter

Smart Connector Temperature Detector

MBUS



Technical Specification

Technical Specification		SUN2000-150K-MG0
Efficiency		
Max. efficiency		98.6% @400V, 98.8% @480V
European efficiency		98.40%
Input		
Max. Input Voltage ¹		1,100 V
Max. Current per MPPT		48A
Max. Current per Input		23A
Max. Short Circuit Current per MPPT		66A
Start Voltage		200 V
MPPT Operating Voltage Range ²		200 V ~ 1,000 V
Number of MPP trackers		7
Max. input number per MPP tracker		3
Output		
Nominal AC Active Power		150,000 W
Max. AC Apparent Power		165,000 VA
Max. AC Active Power (cos ϕ =1)		165,000 W
Nominal Output Voltage		380 V/400 V/480Vac
Rated AC Grid Frequency		50 Hz / 60 Hz
Nominal Output Current		227.9 A @380 V, 216.5 A @400 V, 180.4A @480Vac
Max. Output Current		253.2 A @380 V, 240.5 A @400 V, 200.5A @480Vac
Adjustable Power Factor Range		0.8 leading... 0.8 lagging
alternating current THDi		< 1%
Protection		
Anti-islanding Protection		Yes
AC Overcurrent Protection		Yes
DC Reverse-polarity Protection		Yes
PV-array String Fault Monitoring		Yes
DC Surge Arrester		Type II / I (optional)
AC Surge Arrester		Type II
DC Insulation Resistance Detection		Yes
Residual Current Monitoring Unit		Yes
Smart String Level Disconnect		Yes
Arc Fault Protection		Yes
Terminal Temperature Detection		Yes
PID Recovery		Yes
PV Ground-Fault Protection		Yes
Communication		
Display		LED indicators; WLAN adaptor + FusionSolar APP
RS485		Yes
USB		Yes
Smart Dongle-4G		Smart Dongle - 4G / WLAN (Optional)
Monitoring BUS (MBUS)		Yes (isolation transformer required)
General Data		
Dimensions (W x H x D)		1,000 x 710 x 395 mm
Weight (without mounting plate)		≤ 99 kg
Operating Temperature Range		-25°C ~ 60°C
Cooling Method		Smart Air Cooling
Max. Operating Altitude		4,000 m (13,123 ft.)
Relative Humidity		0 ~ 100%
DC Connector		Amphenol HH4
AC Connector		Waterproof Connector + OT/DT Terminal
Protection Degree		IP66
Topology		Transformerless
Standard Compliance (more available upon request)		
Certificate		EN 62109-1/-2, IEC 62109-1/-2, IEC 62116, IEC 61727, IEC 60068, IEC 61683
Grid Connection Standards		VDE-AR-N4105, EN 50549-1, EN 50549-2, RD 661, RD 1699, C10/11

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.

SUN5000-150KTL-MG0

Smart PV Controller



ProfiLink

PV Module Optimization
Links Inverter to Increase
Energy Yield by 5% to 30%



SafeLink

Links Varies Safety Function
AFCI+ RSD
To Cover the Breakpoint of PV Safety



SmartLink

One-stop Smart Platform Links
Smartdesign & Module-level
Management
To Provide Lifecycle Intelligent
Experience

Technical Specification	MERC-1100W-P	MERC-1300W-P
Input		
Rated Input DC Power ¹	1100 W	1300 W
Max. input voltage	125 V	
MPPT operating voltage range	12.5 – 105 V	
Max. short-circuit current (Isc)	20 A	
Max. efficiency	99.5 %	
Weighted efficiency	99.0 %	
Overvoltage category	II	
Output		
Max. output voltage	80 V	
Max. output current	22 A	
Output bypass ²	Yes	
Shutdown output voltage per optimizer ³	1 V	
Standards Compliance		
Safety	IEC62109-1 (class II safety)	
RoHS	Yes	
General Data		
Dimension (W x H x D)	149 mm x 104 mm x 49 mm (5.9 in. x 4.1 in. x 1.9 in.)	
Weight (including cables)	1.0 kg (2.2 lb.)	
Installation part (optional)	PV Module Frame Plate/T-shaped Bolt ⁴	
Input connector	Staubli MC4	
Input wire length	0.1 m (short input cable version) ⁵	
Output connector	Staubli MC4	
Output wire length	0.1 m (+), 5.1 m (–) (short input cable version) ⁵	
Operating temperature / humidity range	–40°C to +85°C 6/ 0%–100% RH	
Degree of protection	IP68	

Technical Specification

Technical Specification		SUN5000-150K-MG0
Efficiency		
Max. efficiency	98.6% @400V, 98.8% @480V	
European efficiency	98.40%	
Input		
Max. Input Voltage	1,100 V	
Max. Short Circuit Current	66 A	
Operating Voltage Range	200 V ~ 1,000 V	
Max. input number	12	
Output		
Nominal AC Active Power	150,000 W	
Max. AC Apparent Power	165,000 VA	
Max. AC Active Power (cos ϕ =1)	165,000 W	
Nominal Output Voltage	380 V/400 V/480Vac	
Rated AC Grid Frequency	50 Hz / 60 Hz	
Nominal Output Current	227.9 A @380 V, 216.5 A @400 V, 180.4A @480Vac	
Max. Output Current	253.2 A @380 V, 240.5 A @400 V, 200.5A @480Vac	
Adjustable Power Factor Range	0.8 leading... 0.8 lagging	
alternating current THDi	< 1%	
Protection		
Anti-islanding Protection	Yes	
AC Overcurrent Protection	Yes	
DC Surge Arrester	Type III / I (optional)	
AC Surge Arrester	Type II	
DC Insulation Resistance Detection	Yes	
Residual Current Monitoring Unit	Yes	
Smart String Level Disconnect	Yes	
Arc Fault Protection	Yes	
Smart Connector Temperature Detector	Yes	
PID Recovery	Yes	
PV Ground-Fault Protection	Yes	

Technical Specification

Communication

Display	LED indicators; WLAN adaptor + FusionSolar APP
RS485 / USB	Yes
Smart Dongle-4G	Smart Dongle – 4G / WLAN (Optional)
Monitoring BUS (MBUS)	Yes (Isolation Transformer Required)

General Data

Dimensions (W x H x D)	1,000 x 710 x 395 mm
Weight (without mounting plate)	≤ 100 kg
Operating Temperature Range	-25℃ ~ 60℃
Cooling Method	Smart Air Cooling
Max. Operating Altitude	4,000 m (13,123 ft.)
Relative Humidity	0 ~ 100%
DC Connector	Amphenol HH4
AC Connector	Waterproof Connector + OT/DT Terminal
Protection Degree	IP66

Standard Compliance (more available upon request)

Certificate	EN 62109-1/-2, IEC 62109-1/-2, IEC 62116, IEC 61727, IEC 60068, IEC 61683
Grid Connection Standards	VDE-AR-N4105, EN 50549-1, EN 50549-2, RD 661, RD 1699, C10/11

String Configuration (Full Optimizer Configuration) ^{7/8/9} * MERC-1100/1300W-P support full optimizer configuration only		SUN5000-150K-MG0 DC/AC Ratio Recommendation			
Max Input Power Per String	Max Number of Strings	9 Strings	10 Strings	11 Strings	12 Strings
20kW	12-20	0.8-1.0	1.0-1.1	1.1-1.2	1.2-1.6

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 be 1 V.
4. It is for PV module frame/extruded aluminum profile racking system installation.
5. Pay attention to PV module wire length. To match PV modules with a split junction box and short output wire, the long-input-cable version (input wire: 1.3 m(+/-); output wire 0.1m(+)/2.9m (-)) of MERC -1100/1300W-P is available upon request.
6. When the operating temperature of the MERC -1100/1300W-P reaches 70 ℃ to 85 ℃, 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 any damage.
7. Each PV module under the same inverter must be equipped with a MERC -1100/1300W-P.
8. SUN2000-450W-P2/600W-P and MERC -1100/1300W-P can NOT be used in mixture under the same Smart Energy/PV controller.
9. It is recommended that strings under the same inverter have an equal capacity. If it is not feasible, the capacity difference between strings under the same inverter must not exceed 2 kW. Otherwise, the energy yield will be reduced.

SUN2000-115KTL-M2

Smart PV Controller



10

MPP Trackers



98.8% (@480V)

Max. Efficiency



String-level

Management



Smart I-V Curve Diagnosis

Supported



MBUS

Supported



Support

Smart String Level

Disconnecter



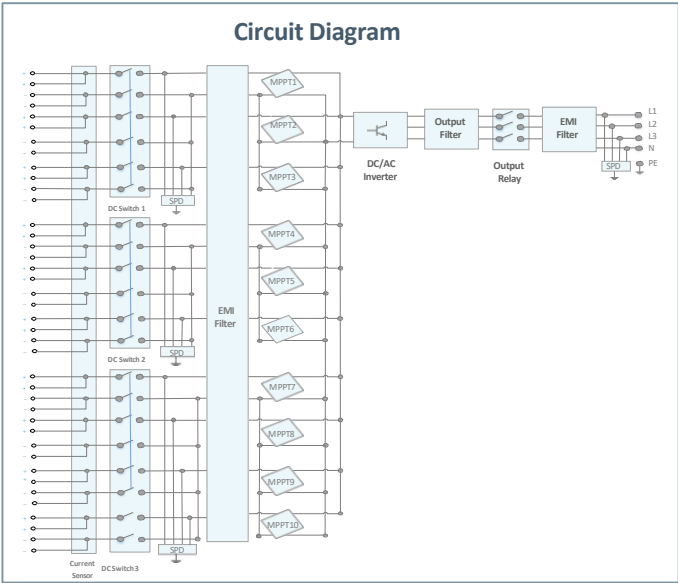
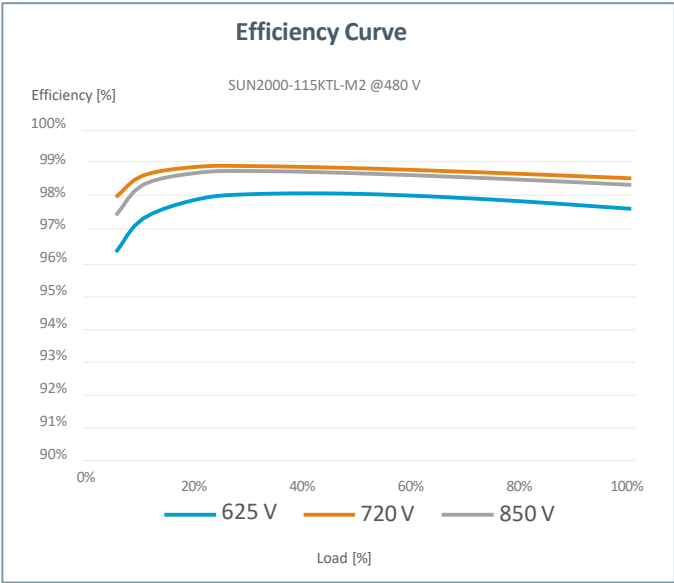
Surge Arresters for

DC & AC



IP66

Protection



Technical Specification

Technical Specification		SUN2000-115KTL-M2
Efficiency		
Max. efficiency		98.6% @400 V, 98.8% @480 V
European efficiency		98.4% @400 V, 98.6% @480 V
Input		
Max. Input Voltage ¹		1,100 V
Max. Current per MPPT		30 A
Max. Short Circuit Current per MPPT		40 A
Start Voltage		200 V
MPPT Operating Voltage Range ²		200 V ~ 1,000 V
Nominal Input Voltage		600 V @400 Vac, 720 V @480 Vac
Number of MPP trackers		10
Max. input number per MPP tracker		2
Output		
Nominal AC Active Power		115,000 W
Max. AC Apparent Power		125,000 VA
Nominal Output Voltage		400 V / 480 V, 3W+(N)+PE
Rated AC Grid Frequency		50 Hz / 60 Hz
Nominal Output Current		166.0 A @400 V, 138.4 A @480 V
Max. Output Current		182.3 A @400 V, 151.9 A @480 V
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
Smart String Level Disconnecter		Yes
Communication		
Display		LED indicators; WLAN adaptor + FusionSolar APP
RS485		Yes
USB		Yes
Smart Dongle-4G		4G / 3G / 2G via Smart Dongle – 4G (Optional)
Monitoring BUS (MBUS)		Yes (isolation transformer required)
General Data		
Dimensions (W x H x D)		1,035 x 700 x 365 mm
Weight (with mounting plate)		93 kg
Operating Temperature Range		-25°C ~ 60°C
Cooling Method		Smart Air Cooling
Max. Operating Altitude		4,000 m (13,123 ft.)
Relative Humidity		0 ~ 100%
DC Connector		Amphenol Helios H4
AC Connector		Waterproof Connector + OT/DT Terminal
Protection Degree		IP66
Topology		Transformerless
Nighttime Power Consumption		< 3.5 W
Standard Compliance (more available upon request)		
Certificate		EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 61727, IEC 60068, IEC 61683
Grid Connection Standards		VDE-AR-N4105, EN 50549-1, EN 50549-2, RD 661, RD 1699, C10/11

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.

SUN2000-100KTL-M2

Smart PV Controller



10
MPP Trackers



98.8% (@480V)
Max. Efficiency



String-level
Management



Smart I-V Curve Diagnosis
Supported



MBUS
Supported



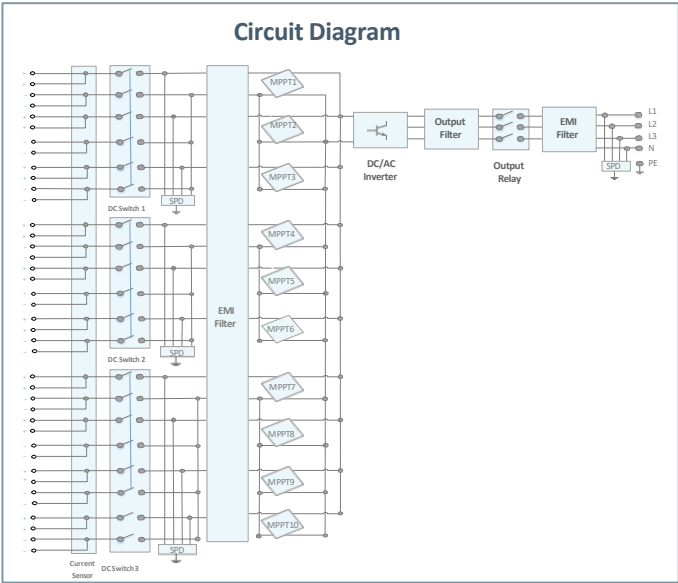
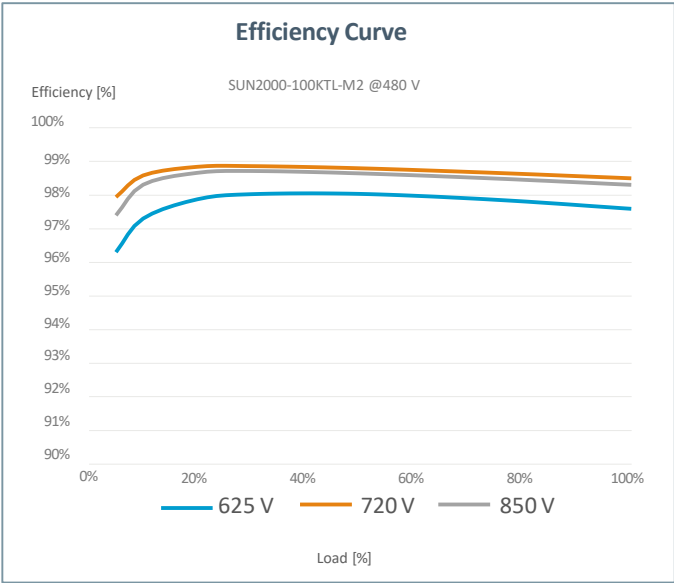
Support AFCI &
Smart String Level
Disconnect



Surge Arresters for
DC & AC



IP66
Protection



Technical Specification

Technical Specification		SUN2000-100KTL-M2
Efficiency		
Max. efficiency		98.6% @ 400 V, 98.8% @ 480 V
European efficiency		98.4% @ 400 V, 98.6% @ 480 V
Input		
Max. Input Voltage ¹		1,100 V
Max. Current per MPPT		30 A
Max. Short Circuit Current per MPPT		40 A
Start Voltage		200 V
MPPT Operating Voltage Range ²		200 V ~ 1,000 V
Nominal Input Voltage		600 V @ 400 Vac, 720 V @ 480 Vac
Number of MPP trackers		10
Max. input number per MPP tracker		2
Output		
Nominal AC Active Power		100,000 W
Max. AC Apparent Power		110,000 VA
Nominal Output Voltage		400 V/ 480 V, 3W+(N)+PE
Rated AC Grid Frequency		50 Hz / 60 Hz
Nominal Output Current		144.4 A @ 400 V, 120.3 A @ 480 V
Max. Output Current		160.4 A @ 400 V, 133.7 A @ 480 V
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
Arc Fault Protection		Yes
Smart String Level Disconnecter		Yes
Communication		
Display		LED indicators; WLAN adaptor + FusionSolar APP
RS485		Yes
USB		Yes
Smart Dongle-4G		4G / 3G / 2G via Smart Dongle – 4G (Optional)
Monitoring BUS (MBUS)		Yes (isolation transformer required)
General Data		
Dimensions (W x H x D)		1,035 x 700 x 365 mm
Weight (with mounting plate)		93 kg
Operating Temperature Range		-25°C ~ 60°C
Cooling Method		Smart Air Cooling
Max. Operating Altitude		4,000 m (13,123 ft.)
Relative Humidity		0 ~ 100%
DC Connector		Amphenol Helios H4
AC Connector		Waterproof Connector + OT/DT Terminal
Protection Degree		IP66
Topology		Transformerless
Nighttime Power Consumption		< 3.5 W
Standard Compliance (more available upon request)		
Certificate		EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 61727, IEC 60068, IEC 61683
Grid Connection Standards		VDE-AR-N4105, EN 50549-1, EN 50549-2, RD 661, RD 1699, C10/11

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.

Version No.:01-(20230220)

SUN2000-50KTL-M3 Smart PV Controller



Higher Yields

Up to 30% More Energy
with Optimizer



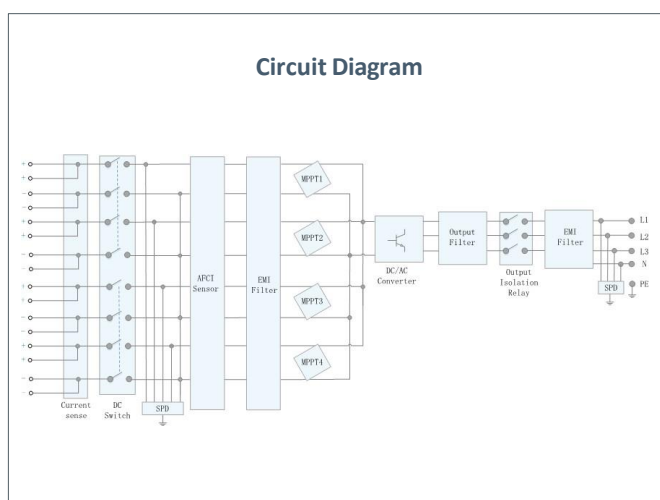
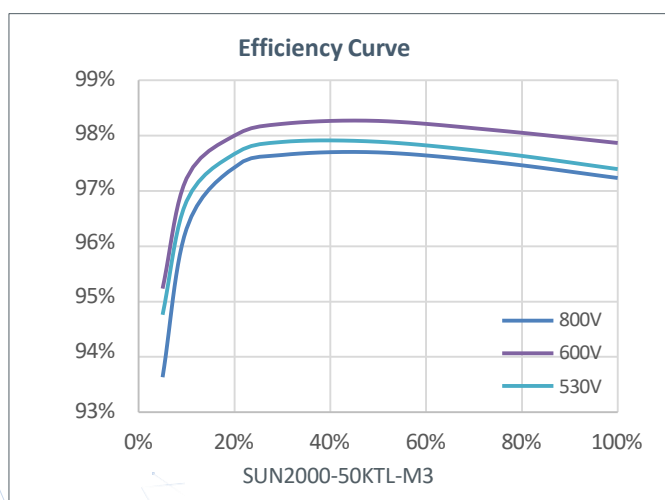
Active Safety

AI Powered Active
Arcing Protection



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported

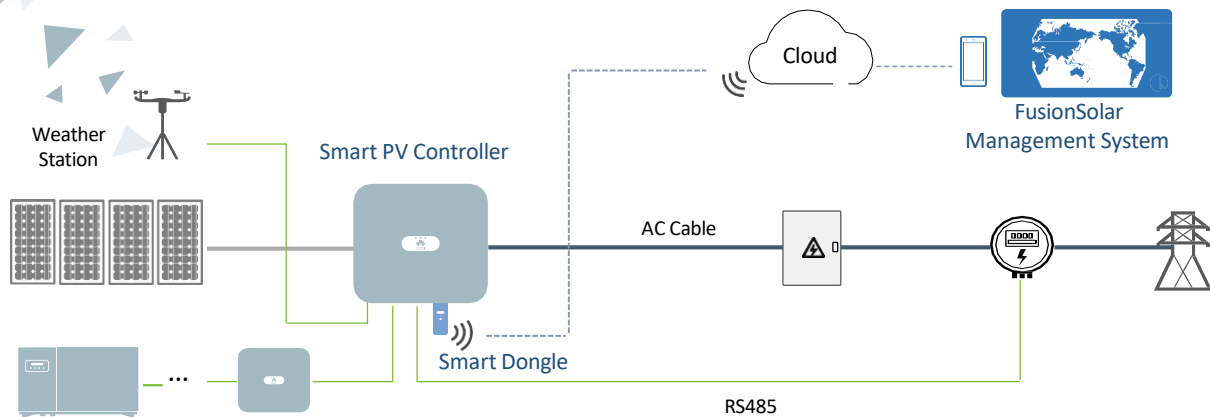


Technical Specification

Technical Specification	SUN2000-50KTL-M3
Efficiency	
Max. Efficiency	98.5%
European Efficiency	98.0%
Input	
Max. Input Voltage ¹	1,100 V
Max. Current per MPPT	30 A
Max. Short Circuit Current per MPPT	40 A
Start Voltage	200 V
MPPT Operating Voltage Range ²	200 V ~ 1,000 V
Rated Input Voltage	600 V
Number of Inputs	8
Number of MPP Trackers	4
Output	
Rated AC Active Power	50,000 W
Max. AC Apparent Power	55,000 VA
Rated Output Voltage	400 Vac / 480 Vac, 3W + (N) + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Rated Output Current	72.2 A @ 400 Vac, 60.1 A @ 480 Vac
Max. Output Current	79.8 A @ 400 Vac, 66.5 A @ 480 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, Bluetooth + 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)
Optimizer Compatibility	
DC MBUS Compatible Optimizer	MERC-1100/1300W-P
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)	49 kg (108.1 lb)
Operating Temperature Range	-25°C ~ 60°C (-13°F ~ 140°F)
Cooling Method	Smart Air Cooling
Max. Operating Altitude	4,000 m (13,123 ft.)
Relative Humidity	0% RH ~ 100% RH
DC Connector	Amphenol Helios H4
AC Connector	Waterproof Connector + OT/DT Terminal
Protection Degree	IP 66
Topology	Transformerless
Nighttime Power Consumption	≤ 5.5W
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 0-21, 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. SUN2000-50KTL-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)

Small-scale Commercial PV Solution



Smart Dongle supports Max. 10 devices¹

¹: Devices refer to: Inverter, meter, weather station devices and so on.

Ultimate Safety

AI Powered AFCI to mitigate fire risk

Fuse-free design for superior safety

Higher Yields

Multi-MPPT to reduce string mismatch

Max. Efficiency 98.65% for higher yields

Better Experience

WLAN/Ethernet/4G, flexible comm. options

One click I-V curve diagnosis making unhealthy modules visible



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



Smart

8 strings intelligent monitoring



Efficient

Max. efficiency 98.7%



Safe

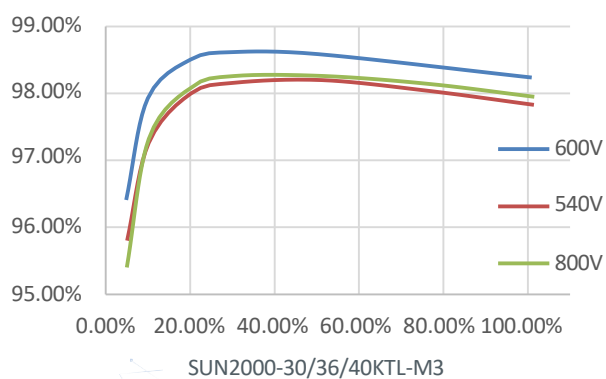
Fuse free design



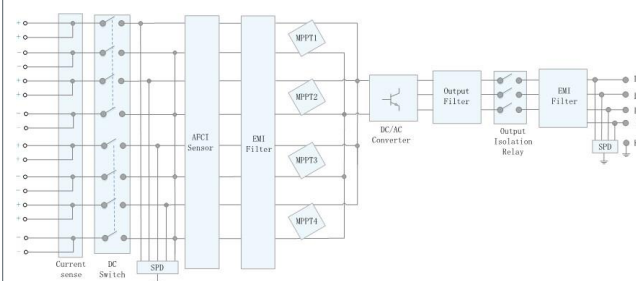
Reliable

Type II surge arresters for DC & AC

Efficiency Curve



Circuit Diagram

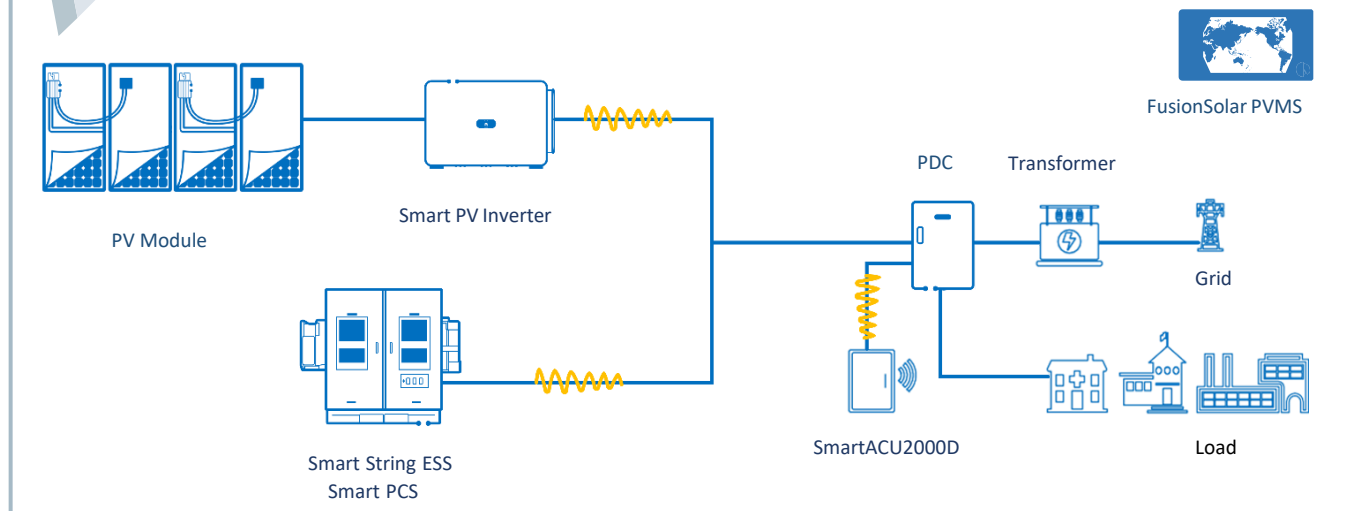


SUN2000-30/36/40KTL-M3
Technical Specification

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	27 A (per MPPT) / 20 A (per Input)		
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	230 Vac / 400 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	Amphenol Helios H4		
AC Connector	Waterproof Connector + OT/DT Terminal		
Protection Degree	IP 66		
Topology	Transformerless		
Nightime Power Consumption	≤ 5.5W		
Optimizer Compatibility			
DC MBUS Compatible Optimizer	SUN2000-450W-P, SUN2000-450W-P2, SUN2000-600W-P, MERC-1100W-P, MERC-1300W-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		

- The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.
- Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
- 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).

Commercial & Industrial Smart PV + BESS Solution



Active Safety

Level 4 AFCI, ahead in the industry
0V voltage shutdown
4 layer protections

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



Industry Leading C&I Hybrid Cooling ESS

Compared with the traditional solution, Huawei 215kWh C&I energy storage system uses the C2C dual-link safety architecture, protecting the cell-pack-system-consumption E2E safety, and ensure the safety of people and assets.

With pack level power optimizer, the system achieves 2% higher discharge energy within the battery lifecycle. And the maximum system cycle efficiency reaches 91.3%*. At the same time, the design simplifies installation and delivery.

* 0.25C, including auxiliary power supply



LUNA2000-215-2S10

Smart String ESS



More Energy



Simple O&M



Safe & Reliable

Energy Storage System Parameters

Model type	LUNA2000-215-2S10
Rated capacity	215.0kWh
Maximum cycle rate	0.5 CP
Maximum cycle efficiency	91.30%
Depth of charge and discharge	0~100%
Dimensions (W x D x H)	1150mm×1800mm×2100mm
Weight	≤ 2.8 T
Operating temperature range	-30°C ~ 55°C (> 50°C Derating)
Storage temperature range	-35°C ~ 60°C
Operating humidity range	0 ~ 100% (non-condensing)
Maximum operating altitude	4,000 m
System temperature control mode	Hybrid cooling
Balance mode	Active balance
SOC calibration mode	Automatic
Fire suppression mode	Directional gas exhaust, Top explosion vent, Aerosol
Auxiliary power supply	176~264 Vac, single phase, ≤5 kW
Power consumption standby	≤150 W
Communication port	Ethernet / Optical fiber
Communication protocol	Modbus TCP
Protection degree	IP55
EMC protection rating	Class B
Noise (rated operating condition)	65 dB(A)
Lightning protection	Type II (AC port)
Protection mode	Anti-islanding protection, residual current detection, insulation resistance detection, AC overcurrent protection, and AC cable connection protection
Environment	RoHS6
Certification standards	UL9540A; UN38.3; IEC 62477-1; IEC 62040-1; IEC 61000-6-1/2/3/4; IEC61727

Battery Parameters (DC)	
Cell material	LFP
Rated battery capacity	280Ah
System battery configuration	240S1P
Number of battery packs	4
Operating voltage range	648~864 V
Rated DC current	140 A
PCS Parameters (AC)	
PCS model type	PCS2000-108K-MB1
Rated output power	108 kW
Rated AC current	164.1 A
AC voltage & frequency	380 / 400 / 415 V (3P4W), 50 / 60 Hz
Adjustable power factor range	-1 ... +1
AC Current Harmonics THDi (rated operating condition)	$\leq 1.5\%$

LUNA2000 - 200/161/129KWH-2H1

LUNA2000 - 97KWH-1H1

Smart String ESS



More Energy



Simple O&M



Safe & Reliable

Energy Storage System Parameters

Model Type	LUNA2000-200KWH-2H1	LUNA2000-161KWH-2H1	LUNA2000-129KWH-2H1	LUNA2000 - 97KWH-1H1
Battery Configuration	12S1P	10S1P	8S1P	6S1P
Maximum battery capacity of the energy storage system	193.5kWh	161.3kWh	129.0kWh	96.8kWh
Max. Charging Power	≤100 kW			
Max. Discharging Power	≤100 kW	≤100 kW	≤100 kW	≤92 kW
Dimensions (W x H x D)	1810mm×2135mm×1200mm			
Dimensions (W x H x D), including Smart Rack Controller and Smart PCS	2570mm x 2135mm x 1200mm			
Weight (including the battery pack)	≤2950kg	≤2690kg	≤2430kg	≤2170kg
Weight (without the battery pack)	≤1070kg	≤1070kg	≤1090kg	≤1130kg
Operating temperature range	-30 °C ~ 55 °C			
Storage temperature range	-40 °C ~ 60 °C			
Operating humidity range	0 ~ 100% (non-condensing)			
Maximum operating altitude	4,000 m			
Installation Environment Requirement	Outdoor installation			
Battery temperature control mode	Industrial-grade air conditioner			
Fire suppression of energy storage system	YES			
Auxiliary Power Supply	220Vac, ≤4.2kW			
Communication port	Ethernet / SFP			
Communication protocol	Modbus TCP			
Protection degree	IP55			
EMC Protection Rating	ClassA			
DC Lightning Protection	Type II			

Standards

Environment	RoHS
Certification Standards	GB/T 36276-2018; GB/T 33582; UL9540A; UN38.3; ISO 9227:2017; IEC 60529; IEC/EN 62477-1 IEC/EN 62040-1; IEC/EN 61000-6-2; IEC/EN 61000-6-4; EN 55011;

Battery Pack & Smart Rack Controller

Smart String ESS



Battery Pack	
General	
Cell Material	LFP
Rated Voltage	57.6 V
Nominal Capacity	16.13kWh
Supported Charge & Discharge Rate	≤ 0.5 C
Weight	≤ 140 kg
Dimensions (W x H x D)	442 x 308 x 660 mm



Smart Rack Controller	
Efficiency	
Max. Efficiency	99.0%
Battery Side	
Rated Voltage	691.2@280Ah
Operating Voltage Range	40 V ~ 1,050 V
Min. Start Voltage	350 V
Bus Side	
Max. DC Voltage	1,100 V
Rated Voltage	665 V
Rated Current	76.3 A
General	
Dimensions (W x H x D)	600 x 270 x 820 mm
Weight	≤ 90 kg
Cooling Method	Smart Air Cooling
Protection Degree	IP66

LUNA2000-100KTL-M1

Smart PCS



Surge Arresters for DC & AC



Modular Design



IP66 Protection

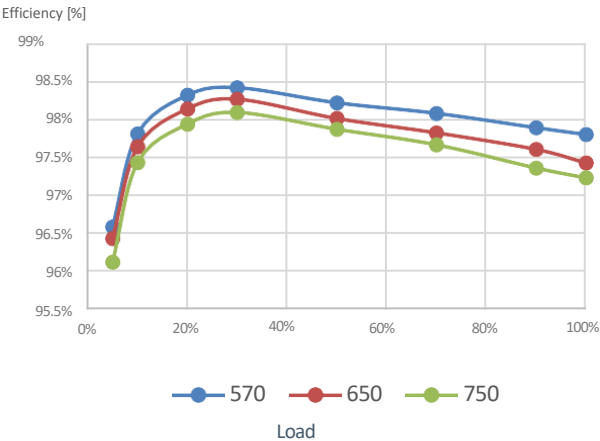


Ethernet Communication

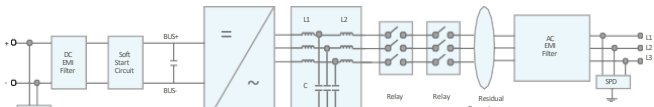


Smart Grid Algorithm

Efficiency Curve



Circuit Diagram



LUNA2000-100KTL-M1

LUNA2000-100KTL-M1

Technical Specifications

Efficiency	
Max. Efficiency	98.4%
DC Side	
Rated DC Voltage	645 V
Max. DC Voltage	1,100 V
Operating DC Voltage Range	570 V ~ 1100 V
Max. DC Current	215.8 A
Max. Number of Inputs	1
AC Side	
Rated AC Active Power	100,000 W @40°C
Rated AC Voltage	380 Vac / 400 Vac / 440 Vac
Rated AC Grid Frequency	50 Hz / 60 Hz
Max. AC Current	173.2 A
Adjustable Power Factor Range	-1 ... +1
Max. Total Harmonic Distortion	<3%
Protection	
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
Insulation Resistance Detection	Yes
Residual Current Protection	Yes
DC Surge Protection	Type II
AC Surge Protection	Type II
Communication	
Display	LED Indicators, WLAN + APP
Networking Mode	Ethernet, CAN
General	
Dimensions (W x H x D)	875 x 820 x 365 mm
Weight	< 95 kg
Operating Temperature Range	-25°C ~ 60°C (Derating above 40°C)
Cooling Method	Smart Air Cooling
Max. Operating Altitude without Derating	4,000 m
Relative Humidity	0 ~ 100%
DC Connector	OT/DT Terminal
AC Connector	OT/DT Terminal
Protection Degree	IP66
Topology	Transformerless

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



IV Safe Voltage Shutdown
Friendly to Inspection



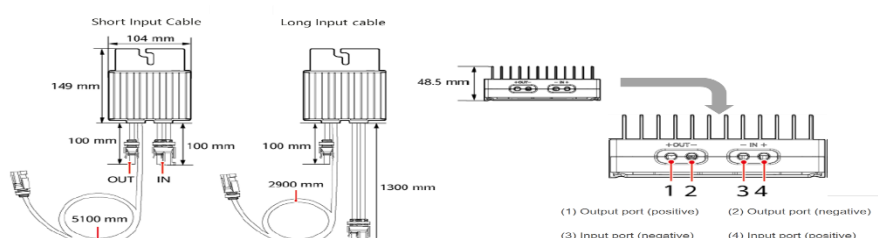
Pinpointing Open-circuit Fault
for Quick Troubleshooting

MERC-1100/1300W-P

Smart Module Controller

Technical Specification	MERC-1100W-P	MERC-1300W-P
	Input	
Rated Input DC Power ¹	1100 W	1300 W
Absolute Maximum Input Voltage	125 V	
MPPT Operating Voltage Range	12.5 ~ 105 V	
Maximum Short Circuit Current (Isc) of Connected PV Module	20 A	
Maximum Efficiency	99.5 %	
Weighted Efficiency	99.0 %	
Overvoltage Category	II	
	Output	
Maximum Output Voltage	80 V	
Maximum Output Current	22 A	
Output Bypass ²	Yes	
Safety Output Voltage per Optimizer ³	1 V	
	Standard Compliance	
Safety	IEC62109-1 (class II safety)	
RoHS	Yes	
	General Data	
Dimension (W X H X D)	149 x 104 x 48.8 mm (5.9 x 4.1 x 1.9 inch)	
Weight (including wires)	1.0 kg (2.2 lb.)	
Installation Part (optional)	PV Module Frame Plate / T-shaped Bolt ⁴	
Input Connector	Staubli MC4	
Input Wire Length	0.1 m (+/-) (short-input-cable version) ⁵	
Output Connector	Staubli MC4	
Output Wire Length	0.1 m (+), 5.1 m (-) (short-input-cable version) ⁵	
Operating Temperature	-40 °C ~ +85 °C ⁶	
Relative Humidity	0 % ~ 100 %	
Protection Rating	IP68	
Compatible Inverters	SUN2000-8/10/12/15/17/20KTL-M2, SUN2000-12/15/17/20/25KTL-M5, SUN2000-20/29.9/30/36/40KTL-M3, SUN2000-50KTL-M3/NHM3	

PV System Design ^{7/8/9} *MERC-1100/1300W-P support full optimizer configuration only	SUN2000-8~20KTL- M2	SUN2000-12~25KTL- M5	SUN2000-30~40KTL-M3	SUN2000-50KTL-M3
Minimum optimizers per string	8	8	8	8
Maximum optimizers per string	25	25	25	20
Maximum DC power per string	20,000 W	20,000 W	20,000 W	20,000 W



^{*1} The maximum power of PV module at STC shall NOT exceed the "Rated Input DC Power" of MERC-1100/1300W-P. PV Modules with up to +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} SUN2000-450V-P2/600V-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.



Smart

Smart zero export control design



Simple

Easy to install on site



Reliable

Safety by lightning protection module

Technical Specification	SmartLogger3000A01EU
Device Management	
Max. Number of Manageable Devices ³	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,B20 DC-HSPA+/HSPA+/HSPA/UMTS: 850/900/1900/2100 MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz 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	FusionSolar APP Communicated 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.

*3: Devices refer to: Inverter, meter, weather station devices and so on.

Smart Dongle-4G



Smart

4G communication ¹

Support 3rd-party monitoring system ²



Simple

Plug & Play

WLAN-AP for local deploying ³



Reliable

IP65

Support auto reconnection

Technical Specification

SDongleB-06-EU

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

Wireless Parameter	
Sim card type	mini-sim (15 mm*25 mm)
Supported standards & frequencies ⁴	LTE-FDD: B1/B3/B7/B8/B20/B28 LTE-TDD: B38/B40/B41 GSM: 850/900/1800/1900MHz
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
-------------	----

Inverter Compatibility

Inverter Model	SUN2000-2~6KTL-L1 SUN2000-3~10KTL-M1 SUN2000-8~20KTL-M2 SUN2000-12~25KTL-M5 SUN2000-20~50KTL-M3 SUN2000-60KTL-M0 SUN2000-100KTL-M0/M1 SUN2000-100/115KTL-M2
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- 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 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

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



Simple

Plug & Play Support
max. 10 devices²



Reliable

IP65
Support auto reconnection

Technical Specification	SDongleA-05
General Data	
Max. Devices ² 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	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	SUN2000-2/3/4/5/6KTL-L1 SUN2000-5/8/10KTL-M1 SUN2000-12/15/17/20KTL-M2 SUN2000-12/15/17/20/25KTL-M5 SUN2000-30/36/40/50KTL-M3 SUN2000-100/115KTL-M2 SUN2000-110KTL-INM2

1. 3rd-party management system shall match the communication protocol with Huawei Smart Dongle.
2. Devices refer to: Inverter, meter, weather station devices and so on.

FusionSolar Smart PV Management System



Better experience

- One APP for all access procedure
- Auto-detection of local devices
- Module auto-mapping within 5s



Energy visualization

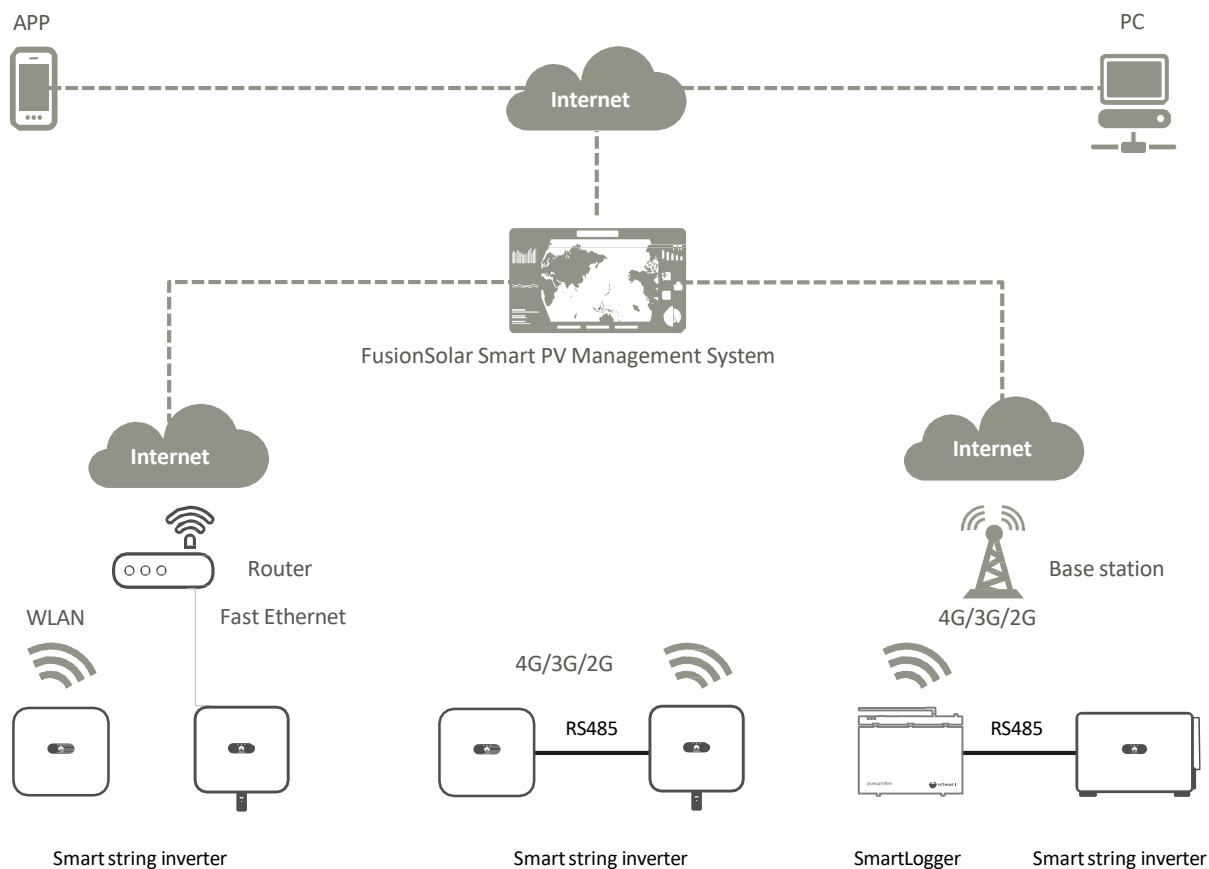
- KPI Dashboard, centralized management of multiple plants
- Module-level monitoring
- Report subscription and real-time alarm push



Smart O&M

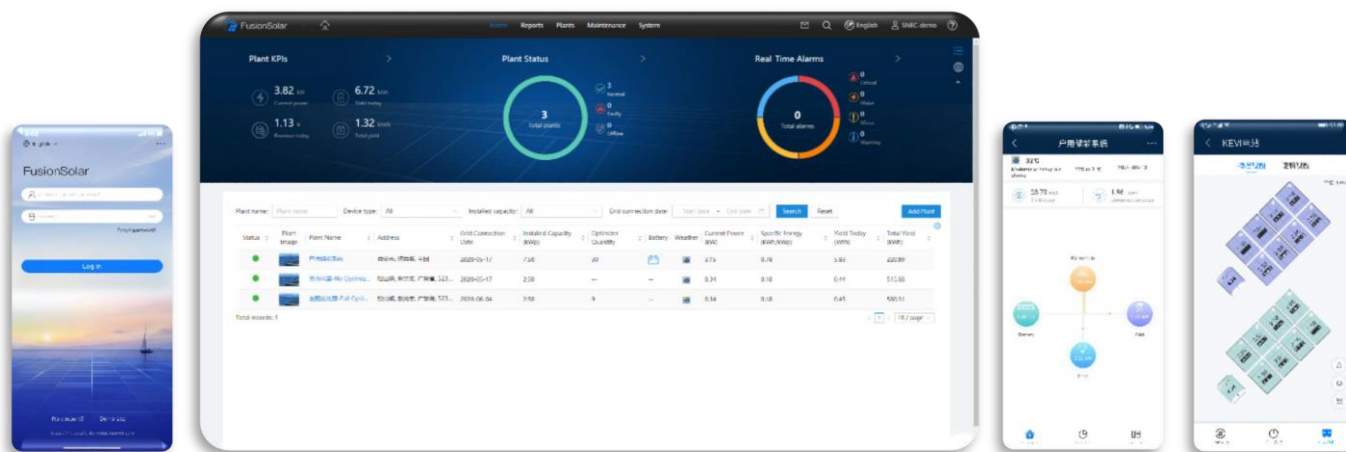
- One-screen mgmt. of site, personnel, status
- One-click ticket dispatching & site navigation
- Online Smart I-V Curve Diagnosis, 15mins required for a 100MW plant diagnosis¹

Networking



1. Require separate license from Smart PV Management System

FusionSolar Smart PV Management System



Category	Function	Web	APP
Homepage	PV Plants List	●	●
	Add Plant	●	●
Report Management	Plant Report	●	
	Inverter Report	●	
	Battery Report	●	
Device Management	Device Details	●	●
	Remote Parameter Setting	●	
	Remote Optimizer Search	●	
Intelligent O&M	Real-time Status	●	
	Alarm Management	●	●
	Task Management	●	●
	Smart IV-Curve Diagnose ¹	●	
KPI Dashboard	KPI Dashboard	●	
Homepage of Single Plant	Energy Flow	●	●
	Energy Management	●	●
	Plant Layout	●	●
	Kiosk Mode	●	
System Setting	Plant Management	●	●
	Company Management	●	
Demo	Demo Site	●	●

1. Require separate license from Smart PV Management System

[illegible]

Automatically identify
different failure types and
provide recovery suggestion

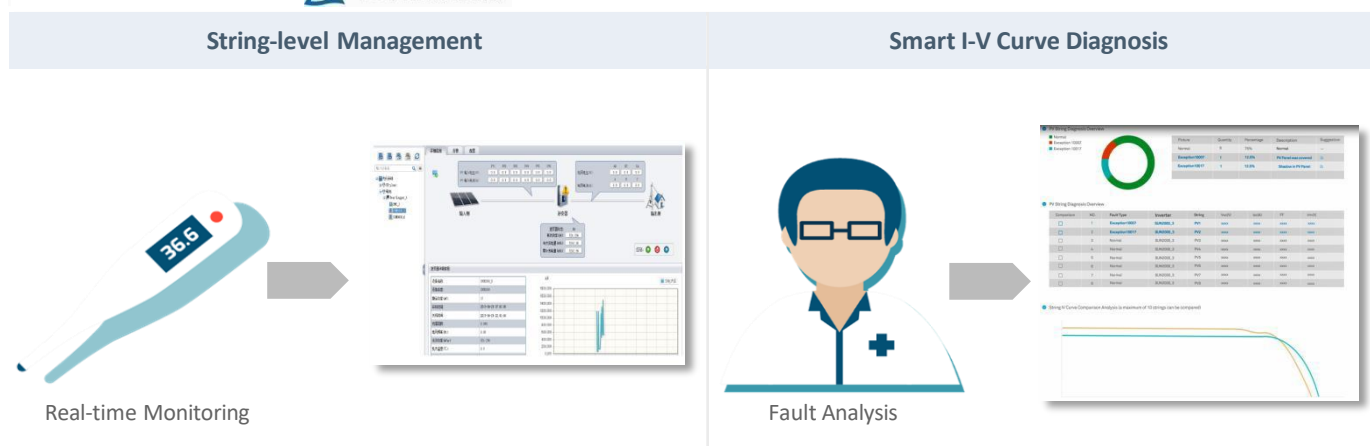
Completing online I-V curve scanning on all strings of 100 MW plant within 15 minutes

The diagram illustrates the Smart PV Management System architecture. At the top, a laptop icon is labeled "One Click Scanning", a desktop computer icon is labeled "Smart PV Management System", and a clipboard icon with a checkmark is labeled "Smart I-V Curve Diagnosis Report". These three components are connected to a central "Smart PV Management System" unit, which is represented by a monitor displaying a world map and various data charts. Below this central unit, there are two "SmartLogger" units. Each "SmartLogger" is connected to four "SUN2000" inverters. The "SUN2000" inverters are connected to solar panels. A "Weather Station (optional)" is also connected to the system. The diagram shows a hierarchical structure where the central system manages multiple loggers, which in turn manage multiple inverters and solar panels.

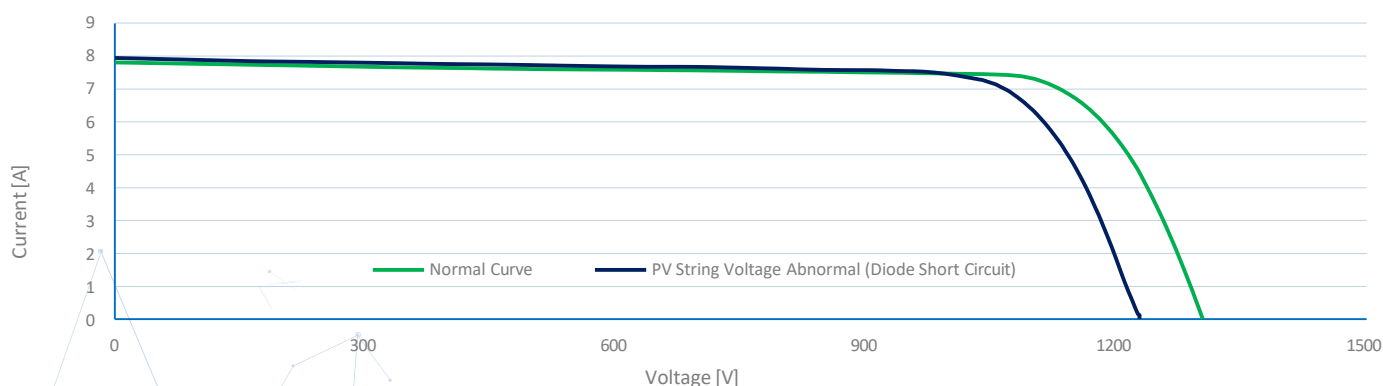
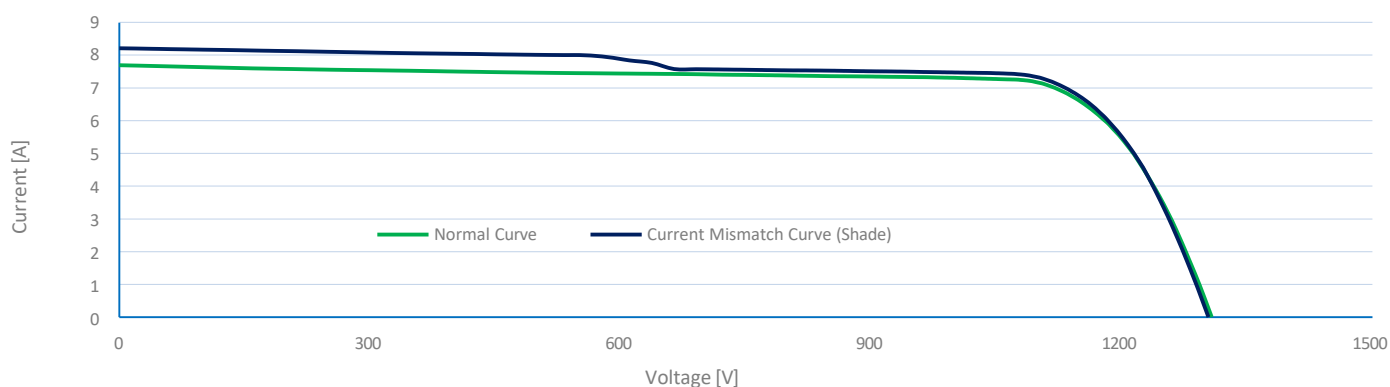
Technical Specifications	
Smart String Inverter	SUN2000-12/15/17/20KTL-M2, SUN2000-12/15/17/20/25KTL-M5, SUN2000-30/36/40KTL-M5, SUN2000-50KTL-M3, SUN2000-100KTL-M2, SUN2000-115KTL-M2
Control Unit	SmartLogger3000
Management System	Smart PV Management System ¹
Scanning Time	<1s per string
Sampling Points per I-V Curve	128
Voltage Accuracy	0.5%rdg. + 1dgt. (rdg.>5, dgt.= 0.3)
Current Accuracy	0.5%rdg. + 2dgt. (rdg.>0.3, dgt.= 0.006)



Smart I-V Curve Diagnosis is TUV Verified.

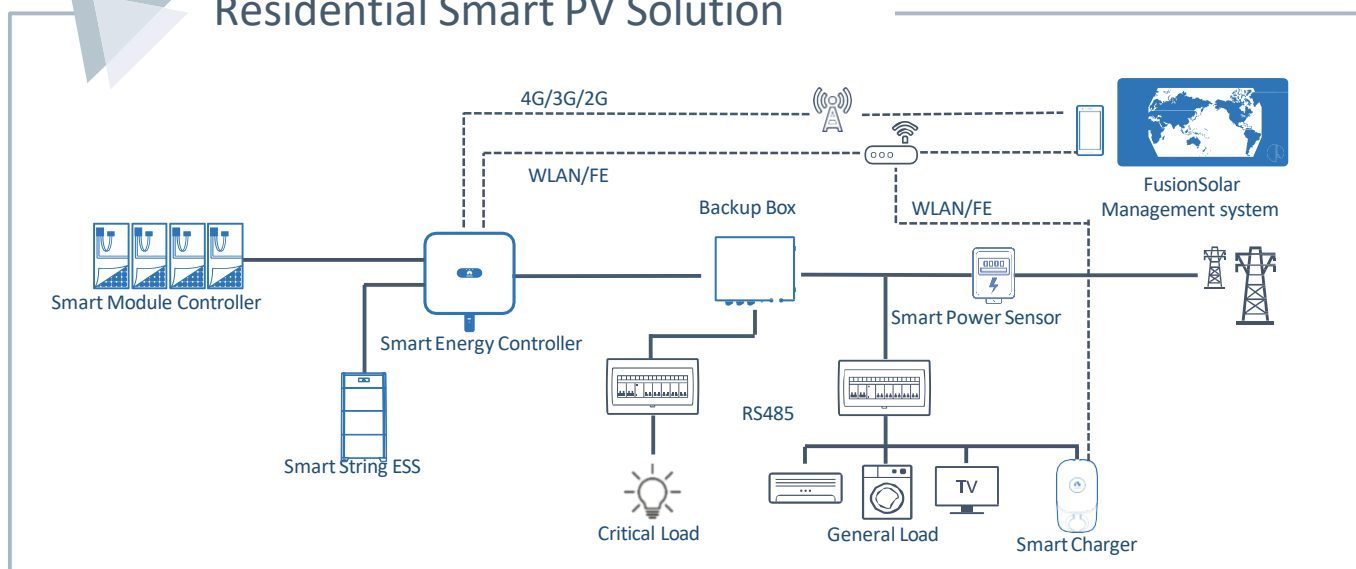


String I-V Curve Comparison



1. Require separate license from Smart PV Management System

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.



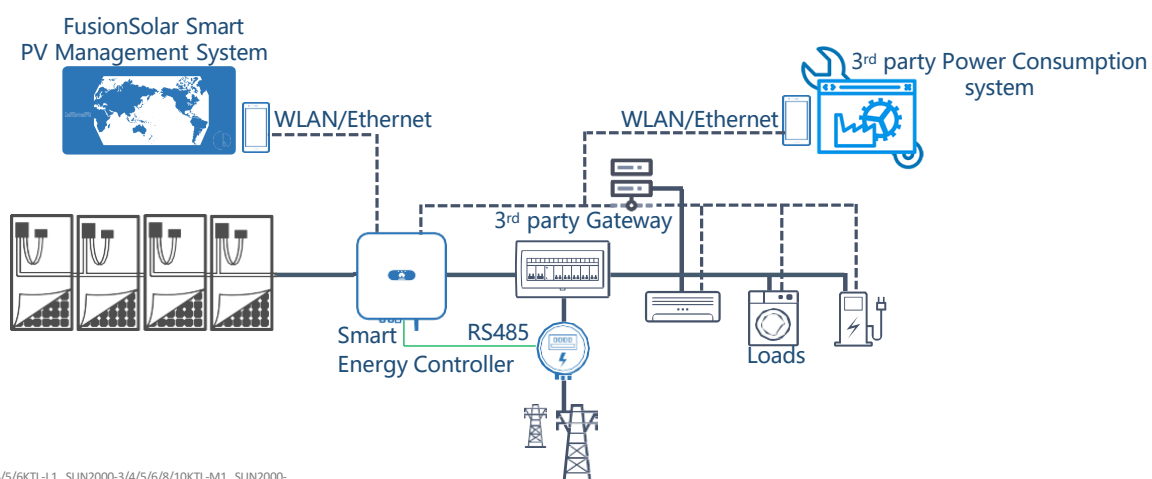


Powerful Ecosystem
Expanding supported partners



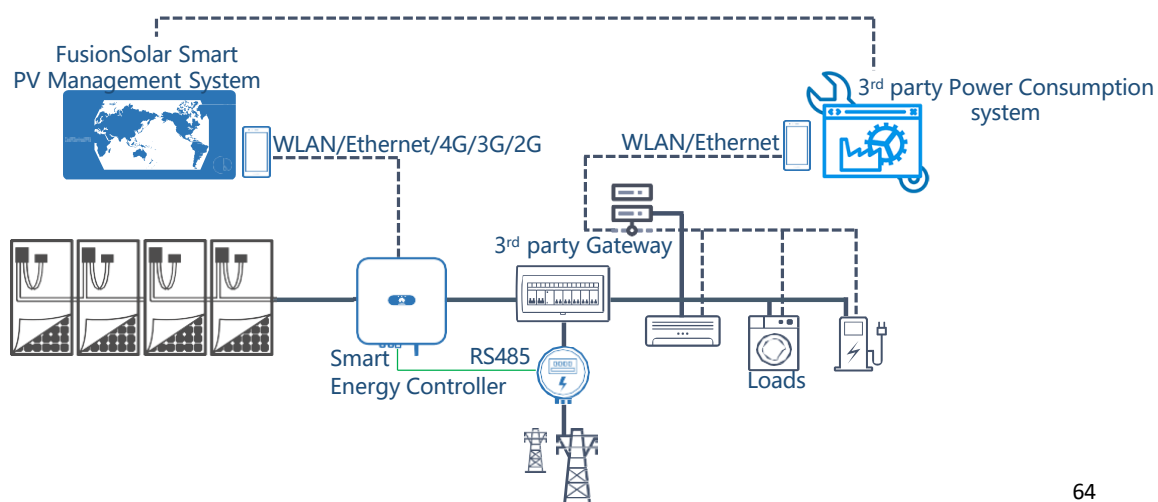
AI Management
Higher Self-consumption Rate

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



SUN2000-5/6/8/10/12K-MAPO
Smart Energy Controller



Active Safety AFCI
Active Arcing
Protection



Higher Yields
Up to 30% More Energy
with Optimizer ¹



Battery Ready
2 Battery Terminals;
Compatible with LUNA2000-S0

Technical Specification	SUN5000-8K-MAPO	SUN5000-12K-MAPO
Efficiency		
Max. efficiency	98.6%	98.6%
European weighted efficiency	98.0%	98.2%
	Input (PV)	
Recommended max. PV power	14,600 Wp	22,000 Wp
Max. input voltage ¹	1100 V	
Operating voltage range ²	160–1000 V	
Startup voltage	160 V	
Rated input voltage	600 V	
Max. input current per MPPT	16 A	
Max. short-circuit current	22 A	
Number of MPP trackers	2	
Max. input per MPP tracker	1	
Input (DC Battery)		
Compatible battery	LUNA2000-5/10/15-S0 / LUNA2000-7/14/21-S1	
Operating voltage range	600–980 V	
Max. operating current	20 A	
Max. charging power	12,000 W	
Max. discharging power	8000 W	12,000 W
	Output (On Grid)	
Grid connection	Three-phase	
Rated output power	8000 W	12,000 W
Max. apparent power	8800 VA	13,200 VA
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 V AC, 240 V AC/415 V AC 3W/N + PE	
Overload capability	110%	
Rated AC grid frequency	50 Hz/60 Hz	
Max. output current	13.3 A	20.2 A
Adjustable power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	≤ 3%	
Output (Off Grid)		
Compatible backup device	SmartGuard-63A-T0 (3 phase)	
Rated output power	8000 W	12,000 W
Rated output voltage	220 V AC/380 V AC, 230 V AC/400 V AC, 240 V AC/415 V AC 3W/N + PE	
110% overload	Continuous	
150% overload	5 min (3-phase) / 5 min (Single-phase)	1 min (3-phase) / 5 min (Single-phase)
200% overload	10 seconds	
Automatic switchover time	≤ 20 ms (with SmartGuard-63A-T0)	

Protection Feature	
Asymmetric load	Yes, supports 100% three-phase asymmetric load
Input-side disconnection device	Yes
Anti-islanding protection	Yes
DC reverse polarity protection	Yes
Insulation detection	Yes
DC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11
Residual current detection	Yes
AC overcurrent protection	Yes
AC short-circuit protection	Yes
AC overvoltage protection	Yes
Arc fault protection	Yes
Terminal temperature detection	Yes (PV & Battery & Optimizer connectors)
Ripple receiver control	Yes
Battery charging from grid	Yes
RSD function	Yes General Specification
Operating temperature range	-25°C to +60°C (-13°F to +140°F)
Relative operating humidity	0 % - 100% RH
Max. operating altitude	4000 m
Cooling	Natural convection
Noise	≤ 29 dB
Display	LED Indicators; Integrated WLAN + FusionSolar APP
Communication	RS485; WLAN / Ethernet via Smart Dongle-WLAN-FE (Optional) 4G/3G/2G via Smart Dongle-4G (Optional); EMMA (Optional)
Weight (incl. mounting brackets)	21 kg
Dimensions (incl. mounting brackets)	490 mm x 460 mm x 130 mm
IP rating	IP66
Nighttime power	< 5.5 W
Optimizer Compatibility	
DC MBUS compatible optimizer ³	SUN2000-450W-P2, SUN2000-600W-P Standards Compliance (More Available Upon Request)
Safety	EN/IEC62109-1, EN/IEC62109-2
Grid connection standards	IEC61727, IEC62116, MEA/PEA, G99/G100, Philippine Grid Code Resolution No. 07, NRS 097-2-1, EN50549-1, VDE4105, UTE15-712-1/VFR 2019, UNE217002, NTS631, RD244(UNE217001), PPDS, ROGA, TOR Erzeuger, CEI 0-21:2020-12 V1, C10/C11
PV System Design	SUN5000-8K/12K-MAPO
Min. string length (power optimizers)	6
Max. string length (power optimizers)	35
Max. DC power per string	12,000 W



Active Safety

AI Powered Arcing Protection



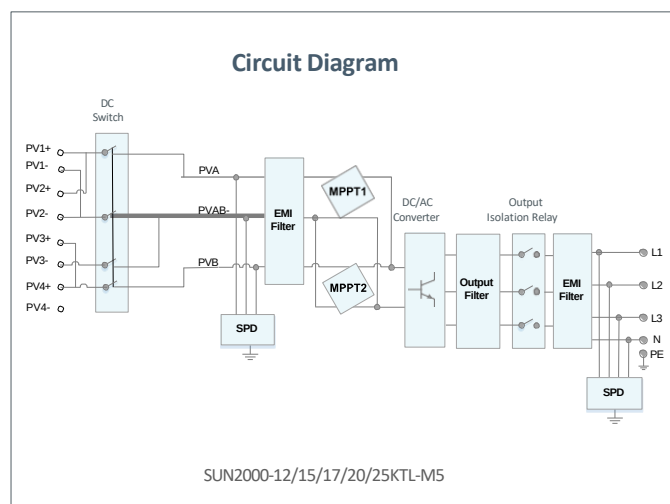
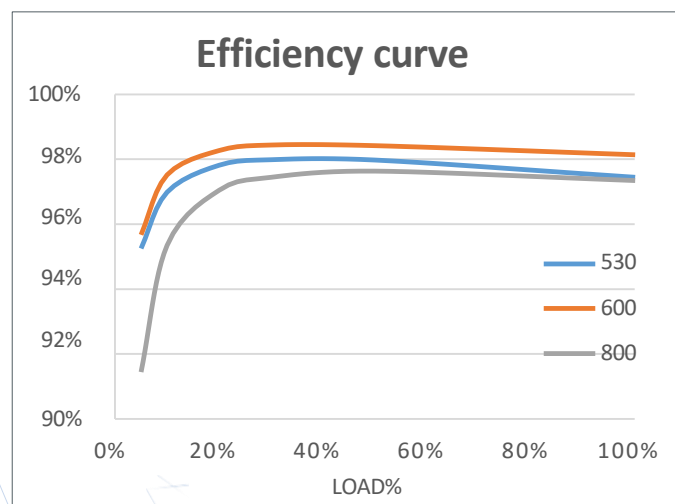
Higher Yields

Up to 30% More Energy with Optimizer



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported



Technical Specification

Technical Specification ¹	SUN2000-12K-MBO	SUN2000-15K-MBO	SUN2000-17K-MBO	SUN2000-20K-MBO	SUN2000-25K-MBO
Efficiency					
Max. efficiency	98.4%	98.4%	98.4%	98.4%	98.4%
European weighted efficiency	97.9%	98.0%	98.1%	98.1%	98.2%
DC Input					
Recommended max. PV power	18,000 Wp	22,500 Wp	22,500 Wp	30,000 Wp	37,500 Wp
Max. input voltage 2	1,100 V				
Max. input current per MPPT	30 A (two strings) / 20 A (single string)				
Max. short-circuit current	40 A				
Start-up voltage	200 V				
MPPT operating voltage range 3	200 V ~ 1,000 V				
Full-load MPPT voltage range	370 V ~ 800 V	410 V ~ 800 V	410 V ~ 800 V	410 V ~ 800 V	530 V ~ 800 V
Rated input voltage	600 V				
Max. number of inputs	4				
Number of MPP trackers	2				
Smart String Energy Storage System Terminal					
Compatible Smart String ESS	LUNA2000-5/10/15-S0				
Number of terminals	2				
Max. charging power	21 kW (Single string) / 25 kW (Two strings)				
Max. discharge power	13.2 kW	16.5 kW	18.7 kW	22.0 kW	25.0 kW
Max. operating current	26.25 A (per string)				
Operating voltage range	600 V ~ 980 V				
Output					
Rated output power	12,000 W	15,000 W	17,000 W	20,000 W	25,000 W
Max. apparent power	13,200 VA	16,500 VA	18,700 VA	22,000 VA	27,500 VA
Max. active power (cosφ = 1)	13,200 W	16,500 W	18,700 W	22,000 W	27,500 W
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 240 Vac / 415 Vac; 3 W / N + PE				
Rated output current	18.2 A / 380 Vac	22.8 A / 380 Vac	25.8 A / 380 Vac	30.4 A / 380 Vac	38.0 A / 380 Vac
	17.3 A / 400 Vac	21.7 A / 400 Vac	24.5 A / 400 Vac	28.9 A / 400 Vac	36.1 A / 400 Vac
	16.7 A / 415 Vac	20.9 A / 415 Vac	23.7 A / 415 Vac	27.8 A / 415 Vac	34.8 A / 415 Vac
Max. output current	20.2 A / 380 Vac	25.2 A / 380 Vac	28.6 A / 380 Vac	33.6 A / 380 Vac	42.0 A / 380 Vac
	19.1 A / 400 Vac	23.9 A / 400 Vac	27.1 A / 400 Vac	31.9 A / 400 Vac	39.9 A / 400 Vac
	18.5 A / 415 Vac	23.1 A / 415 Vac	26.1 A / 415 Vac	30.8 A / 415 Vac	38.5 A / 415 Vac
Rated AC grid frequency	50 Hz / 60 Hz				
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3%				
Feature & Protection					
Overvoltage category	PV II /AC III				
Input-side disconnection device	Yes				
Anti-islanding protection	Yes				
AC over-current protection	Yes				
DC reverse-polarity protection	Yes				
DC surge protection	TYPE II				
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11				
DC insulation resistance detection	Yes				
Residual current monitoring unit	Yes				
Arc fault protection	Yes				
General Data					
Operating temperature range	-25 °C ~ +60 °C (-13 °F ~ 140 °F)				
Relative humidity	0 % RH ~ 100 % RH				
Max. operating altitude	4,000 m (13,123 ft.) (Derating above 2,000 m)				
Cooling	Smart air cooling				
Display	LED indicators, Integrated WLAN + FusionSolar APP				
Communication	RS485; WLAN / Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional); EMMA (Optional)				
Weight	21 kg				
Dimensions (W x H x D)	546 x 460 x 241.5 mm				
Protection level	IP66				
Max. number of paralleled unit (with Smart String ESS)	3				
Optimizer Compatibility					
Compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P, MERC-1100W-P, MERC-1300W-P				
Standards Compliance (More Available Upon Request)					
Certificates	EN/IEC62109-1, EN/IEC62109-2				
Grid connection standards	IEC61727, IEC62116, IEC61683, EN50530, ABNT NBR 16149/16150, MEA/PEA, G99, IRR-DCC-MV/IRR-TIC, Philippine Grid Code Resolution No. 07, NRS 097-2-1, EN50549-1, VDE4105, UTE15-712-1/VFR 2019, UNE217002, NTS631, RD244(UNE217001), PPDS, ROGA, TOR Erzeuger, CEI 0-21:2020-12 V1, CEI-016, C10/C11, EN50549-2, VDE4110				

1 - For Thailand, only SUN2000-12K-MBO & SUN2000-15K-MBO & SUN2000-20K-MBO are available.

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.

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

SUN2000-12/15/17/20KTL-MB0
Smart Energy Controller



Active Safety AFCI
Active Arcing
Protection



Higher Yields
Up to 30% More Energy
with Optimizer ¹



Battery Ready
2 Battery Terminals;
Compatible with LUNA2000-S0

Technical Specification

Technical Specification ¹	SUN2000-12K-MBO	SUN2000-15K-MBO	SUN2000-17K-MBO	SUN2000-20K-MBO	SUN2000-25K-MBO
Efficiency					
Max. efficiency	98.4%	98.4%	98.4%	98.4%	98.4%
European weighted efficiency	97.9%	98.0%	98.1%	98.1%	98.2%
DC Input					
Recommended max. PV power	18,000 Wp	22,500 Wp	22,500 Wp	30,000 Wp	37,500 Wp
Max. input voltage 2	1,100 V				
Max. input current per MPPT	30 A (two strings) / 20 A (single string)				
Max. short-circuit current	40 A				
Start-up voltage	200 V				
MPPT operating voltage range 3	200 V ~ 1,000 V				
Full-load MPPT voltage range	370 V ~ 800 V	410 V ~ 800 V	410 V ~ 800 V	410 V ~ 800 V	530 V ~ 800 V
Rated input voltage	600 V				
Max. number of inputs	4				
Number of MPP trackers	2				
Smart String Energy Storage System Terminal					
Compatible Smart String ESS	LUNA2000-5/10/15-S0				
Number of terminals	2				
Max. charging power	21 kW (Single string) / 25 kW (Two strings)				
Max. discharge power	13.2 kW	16.5 kW	18.7 kW	22.0 kW	25.0 kW
Max. operating current	26.25 A (per string)				
Operating voltage range	600 V ~ 980 V				
Output					
Rated output power	12,000 W	15,000 W	17,000 W	20,000 W	25,000 W
Max. apparent power	13,200 VA	16,500 VA	18,700 VA	22,000 VA	27,500 VA
Max. active power (cosφ = 1)	13,200 W	16,500 W	18,700 W	22,000 W	27,500 W
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 240 Vac / 415 Vac; 3 W / N + PE				
Rated output current	18.2 A / 380 Vac	22.8 A / 380 Vac	25.8 A / 380 Vac	30.4 A / 380 Vac	38.0 A / 380 Vac
	17.3 A / 400 Vac	21.7 A / 400 Vac	24.5 A / 400 Vac	28.9 A / 400 Vac	36.1 A / 400 Vac
	16.7 A / 415 Vac	20.9 A / 415 Vac	23.7 A / 415 Vac	27.8 A / 415 Vac	34.8 A / 415 Vac
Max. output current	20.2 A / 380 Vac	25.2 A / 380 Vac	28.6 A / 380 Vac	33.6 A / 380 Vac	42.0 A / 380 Vac
	19.1 A / 400 Vac	23.9 A / 400 Vac	27.1 A / 400 Vac	31.9 A / 400 Vac	39.9 A / 400 Vac
	18.5 A / 415 Vac	23.1 A / 415 Vac	26.1 A / 415 Vac	30.8 A / 415 Vac	38.5 A / 415 Vac
Rated AC grid frequency	50 Hz / 60 Hz				
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3%				
Feature & Protection					
Overvoltage category	PV II /AC III				
Input-side disconnection device	Yes				
Anti-islanding protection	Yes				
AC over-current protection	Yes				
DC reverse-polarity protection	Yes				
DC surge protection	TYPE II				
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11				
DC insulation resistance detection	Yes				
Residual current monitoring unit	Yes				
Arc fault protection	Yes				
General Data					
Operating temperature range	-25 °C ~ +60 °C (-13 °F ~ 140 °F)				
Relative humidity	0 % RH ~ 100 % RH				
Max. operating altitude	4,000 m (13,123 ft.) (Derating above 2,000 m)				
Cooling	Smart air cooling				
Display	LED indicators, Integrated WLAN + FusionSolar APP				
Communication	RS485; WLAN / Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional); EMMA (Optional)				
Weight	21 kg				
Dimensions (W x H x D)	546 x 460 x 241.5 mm				
Protection level	IP66				
Max. number of paralleled unit (with Smart String ESS)	3				
Optimizer Compatibility					
Compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P, MERC-1100W-P, MERC-1300W-P				
Standards Compliance (More Available Upon Request)					
Certificates	EN/IEC62109-1, EN/IEC62109-2				
Grid connection standards	IEC61727, IEC62116, IEC61683, EN50530, ABNT NBR 16149/16150, MEA/PEA, G99, IRR-DCC-MV/IRR-TIC, Philippine Grid Code Resolution No. 07, NRS 097-2-1, EN50549-1, VDE4105, UTE15-712-1/VFR 2019, UNE217002, NTS631, RD244(UNE217001), PPDS, ROGA, TOR Erzeuger, CEI 0-21:2020-12 V1, CEI-016, C10/C11, EN50549-2, VDE4110				

1 - For Thailand, only SUN2000-12K-MBO & SUN2000-15K-MBO & SUN2000-20K-MBO are available.

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.

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

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



Active Safety

AI Powered Active
Arcing Protection



Higher Yields

Up to 30% More Energy
with Optimizer ¹



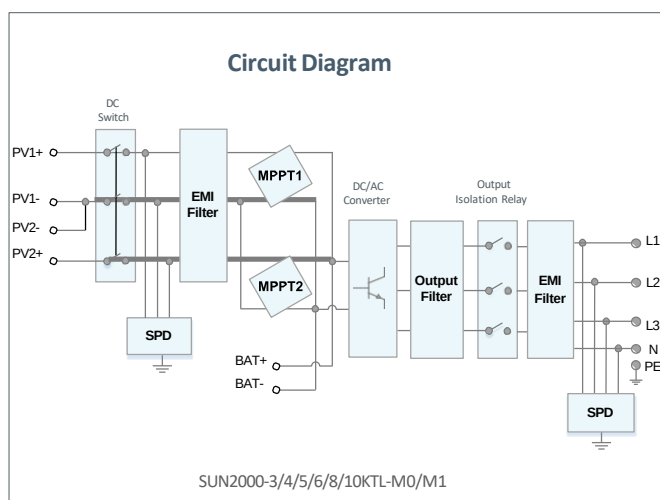
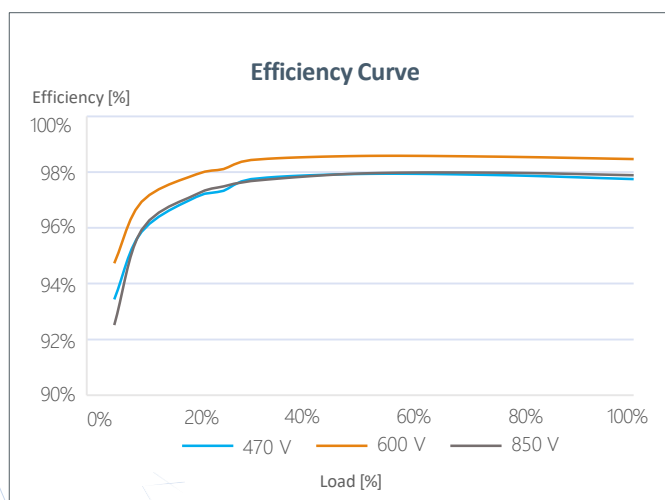
Battery Ready

Plug & Play battery interface ²



Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported



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

Technical Specification

Technical Specification	SUN2000 -3KTL-M1 ⁷	SUN2000 -4KTL-M1	SUN2000 -5KTL-M1	SUN2000 -6KTL-M1	SUN2000 -8KTL-M1	SUN2000 -10KTL-M1
Efficiency						
Max. efficiency	98.2%	98.3%	98.4%	98.6%	98.6%	98.6%
European weighted efficiency	96.7%	97.1%	97.5%	97.7%	98.0%	98.1%
Input (PV)						
Recommended max. PV power ¹	4,500 Wp	6,000 Wp	7,500 Wp	9,000 Wp	12,000 Wp	15,000 Wp
Max. input voltage ²	1,100 V					
Operating voltage range ³	140 V ~ 980 V					
Start-up voltage	200 V					
Rated input voltage	600 V					
Max. input current per MPPT	13.5 A					
Max. short-circuit current	19.5 A					
Number of MPP trackers	2					
Max. input number per MPP tracker	1					
Input (DC Battery)						
Compatible battery	HUAWEI Smart String ESS 5kWh – 30kWh					
Operating voltage range	600 V ~ 980 V					
Max operating current	16.7 A					
Max charge power	10,000 W					
Max discharge power	3,300 W	4,400 W	5,500 W	6,600 W	8,800 W	10,000 W
Output (On Grid)						
Grid connection	Three-phase					
Rated output power	3,000 W	4,000 W	5,000 W	6,000 W	8,000 W	10,000 W
Max. apparent power	3,300 VA	4,400 VA	5,500 VA	6,600 VA	8,800 VA	11,000 VA ⁴
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 3W / N+PE					
Rated AC grid frequency	50 Hz / 60 Hz					
Max. output current	5.1 A	6.8 A	8.5 A	10.1 A	13.5 A	16.9 A
Adjustable power factor	0.8 leading ... 0.8 lagging					
Max. total harmonic distortion	≤ 3 %					
Output (Off Grid)						
Backup Box	Backup Box – B1					
Maximum apparent power	3,000 VA	3,300 VA	3,300 VA	3,300 VA	3,300 VA	3,300 VA
Rated output voltage	220 V / 230 V					
Maximum output current	13.6 A	15 A	15 A	15 A	15 A	15 A
Power factor range	0.8 leading ... 0.8 lagging					
Features & Protections						
Input-side disconnection device	Yes					
Anti-Islanding protection	Yes					
DC reverse polarity protection	Yes					
Insulation monitoring	Yes					
DC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11					
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11					
Residual current monitoring	Yes					
AC overcurrent protection	Yes					
AC short-circuit protection	Yes					
AC overvoltage protection	Yes					
Arc fault protection	Yes					
Ripple receiver control	Yes					
Integrated PID recovery ⁵	Yes					
Battery reverse charging from grid	Yes					
General Data						
Operating temperature range	-25 ~ + 60 °C (-13 °F ~ 140 °F)					
Relative operating humidity	0 % RH ~ 100 % RH					
Max. operating altitude	4,000 m (13,123 ft.) (Derating above 2000 m)					
Cooling	Natural convection					
Display	LED Indicators; Integrated WLAN + FusionSolar App					
Communication	RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE; 4G / 3G / 2G via Smart Dongle-4G (Optional)					
Weight (incl. mounting bracket)	17 kg (37.5 lb)					
Dimension (incl. mounting bracket)	525 x 470 x 146.5 mm (20.7 x 18.5 x 5.8 inch)					
Degree of protection	IP65					
Nighttime power consumption	< 5.5 W ⁶					
Optimizer Compatibility						
DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P					
Standard Compliance (more available upon request)						
Certificate	EN/IEC 62109-1, EN/IEC 62109-2, IEC 62116					
Grid connection standards	G98, G99, EN 50438, CEI 0-21, VDE-AR-N-4105, AS 4777, C10/11, ABNT, UTE C15-712, RD 1699, TOR D4, NRS 097-2-1, IEC61727, IEC62116, DEWA					

1 - Inverter max input PV power is 20,000 Wp when long strings are designed and fully connected with SUN2000-450W-P, SUN2000-450W-P2, SUN2000-600W-P power optimizers.

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

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

4 - C10 / 11: 10,000 VA

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

6 - <10 W when PID recovery function is activated.

7 - Upon request.

SUN2000-2-6KTL-L1 (High Current Version) Smart Energy Controller



Active Safety

AI Powered Active
Arcing Protection



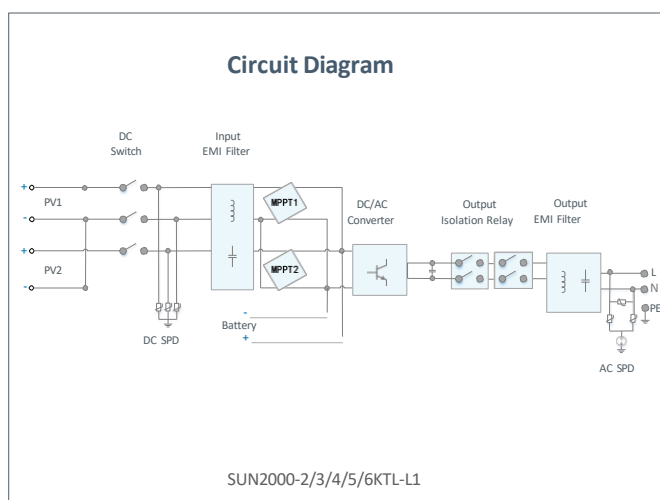
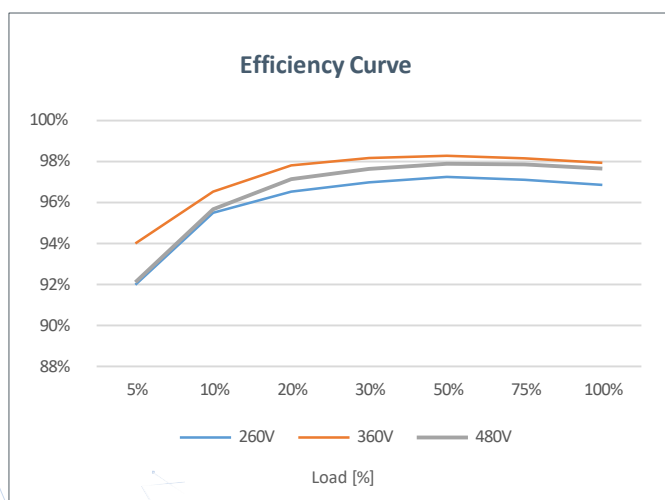
Higher Yields

Up to 30% More Energy
with Optimizer



2x POWER Battery Ready

5KW AC Output plus
5KW Battery Charge



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

Technical Specification	SUN2000 -2KTL-L1	SUN2000 -3KTL-L1	SUN2000 -4KTL-L1	SUN2000 -5KTL-L1	SUN2000 -6KTL-L1
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 ¹	3,000 Wp	4,500 Wp	6,000 Wp	7,500 Wp	9,000 Wp
Max. input voltage	600 V ²				
Start-up voltage	100 V				
MPPT operating voltage range*	90 V – 530 V ²				
Rated input voltage	360 V				
Max. input current per MPPT	13.5 A				
Max. short-circuit current*	20 A				
Number of MPP trackers*	2				
Max. input number per MPP tracker	1				
Input (DC Battery)					
Compatible Battery	HUAWEI Smart ESS Battery 5kWh – 30kWh				
Operating voltage range	350 ~ 560 Vdc				
Max. operating current	15 A				
Max. charge Power*	5,000 W ³				
Max. discharge Power*	2,200 W	3,300 W	4,400 W	5,000 W	5,000 W
Output (On Grid)					
Grid connection*	Single phase				
Rated output power*	2,000 W	3,000 W	4,000 W	5,000 W ⁴	6,000 W
Max. apparent power*	2,200 VA	3,300 VA	4,400 VA	5,500 VA ⁶	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 ⁷	27.3 A
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3 %				
Output (Off Grid)					
Backup Box (Optional)	Backup Box – B0, SmartGuard 63A S0				
Maximum apparent power	2,000 VA	3,000 VA	4,000 VA	5,000 VA	5,000 VA
Rated output voltage			220 V / 230 V		
Maximum output current	9.1 A	13.6 A	18.2 A	22.7 A	22.7 A
Power factor range	0.8 leading ... 0.8 lagging				

1 - Inverter max. input PV power is 20,000 Wp when long strings are designed and fully connected with SUN2000-450W-P2/600W-P power optimizers.
2 - The maximum input voltage and operating voltage upper limit will be reduced to 495 V when inverter connects and works with LG battery.
3 - 2,500 W @ 5kWh HUAWEI ESS battery
4 - AS4777.2: 4,991W
5 - VDE-AR-N 4105: 4,600VA / AS4777.2: 4,999VA.
6 - AS4777.2: 4,999VA / C10/11:5,000VA
7 - AS4777.2: 21.7A.



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
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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

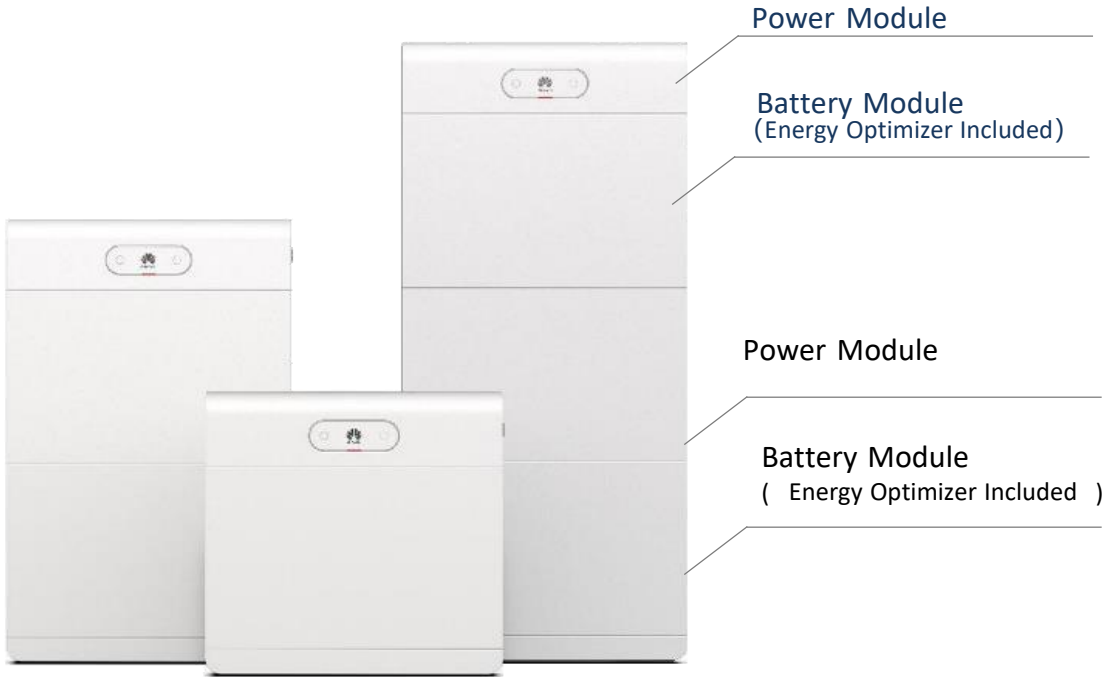
General Data	
Operating temperature range	-25 ~ +60 °C
Relative operating humidity	0 %RH ~ 100 %RH
Operating altitude	0 ~ 4,000 m (Derating above 2,000 m)
Cooling	Natural convection
Display	LED indicators; integrated WLAN + FusionSolar APP
Communication	RS485, WLAN via inverter built-in WLAN module Ethernet 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-P, SUN2000-450W-P2 & SUN2000-600W-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

LUNA2000-7/14/21-S1

Smart String Energy Storage System



Flexible Capacity

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



More Usable Energy

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



5-layer Safety Protection

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



Ultimate Use Experience

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



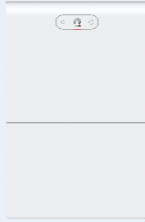
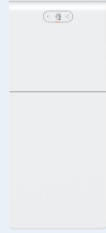
Easy Installation

Cable Free Connection Between Modules
Horizontal Adjustment Design
Quick Commissioning



Aesthetically Pleasing Design

Breathing Star Ring Display
Silky Curve Design
Simplistic and Borderless

Technical Specification	LUNA2000-7-S1	LUNA2000-14-S1	LUNA2000-21-S1
			

Performance			
Powermodule	LUNA2000-10KW-C1		
Number of powermodules	1		
Batterymodule	LUNA2000-7-E1		
Battery moduleenergy	6.9 kWh		
Number of batterymodules	1	2	3
Battery usable energy ¹	6.9 kWh	13.8 kWh	20.7 kWh
Max. charging & discharging power	3.5kW	7 kW	10.5 kW
Operating voltage range (single-phasesystem)	350 – 560 V		
Operating voltagerange (three-phase system)	600 – 980 V		

Communication	
Display	SOC status indicator, LED indicator
Communication ²	RS485/FE/CAN

General Specification			
Dimensions (W x D x H)	590 mm x 255 mm x 510 mm	590 mm x 255 mm x 870 mm	590 mm x 255 mm x 1230 mm
Weight (Floor stand toolkit included)	80 kg	148 kg	216 kg
Power module dimension(W x D x H)	590 mm x 255 mm x 150 mm		
Power moduleweight	10 kg		
Battery module dimensions (W x D x H)	590 mm x 255 mm x 360 mm		
Battery moduleweight ³	68 kg		
Installation	Floor stand (standard), Wall mounting (optional)		
Operatingtemperature ⁴	-20°C to +55°C (-4°F to +131°F)		
Max. operatingaltitude ⁵	4,000 m (13,123 ft.) (Derating above 2,000 m)		
Environment ⁶	Outdoor/Indoor		
Relative humidity	5% - 95%		
Cooling	Natural convection		
Protectionrating	IP 66		
Noise emission	< 29 dB ⁷		
Celltechnology	Lithium iron phosphate (LiFePO ₄)		
Scalability ⁸	Max. 4 systems in parallel operation		
Compatibleinverters ⁹	SUN2000-12/15/17/20/25K-MB0, SUN2000-3/4/5/6/8/10KTL-M1 SUN2000-5/6/8/10/12K-MAP0, SUN2000-8/10K-LC0, SUN2000-2/3/3.68/4/4.6/5/6KTL-L1 SUN5000-8/12K-MAP0,SUN5000-17/25K-MB0		

Standards Compliance (more available upon request)	
Certificates	CE, RCM, CEC, VDE2510-50, IEC62619, IEC 60730, UN38.3, ISO13849, REACH, RoHS
Ordering and Deliverable Part	
Available for ordering ¹⁰	LUNA2000-7-E1, LUNA2000-10KW-C1, Wall Mounting Bracket for LUNA2000-7/14/21-S1

•Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25°C, at the beginning of service life.
•CAN is for communication between energy storage in parallel scenarios only. Launch time of FE communication is to be determined, please confirm with your local product manager of Huawei for final version.
•The weight of the battery modules varies with products, with a tolerance of ±3%.
•The output power may be affected by temperature. Please refer to the output derating curve for details.
•The output power may be affected by altitude. Please refer to the output derating curve for details.
•Outdoor installation is recommended. For indoor installation instructions, please refer to the user manual.
•The data is from Huawei lab, and the test condition is 1m distance and typical working voltage.
•Only SUN2000-12/15/17/20/25K-MB0 supports 4 energy storage systems in parallel operation.
•LUNA S1 will be compatible with inverter SUN2000 MAP0/L1/LC0 and SUN5000 MAP0/MB0 in 2024.Q3.
10. The power module and battery modules of the storage system are separately order in the required quantity.

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

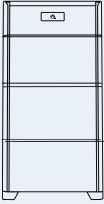


Perfect Compatibility

Compatible to Both Residential
Single & Three Phase Inverter

LUNA2000-5/10/15-S0

Technical Specification

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

Performance			
Power module	LUNA2000-5KW-C0		
Number of power modules	1		
Battery module	LUNA2000-5-E0		
Battery module 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) ²		
Installation	Floor stand (standard), Wall mount (optional)		
Operating temperature	-20°C ~ +55°C (-4°F ~ 131°F) ³		
Max. operating altitude	4,000 m (13,123 ft.) (Derating above 2,000 m)		
Environment	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, at the beginning of life.
- The weight of the battery module is subject to the actual product, with a tolerance of ±3%.
- Refer to battery warranty letter for conditional application.
- Please contact local engineer for the compatibility between the SUN2000-3/4/5/6/8/10KTL-M0 with the LUNA2000.
- Storage system is ordered and delivered in the form of power module and battery module separately with corresponding quantity.



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	
Fire Safety			VDE-AR-E 2100-712:2018-12	
			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			Staubli 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, SUN2000-12/15/17/20/25KTL-M5, SUN2000-30/36/40KTL-M3	
Long String Design (Full Optimizer)	SUN2000-2-6KTL-L1	SUN2000-3-10KTL-M1	SUN2000-12-25KTL-M5	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.

MERC-1100/1300W-P

Smart PV Optimizer



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



Flexible Design
Long String Design to
Reduce Bos



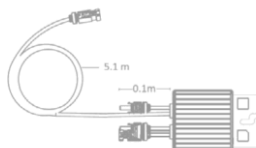
Active Safety
Firefighting and O&M
Safety with Module-
level Rapid Shutdown



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

Technical Specification	MERC-1100W-P			MERC-1300W-P	
Input					
Rated input DC power ¹	1100 W			1300 W	
Absolute max. input voltage				125 V	
MPPT operating voltage range				12.5–105 V	
Max. short-circuit current (Isc)				20 A	
Max. efficiency				99.5%	
Weighted efficiency				99.0%	
Overvoltage category				II	
Output					
Max. output voltage				80 V	
Max. output current				22 A	
Output bypass ²				Yes	
Safety output voltage ³				1 V	
				Standards Compliance	
Safety				IEC62109-1 (class II safety)	
RoHS				Yes	
General Specification					
Dimensions (W X H X D)	149 mm x 104 mm x 48.8 mm (5.9 in. x 4.1 in. x 1.9 in.)				
Weight (including wires)	1.0 kg (2.2 lb.)				
Installation kit (optional)	PV Module Frame Plate/T-shaped Bolt ⁴				
Input connector	Staubli MC4				
Input wire length	0.1 m (+/-) (short-input-cable version) ⁵				
Output connector	Staubli MC4				
Output wire length	0.1 m (+), 5.1 m (-) (short-input-cable version) ⁵				
Operating temperature	–40°C to +85°C ⁶				
Relative humidity	0%–100%				
IP rating	IP68				
Compatible inverters	SUN2000-12-25K-MB0, SUN2000-12-25KTL-M5, SUN2000-30-40KTL-M3, SUN2000-50KTL-M3, SUN5000-150K-MG0				
PV System Design ^{7/8/9}	SUN2000-12~25K-MB0	SUN2000-12~25KTL-M5	SUN2000-30~40KTL-M3	SUN2000-50KTL-M3	SUN5000-150K-MG0
Min. string length (power optimizers)	8	8	8	8	12
Max. string length (power optimizers)	25	25	25	20	20
Max. DC power per string	20,000 W	20,000 W	20,000 W	20,000 W	20,000 W

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 ±10% power tolerance are allowed.

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

*3 When the MERC-1100/1300W-P is disconnected from inverter or when the inverter is off, its output voltage will become 1 V. *4 It is for PV module frame/extruded aluminum profile racking system installation.

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

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

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

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

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

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

SmartGuard-6A-TO/AUTO



Simple

Three-phase whole home backup supported



Seamless

≤20ms Ultra-fast switchover to power backup mode



Seamless

Provide bypass mode when a fault occurs



Seamless

Ready for DG, intelligent loads management with EMMA

Technical Specification		SmartGuard-63A-T0/AUTO
General Data		
Dimensions (W x H x D)		485 mm × 150 mm × 355 mm
Weight		≤14 kg
Performance		
AC Voltage (Nominal)		220/230/240V L/N+PE
Max. current (from Grid)		63 A
Max. current (from Inverter)		60 A
Max. current (to Backup Load)		63 A
Max. current (to Non-BackupLoad)		63 A
Self consumption		10 W
Low-Voltage ride-through		Supported
Switchover time		≤ 20ms (in Seamless Mode)
Bypass operation mode		Manual
Interface		
Power output		9.5 ~ 13.2V @ 100mA, ≤ 3m
LAN		10 / 100Mbps, ≤ 100m
WAN		10 / 100Mbps, ≤ 100m
WLAN		AP Mode, 802.11b/g/n (2.412GHz ~ 2.484GHz)
RS485		9600 / 19200 / 115200bps, × 2, ≤ 50m
Digital Input		×2, ≤ 20m
Digital Output		×2, ≤ 20m
Measurement Range		
Current Range		≤ 63 A
Voltage Range		1P (L-N): 85 ~ 299 Vac
Energy Accuracy		± 1%
Device Management		
Smart Energy Controllers		up to 1
Smart Chargers		up to 2
Heat Pump		up to 1 ²
Shelly Device		up to 20

Device Management	
Smart Energy Controllers	up to 1
Smart Chargers	up to 2
Heat Pump	up to 1 ²
Shelly Device	up to 20
Environment	
Noise Emission	≤ 29dBA
Cooling	Natural Convection
Relative Humidity Range	5%-95% RH (non condensing)
Max. Operating Altitude	4000m (derating over 2000m)
Degree of Protection	IP55
Operating Temperature Range	-25°C~50°C ³
Compatible Device	
Smart Energy Controllers	SUN2000-2-6KTL-L1 / SUN2000-8-10K LCO
Smart Chargers	SCharger-7KS-S0
Heat Pump	SG-ready
Shelly Device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM

*1 The sum of the output current of the backup port and the non-backup port could not be more than 63A.

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

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

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

*5 On-grid Mode: -25~30 °C, no derating; 30~50 °C, linear derating from 63A to 43A; Off-grid Mode: -25~40 °C, no derating; 40~50 °C, linear derating from 60A to 50A. *6 The supported firmware version of shelly devices can be found in user manual.

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

SmartGuard-6A-S0



Simple

Three-phase whole home backup supported



Seamless

≤20ms Ultra-fast switchover to power backup mode



Seamless

Provide bypass mode when a fault occurs



Seamless

Ready for DG, intelligent loads management with EMMA

Technical Specification		SmartGuard-63A-S0
General Data		
Dimensions (W x H x D)		485 mm × 150 mm × 355 mm
Weight		≤14 kg
Performance		
AC Voltage (Nominal)		220/230/240V L/N+PE
Max. current (from Grid)		63 A
Max. current (from Inverter)		60 A
Max. current (to Backup Load)		63 A
Max. current (to Non-BackupLoad)		63 A
Self consumption		10 W
Low-Voltage ride-through		Supported
Switchover time		≤ 20ms (in Seamless Mode)
Bypass operation mode		Manual
Interface		
Power output		9.5 ~ 13.2V @ 100mA, ≤ 3m
LAN		10 / 100Mbps, ≤ 100m
WAN		10 / 100Mbps, ≤ 100m
WLAN		AP Mode, 802.11b/g/n (2.412GHz ~ 2.484GHz)
RS485		9600 / 19200 / 115200bps, × 2, ≤ 50m
Digital Input		×2, ≤ 20m
Digital Output		×2, ≤ 20m
Measurement Range		
Current Range		≤ 63 A
Voltage Range		1P (L-N): 85 ~ 299 Vac
Energy Accuracy		± 1%
Device Management		
Smart Energy Controllers		up to 1
Smart Chargers		up to 2
Heat Pump		up to 1 ²
Shelly Device		up to 20

Device Management	
Smart Energy Controllers	up to 1
Smart Chargers	up to 2
Heat Pump	up to 1 ²
Shelly Device	up to 20
Environment	
Noise Emission	≤ 29dBA
Cooling	Natural Convection
Relative Humidity Range	5%-95% RH (non condensing)
Max. Operating Altitude	4000m (derating over 2000m)
Degree of Protection	IP55
Operating Temperature Range	-25°C~50°C ³
Compatible Device	
Smart Energy Controllers	SUN2000-2-6KTL-L1 / SUN2000-8-10K LCO
Smart Chargers	SCharger-7KS-S0
Heat Pump	SG-ready
Shelly Device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM

*1 The sum of the output current of the backup port and the non-backup port could not be more than 63A.

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

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

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

*5 On-grid Mode: -25~30 °C, no derating; 30~50 °C, linear derating from 63A to 43A; Off-grid Mode: -25~40 °C, no derating; 40~50 °C, linear derating from 60A to 50A. *6 The supported firmware version of shelly devices can be found in user manual.

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

Model: EMMA-A02

Energy Management Assistant



Unified management

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



More intelligent

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



More economical

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



Open to 3rd parties

Supports Modbus-TCP and third-party VPP integration, enabling FCR-D frequency modulation.

Technical Specification	EMMA-A02		
General Data			
Dimension(W × H × D)	108 mm × 100 mm × 65 mm		
Mounting type	DIN35 Rail		
Height requirement of cabinet	≥ 47.5 mm		
Weight	0.5 kg		
Power Supply			
AC Voltage	1P2W: 100 ~ 240V, 50 / 60Hz	3P3W: 346 ~ 415V, 50 / 60Hz	3P4W: 346 ~ 415V, 50 / 60Hz
Typical power consumption	4 W		
Interface			
Power output	9.5 ~ 13.2V @ 100mA, ≤ 3m		
LAN	10 / 100Mbps,≤ 100m		
WAN	10 / 100Mbps,≤ 100m		
WLAN	AP + STA, 802.11b/g/n (2.412GHz ~ 2.484GHz)		
RS485	9600 / 19200 / 115200bps,× 2, ≤ 50m		
Digital input	× 2, ≤ 20 m		
Digital output	× 2, ≤ 20 m		
Interaction			
LED	LED Indicator × 3 RUN, ALM, COM		
Button	RST		
APP	Communication by WLAN for Commissioning		
Measurement Range			
Current range	Direct connection: ≤ 63 A, external CT ¹ : > 63 A		
Voltage range	1P (L-N): 85 ~ 299 Vac; 3P (L L): 148 ~520 Vac		
Energy accuracy	±1%		

Technical Specification

Device Management	
Smart Energy Controllers	up to 3
Smart Chargers	up to 2
Heat Pump	up to 1 ²
Shelly Device	up to 20
Environment	
Noise Emission	-25 °C~ +60 °C
Cooling	-40 °C~ +85 °C
Relative Humidity Range	5% ~ 95% RH (non condensing)
Max. Operating Altitude	4000m (derating over 2000m)
Degree of Protection	IP2X
Operating Temperature Range	-25 °C~ +60 °C
Compatible Device	
Smart Energy Controllers	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-8/10K-LC0, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20/25KTL-M5, SUN2000-12/15/17/20/25K-MB0, SUN2000-5/6/8/10/12KMAPO, SUN5000-8/12K-MAPO, SUN5000-17/25K-MB0
Smart Chargers	SCharger-7KS/22KT-S0
Heat Pump	SG-ready
Shelly Device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM
Smart Scheduling	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-8/10K-LC0, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20/25KTL-M5, SUN2000-12/15/17/20/25K-MB0, SUN2000-5/6/8/10/12K-MAPO, SUN5000-8/12K-MAPO, SUN5000-17/25K-MB0 + LUNA2000-5/10/15-S0 / LUNA2000-7/14/21
Dynamic Tariff	Automatically connect to Nord Pool electricity market and obtain day-ahead dynamic tariff. (Available in Sweden, Denmark, Finland, Norway, Lithuania, Estonia, Latvia, and the Netherlands.)

*1. The secondary current of an external CT connected shall be 50 mA, and the cable length can be up to 30 m.

*2. A heat pump can be directly connected to EMMA-A02. More appliances can be connected through a Shelly device.

*3. For the Shelly device firmware version supported, please refer to the user manual.

*4. The smart scheduling function of the EMMA is offered free of charge for two years from the trial start date. After this period, we reserve the right to charge for this service.

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

ENERGY MANAGEMENT ASSISTANT

EMMA-A02



Unified management

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



More intelligent

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



More economical

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



Open to 3rd parties

Supports Modbus-TCP and third-party VPP integration, enabling FCR-D frequency modulation.

Smart Dongle-WLAN-FE



Smart

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



Simple

Plug & Play Support
max. 10 devices²



Reliable

IP65
Support auto reconnection

Technical Specification	SDongleA-05
General Data	
Max. Devices ² 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	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	SUN2000-2/3/4/5/6KTL-L1 SUN2000-5/8/10KTL-M1 SUN2000-12/15/17/20KTL-M2 SUN2000-30/36/40KTL-M3

1. 3rd-party management system shall match the communication protocol with Huawei Smart Dongle.
2. Devices refer to: Inverter, meter, weather station devices and so on.

Smart Dongle-4G



Smart

4G communication ¹

Support 3rd-party monitoring system ²



Simple

Plug & Play

WLAN-AP for local deploying ³



Reliable

IP65

Support auto reconnection

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

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

Environment	
Operating temperature range	-30 °C to +65 °C (-22 °F to 149 °F)
Relative humidity range	5 - 95% RH
Storage temperature range	-40 °C to +70 °C (-40 °F to 158 °F)
Max. operating altitude	4,000 m (13, 123 ft.)

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

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

¹: To ensure stable data transmission, Huawei suggests 4G dongle to be installed in areas with stable mobile signal (2G signal ≥4 bars, 3G/4G signal ≥3 bars).

²: 3rd-party management system shall match the communication protocol with Huawei Smart Dongle. Currently this function is only compatible with M5 Inverter. ³: When all inverters support WLAN hotspot, hotspot of Dongle will be disabled by default.

⁴: For recommended carriers list and details on supported frequencies, please contact local distributors.



Single Phase

7.4 kW/32 A

SCharger-7KS-S0

Three Phase

22 kW/32 A

SCharger-22KT-S0



PV Power Preferred

Power Your Car with Solar
Make EV Even Greener



Automatic Phase Switch ¹

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



3 Ways Authentication

Bluetooth, RFID and APP
Avoid Accidental Charging



Dynamic Charging Power

Automatic Detection and Adjustment No
Worry about Overload



All on a Single APP

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



3-Step Installation

Fast Installation in 16 Minutes
Wiring-free Maintenance

Technical Specification	SCharger-7KS-S0	SCharger-22KT-S0
Inputs and Outputs		
Charge power (configurable)	1.4 kW to 7.4 kW	1.4 kW ² to 22 kW
Nominal voltage	230 V (1-phase) ± 20%	400 V (3-phase) ± 20%
Nominal current (configurable)	6–32 A (1-phase)	6–32 A (3-phase or 1-phase)
Nominal frequency	50 Hz/60 Hz ± 1 Hz	
Vehicle connection	Type 2 socket	
Cable width	Up to 10 mm²	
Network types	TN, TT, IT	TN, TT
User Interface & Communications		
Protocol	Modbus TCP	
Communication	Wi-Fi/Ethernet	
Charger status information	WRGB LED, App	
Authentication	RFID (ISO-14443-A), App, Bluetooth	
Remote control & monitoring	App	
Working mode	Normal Charge Scheduled Charge PV Power Preferred	
Protection		
Cable protection	Cable E-Lock via App	
Residual current protection (RCD)	Type A(30mA) + DC 6 mA integrated (IEC 62955 & IEC 61008-1)	
Fire Class	UL94	
Overcurrent protection	IEC 61851-1	
Over-temperature protection	Yes	
Surge protection	CAT II	
General Specifications		
Operating temperature range	–35°C to +45°C	–35°C to +40°C @ 32A –35°C to +50°C @ 16A
Application environment	Outdoor/Indoor	
Storage temperature	–40°C to +70°C	
Relative humidity	5% RH–95% RH	
Altitude	≤ 2000 m (derating between 2000~4000m)	
Dimensions (H x W x D)	335 mm x 180 mm x 145 mm	
Weight	3 kg	3.1 kg
Installation mode	Wall-mounted	
IP rating	IP54	
Impact protection level	IK10	
Standby self-consumption	< 6 W	
Standards Compliance (More Available Upon Request)		
Standard	EN 61851-1 2019, IEC 62955:2018, IEC 61008-1 2010, IEC/EN 62196-1	
Others		
Accessories	RFID Card * 2	

*1 Available in PV Power Preferred Mode

*2 1.4 kW for 1-Phase charge and 4.2 kW for 3-Phase charge

Version No.:19-(20230321)



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 ≤ 1.5 W

Technical Specification

SmartPS-100A-S0

SmartPS-80AI-T0

General Data

Dimension (W × H × D)	36 x 100 x 65.5 mm	72 x 100 x 80 mm
Mounting type	DIN35 Rail	
Weight (including cables)	≤ 0.85 kg	≤ 0.99 kg
Height requirement of cabinet	≥ 52 mm	≥ 62 mm

Power Supply

Power grid type	1P2W	3P4W/3P3W
Input voltage (line voltage)	176 ~ 288 Vac	90 ~ 500 Vac
Power consumption	≤ 0.8 W	≤ 1.5 W

Measurement Range

Line voltage	/	90 ~ 1000 Vac (> 500 with external PT ¹)
Phase voltage	176 ~ 288 Vac	52 ~ 577 Vac
Current	0 ~ 100 A	0 ~ 80 A (> 80 with external CTs ²)

Measurement Accuracy

Voltage / Current	± 0.5 %
Power / Energy	± 1 %
Frequency	± 0.01 Hz

Communication

Interface	RS485
Baud rate	4800/9600/19200/115200 (Default 9600bps)
Communication protocol	Modbus-RTU

Environment

Operating temperature range	-25 °C ~ 60 °C
Storage temperature range	-40 °C ~ 70 °C
Operating humidity	5 %RH ~ 95 %RH (non-condensing)

Others

Accessories	RS485 Cable (10 m / 33 ft.)	/
	1 CT 100 A/40 mA (5 m)	/

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

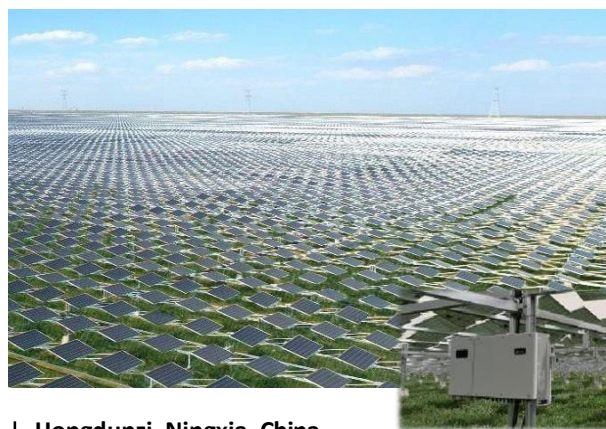


Datong, Shanci, China

Mountain-mounted Smart PV Plant

Capacity: 100 MW

Inverter Model: SUN2000-40KTL

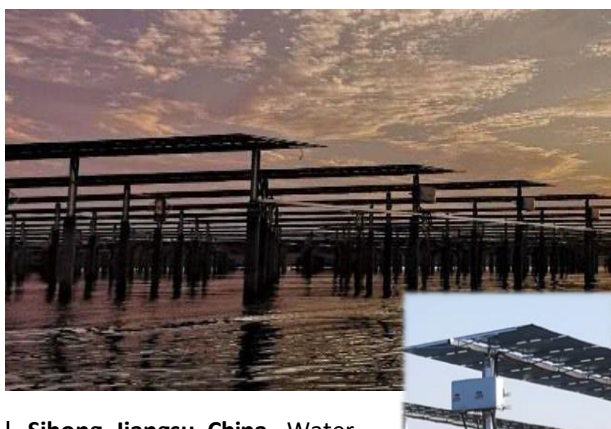


Hongdunzi, Ningxia, China

Largest Tracking System PV Plant Worldwide

Capacity: 700 MW

Inverter Model: SUN2000-50KTL



Sihong, Jiangsu, China

Water Surface Smart PV Plant

Capacity: 100 MW

Inverter Model: SUN2000-100KTL



Yanchi, Ningxia, China

Largest Single PV Plant Worldwide

Capacity: 1 GW

Inverter Model: SUN2000-40KTL



Sabah, Malaysia

Mountain-mounted Smart PV Plant

Capacity: 49 MW

Inverter Model: SUN2000-42KTL



Haining, Zhejiang, China

Largest Rooftop-mounted PV Plant Worldwide

Capacity: 300 MW

Inverter Model: SUN2000-28KTL, 36KTL, 50KTL

Case Reference



Pasir Gudang, Johor

Ground-mounted Smart PV Plant

Capacity: 25 MW

Inverter Model: SUN2000-185KTL-H1



Kamunting, Perak

Ground-mounted Smart PV Plant

Capacity: 30 MW

Inverter Model: SUN2000-185KTL-H1



Sik, Kedah

Ground-mounted Smart PV Plant

Capacity: 30 MW

Inverter Model: SUN2000-185KTL-H1



PV Park Pekan, Pahang

GPS Tracker PV Plant in Malaysia

Capacity: 45 MW

Inverter Model: SUN2000-90KTL-H2



Kuala Muda, Kedah

Ground-mounted Smart PV Plant

Capacity: 30 MW

Inverter Model: SUN2000-185KTL



Paka, Terengganu

Ground-mounted Smart PV Plant

Capacity: 30 MW

Inverter Model: SUN2000-90KTL-H1

Case Reference



Sungai Siput, Perak

Ground-mounted Smart PV Plant
Capacity: 49 MW
Inverter Model: SUN2000-42KTL



Kota Tinggi, Johor

Ground-mounted Smart PV Plant
Capacity: 29 MW
Inverter Model: SUN2000-90KTL-H1



Dungun, Terengganu

Ground-mounted Smart PV Plant
Capacity: 43.5MW
Inverter Model: SUN2000-42KTL



Kuala Ketil, Kedah

GPS Tracker PV Plant in Malaysia
Capacity: 50 MW
Inverter Model: SUN2000-42KTL



Paka, Terengganu

Ground-mounted Smart PV Plant
Capacity: 30 MW
Inverter Model: SUN2000-90KTL-H1

Case Reference



Malaysia

Capacity: 636 kWac

Inverter Model: SUN2000-100KTL-M1
SUN2000-36KTL-M3



Malaysia

Large Green Building Category in
ASEAN Energy Awards 2019 Capacity:
1 MWp

Inverter Model: SUN2000-36KTL



Malaysia

Capacity: 0.6 MW

Inverter Model: SUN2000-36KTL



Singapore

Capacity: 2.8 MWp

Inverter Model: SUN2000-36KTL



Philippines

Capacity: 604.5 kWp

Inverter Model: SUN2000-42KTL



Vietnam

Capacity: 760kWp

Inverter Model: SUN2000-36KTL

Case Reference



Taiwan
Capacity: 4.5MW
Inverter Model: SUN2000-40KTL



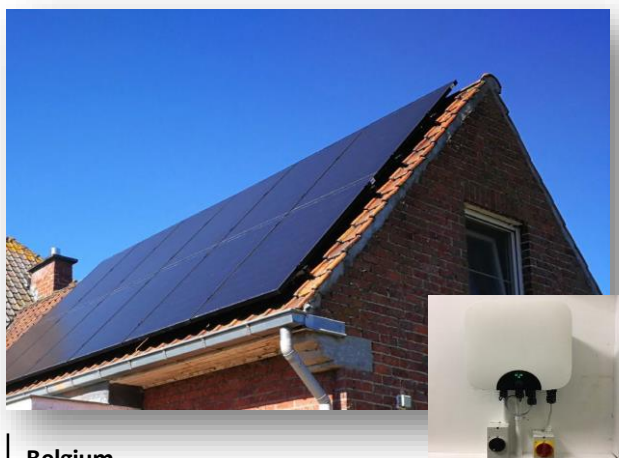
Philippines
Capacity: 15kW
Inverter Model: SUN2000-5KTL



Philippines
Capacity: 3kW
Inverter Model: SUN2000-3KTL



Hong Kong
Capacity: 5kW
Inverter Model: SUN2000-5KTL



Belgium
Capacity: 6 kWp
Inverter Model: SUN2000-4KTL



Thailand
Capacity: 5kW
Inverter Model: SUN2000-5KTL



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