Fusionsolar

Utility Smart PV & ESS Solution

HUAWEI

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About Huawei

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

Employees
207,000+

R&D Personnel
55.4%

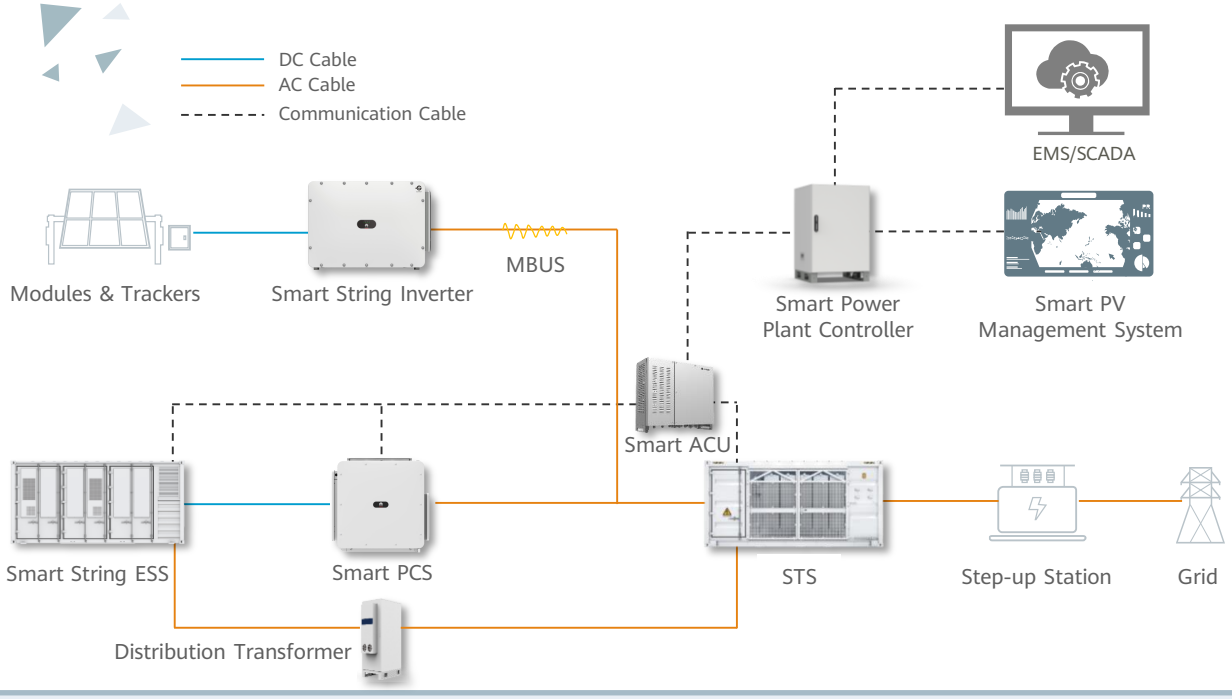
Countries
170+

Best Global Brands
86

R&D Investment
4

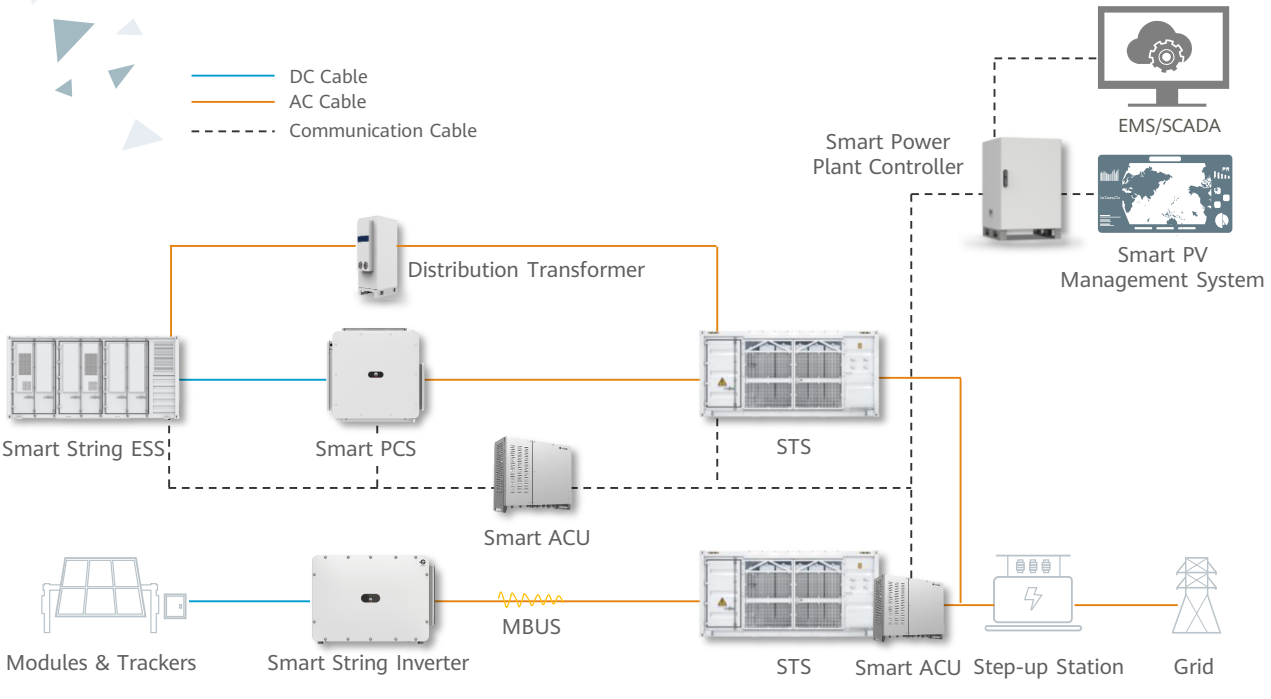
Most Innovative Companies
8

Smart PV & ESS Solution - LVAC



Optimal Investment | **Smart O&M** | **Safe & Reliable** | **Grid Supporting**

Smart PV & ESS Solution - Grid Forming



Voltage Stable | **Frequency Stable** | **Phase Angle Stable**

SUN2000-330KTL-H1
Smart String Inverter
For APAC, LATAM & EUROPE

Max. Efficiency ≥ 99.0%

Smart Connector-level Detection (SCLD)

Smart Self-cleaning Fan (SSCF)

IP66 Protection

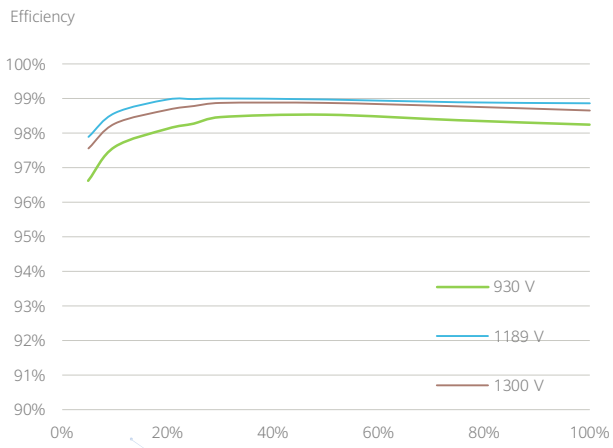
MBUS Supported

Smart String-level Disconnection (SSLD)

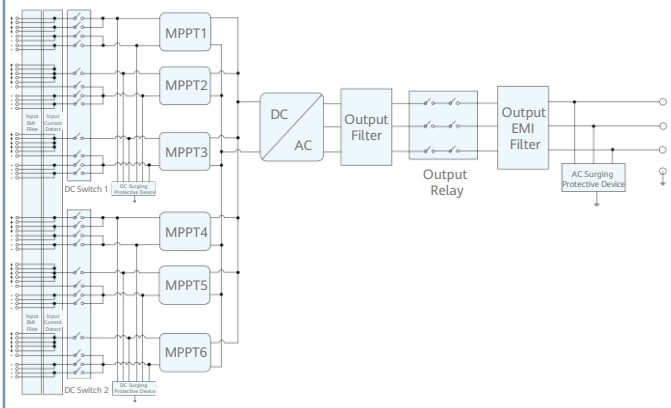
Smart IV Curve Diagnosis Supported

Surge Arresters for DC & AC

Efficiency Curve



Circuit Diagram



SUN2000-330KTL-H1

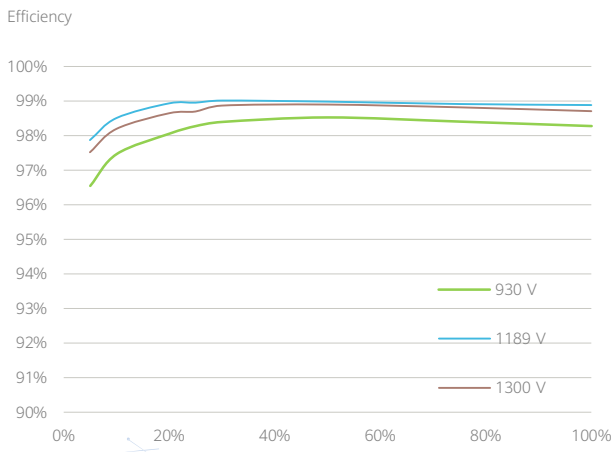
Technical Specifications

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
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	THD_i <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	HH4SMM4TMSPA / HH4SFM4TMSPA
AC Connector	Support OT / DT Terminal (Max. 400 mm^2)
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.	

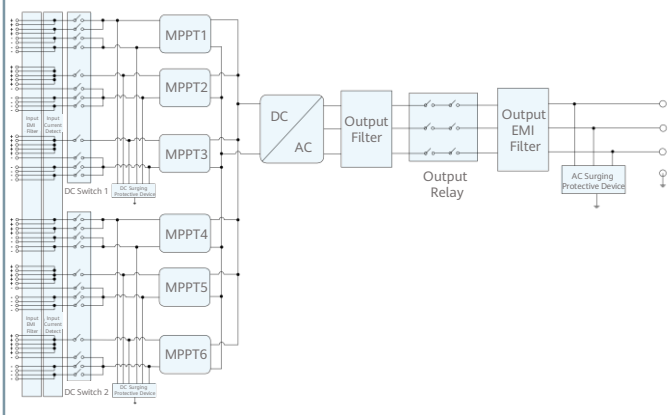
SUN2000-330KTL-H2
Smart String Inverter
For MEA, Eurasian

- 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



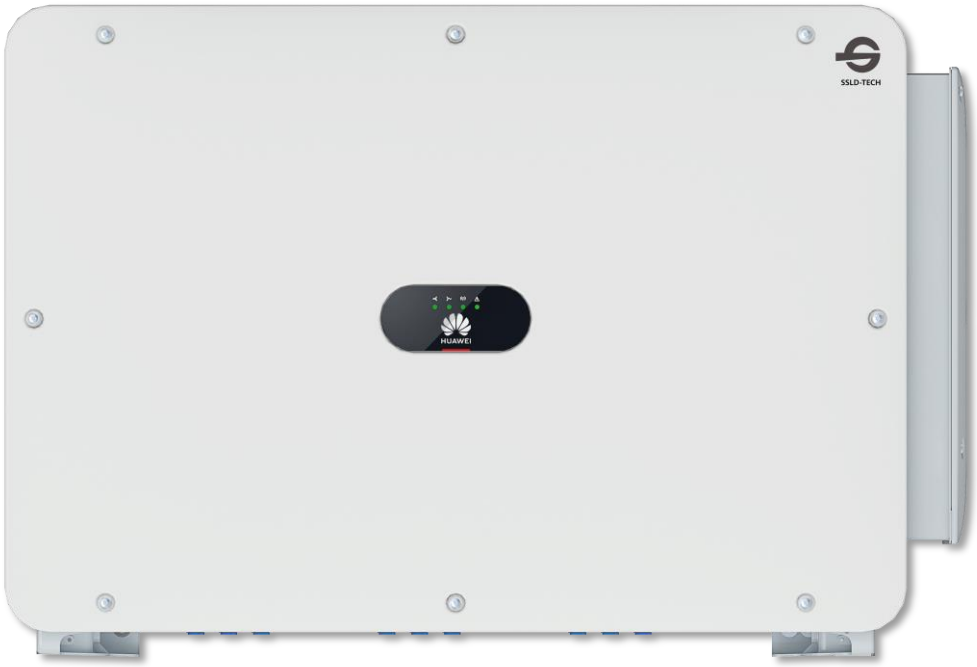
SUN2000-330KTL-H2

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	275,000 W[1]
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	198.5 A
Max. Output Current	240.3 A
Adjustable Power Factor Range	0.8 LG ... 0.8 LD
Total Harmonic Distortion	THD_i <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	HH4SMM4TMSPA / HH4SFM4TMSPA
AC Connector	Support OT / DT Terminal (Max. 400 mm^2)
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.	

1: Environmental temperature is 50°C

SUN2000-215KTL-H0
Smart String Inverter



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MPP Trackers

Max. Efficiency
≥99.0%

Smart String-level
Disconnection

Smart I-V Curve
Diagnosis Supported

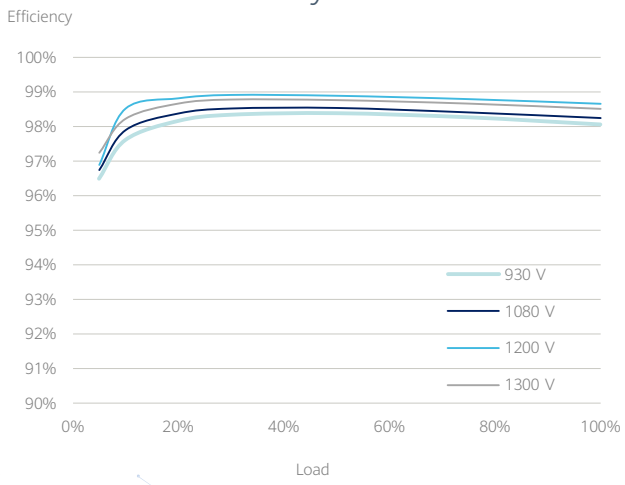
MBUS
Supported

Fuse Free
Design

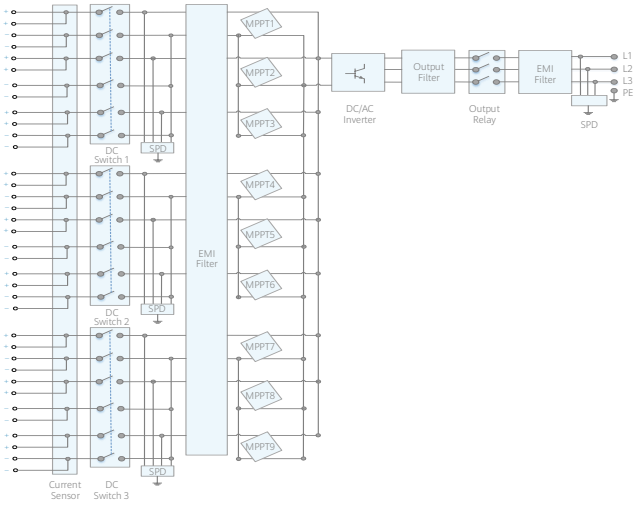
Surge Arresters for
DC & AC

IP66
Protection

Efficiency Curve



Circuit Diagram



SUN2000-215KTL-H0

Technical Specifications

Efficiency	
Max. Efficiency	99.00%
European Efficiency	98.80%
Input	
Max. Input Voltage	1,500 V
Max. Current per MPPT	30 A
Max. Short Circuit Current per MPPT	50 A
Start Voltage	550 V
MPPT Operating Voltage Range	500 V ~ 1,500 V
Nominal Input Voltage	1,080 V
Number of Inputs	18
Number of MPP Trackers	9
Output	
Nominal AC Active Power	200,000 W
Max. AC Apparent Power	215,000 VA
Max. AC Active Power (cosϕ=1)	215,000 W
Nominal Output Voltage	800 V, 3W + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Nominal Output Current	144.4 A
Max. Output Current	155.2 A
Adjustable Power Factor Range	0.8 LG ... 0.8 LD
Total Harmonic Distortion	THD_i <1% (Rated)
Protection	
Smart String-level Disconnection (SSLD)	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)	1,035 x 700 x 365 mm
Weight (with mounting plate)	≤ 86 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	MC4 EVO2
AC Connector	Support OT / DT Terminal
Protection Degree	IP66
Anti-corrosion Protection	C5-Medium
Topology	Transformerless
Standards Compliance	
IEC 62109-1/-2, IEC 62920, EN 50549-2, EN 50530, etc.	

LUNA2000-200KTL-H1
Smart PCS

Max. Efficiency 99%

Modular Design

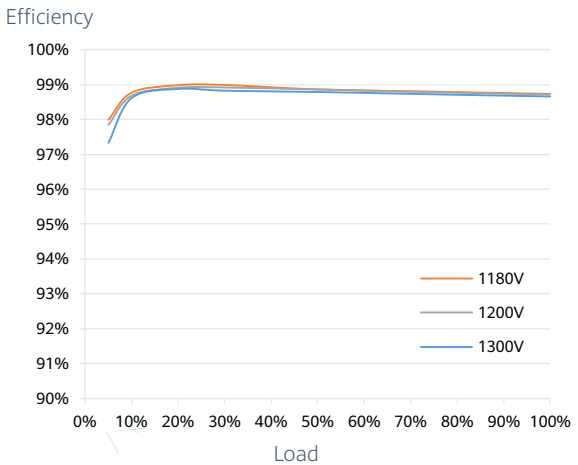
IP66 Protection

Surge Arresters for DC & AC

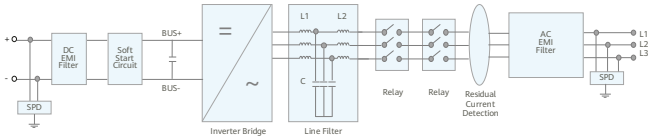
Ethernet Communication

Grid Forming

Efficiency Curve



Circuit Diagram



LUNA2000-200KTL-H1

Technical Specifications

Efficiency	
Max. Efficiency	99.01%
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	
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)
Grid Forming	Yes
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

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

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	508 kW	1,016 kW	2,032 kW
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 System	Novec 1230™ + Water Sprinkler		
Communication Interface	Ethernet / SFP		
Communication Protocol	Modbus TCP / IEC 104		
Protection Degree	IP55		
Anti-corrosion Protection	C5-Medium		
Low Voltage AC Coupling	Yes	Yes	Yes
Grid Forming	Yes	Yes	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

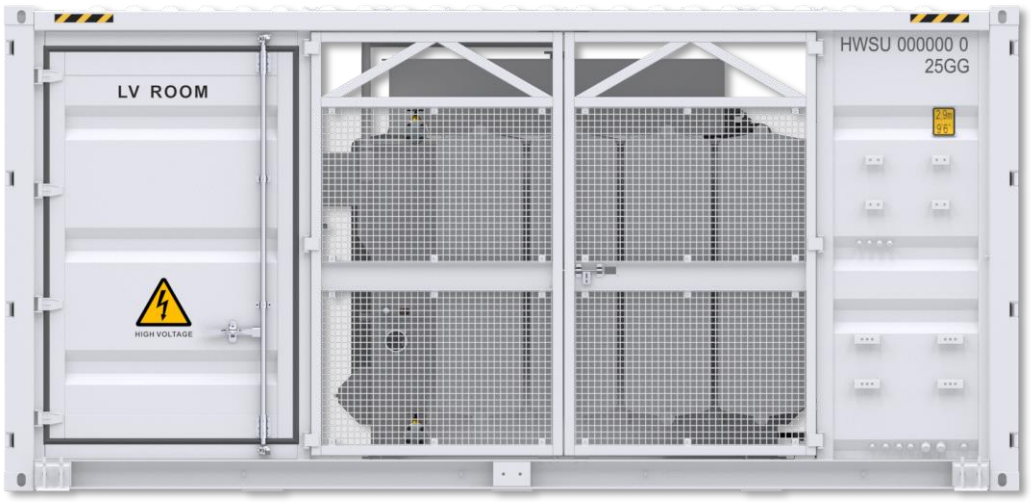
Smart Rack Controller

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-3000K-H1-GF

Smart Transformer Station

For EUROPE



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

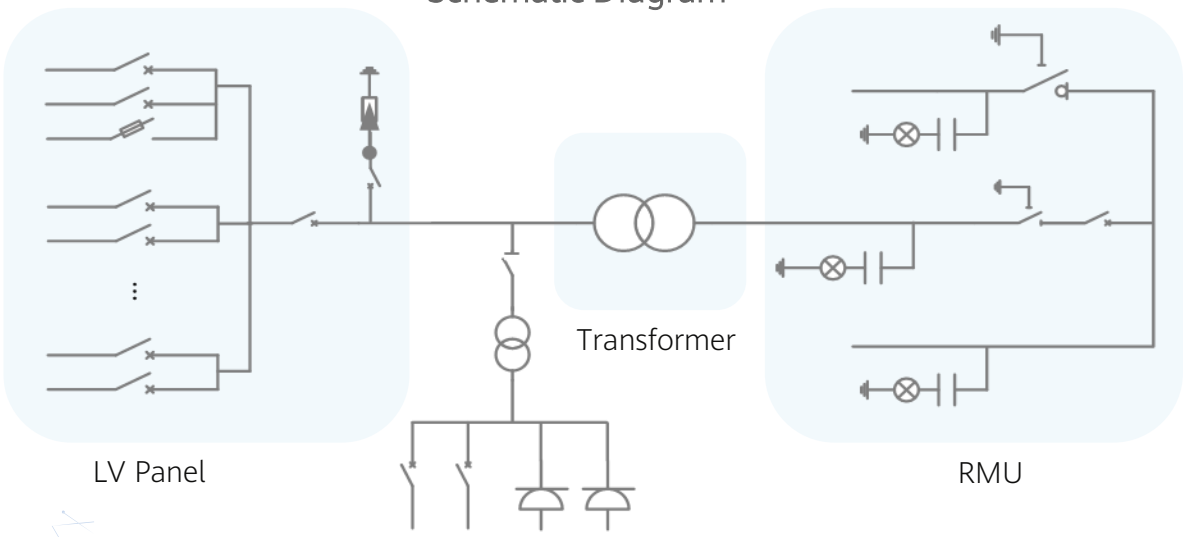
Smart

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-3000K-H1-GF

Technical Specifications

Input	
Available Inverters / PCS	LUNA2000-200KTL-H1
Maximum LV AC Inputs	38
AC Power	3,300 kVA @40℃ / 3,025 kVA @50℃ [1]
Rated Input Voltage	800 V
LV Panel Segregation	Form 2b
LV Main Switches	ACB (2,900 A, 1 x 1 pcs)
LV Main Switches for LUNA2000-200KTL-H1	MCCB (250 A, 2 x 18 pcs)
LV Main Switches for DTS-200K-D0 [2]	MCCB (250 A, 2 x 1 pcs)
Output	
Rated Output Voltage	30 kV, 33 kV, 35 kV [3]
Frequency	50 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
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 Classification of STS	IAC A 20 kA 1s
MV Relay Protection	50/51, 50N/51N
LV Overvoltage Protection	Type I+II
Anti-rodent Protection	C5-Medium
Features	
2 kVA UPS	Optional [4]
MV Surge Arrester for Transformer	Optional [4]
General	
Dimensions (W x H x D)	6,058 x 2,896 x 2,438 mm (20' HC ISO Container)
Weight	< 23 t
Operating Temperature Range	-25℃ ~ 60℃ [5]
Relative Humidity	0% ~ 95% (Non-condensing)
Max. Operating Altitude	1,000 m [6]
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 Smartlogger3000B
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: If no DTS, pls connect more PCS accordingly.
3: Rated output voltage from 10 kV to 35 kV, more available upon request
4: Extra expense needed for optional features which standard product doesn't contain, more options upon request.
5: When ambient temperature ≥55℃, awning shall be equipped for STS on site by customer.
6: For higher operating altitude, pls consult with Huawei.

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

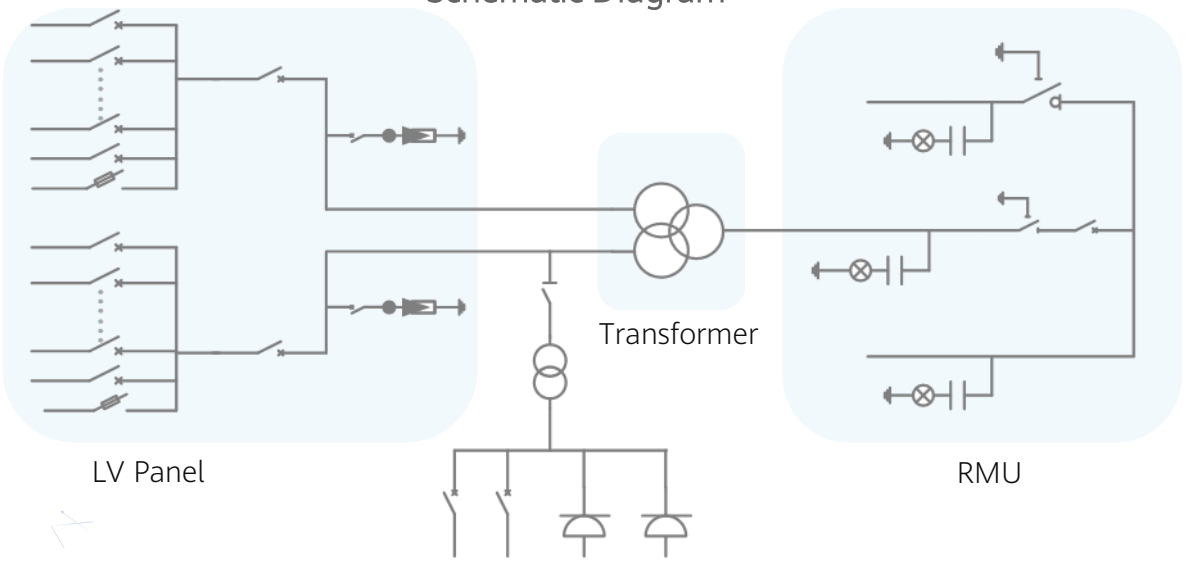
Smart

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



Technical Specifications

Technical Specifications	JUPITER-9000K-H1	JUPITER-6000K-H1	JUPITER-3000K-H1
Input			
Available Inverters / PCS	SUN2000-330KTL-H1 / SUN2000-330KTL-H2 / LUNA2000-200KTL-H1		
Max. LV AC Inputs	30	22	11
AC Power	9,000 kVA @40℃ [1]	6,600 kVA @40℃ [1]	3,300 kVA @40℃ [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 Inverters / PCS	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-rodent Protection	C5-Medium		
Features			
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℃ ~ 60℃ [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℃, awning shall be equipped for STS on site by customer.
5: For higher operating altitude, pls 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

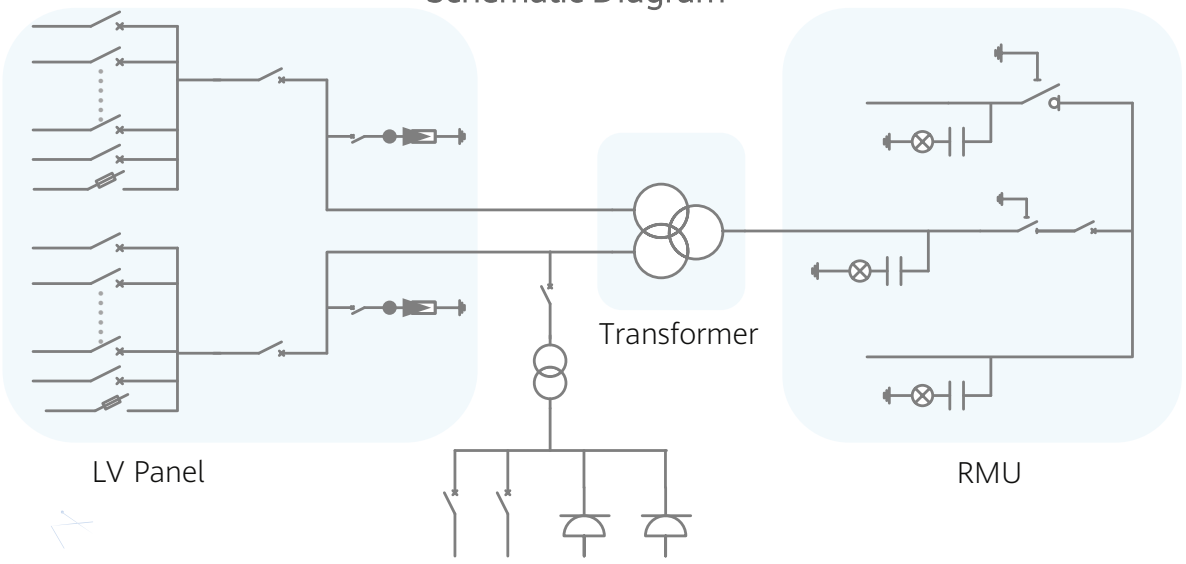
Smart

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-H0		
Max. LV AC Inputs	44	34	17
AC Power	9,000 kVA @40℃ [1]	6,800 kVA @40℃ [1]	3,400 kVA @40℃ [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-H0	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, li0	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-rodent 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 ISO Container)		
Weight	< 28 t	< 22 t	< 15 t
Operating Temperature Range	-25℃ ~ 60℃ [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℃, awning shall be equipped for STS on site by customer.
5: For higher operating altitude, pls 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

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	± 2 x 2.5%
Transformer Winding	Al
Transformer Insulation Class	H
Transformer Impedance (at 145°C)	4% (±10%) @50Hz / 4.8% (±10%) @60Hz
Transformer No-load Loss	≤ 500 W (+15%)
Transformer Load Loss	≤ 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℃ ~ 55℃
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	

SPPC2000
Smart Power Plant Controller
For APAC & LATAM

SPPC2000

SmartController (inside SPPC2000)

Current/Voltage Real-time High-precision Sampling

Independent Dual-CPU

Station Power Control with High Precision and Reliability

Power Oscillation Damping (POD)[1]

Technical Specifications	SPPC2000-A01	SPPC2000-A02
Device Management		
Max. Number of Manageable Arrays	One Supports 64 Arrays (About 500 MW)	
Features		
Active Power Control	Active Power Control with Dynamic or Fixed Setpoints	
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 (Active and Reactive Power)	Control the Active/Reactive Power Up and Down Ramp Rates	
Cooperative Control of PV and ESS	Yes	
Power Oscillation Damping (POD)	Yes, 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)	
Circuit Breaker Status Acquisition and Control	Control Substations Disconnection and Connection	
Simulation Model	PSSE, DIgSILENT, PSCAD	
PT/CT Accuracy	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		
LED	Yes	
WEB	Yes	
Management System	Smart PV 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)	

1: Available time January 30, 2024

SmartACU2000D
Smart Array Controller

With SmartPID2000 Module

Without SmartPID2000 Module

Smart

Support one-click commissioning
Patented anti-PID module

Simple

SmartPID2000 & Smartlogger3000B
pre-installed with multiple interfaces

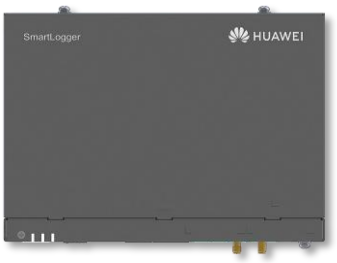
Reliable

Industrial-level application
and high reliability

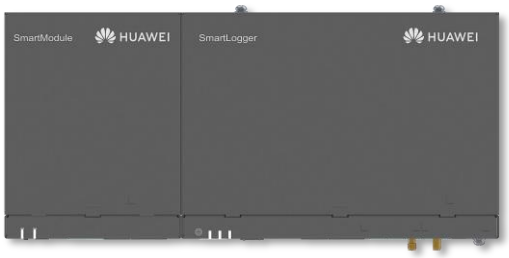
Technical Specifications	SmartACU2000D-D-06	SmartACU2000D-D-00	SmartACU2000D-D-02	SmartACU2000D-D-01	SmartACU2000D-D-03
Configuration					
SmartLogger	SmartLogger3000B x 1				
SmartModule1000A	Optional				Standard with 1
Ethernet	14	1 or 3 (with a SmartModule1000A) or 6 (with a SmartModule1000A and a five-port switch)			
RS485	COM x 6, 1,200 / 2,400 / 4,800 / 9,600 / 19,200 / 115,200 bps				
Optical Ethernet	SFP x 10, 100 / 1,000 Mbps	SFP x 2, 100 / 1,000 Mbps			
Number of MBUS Module [1]	0	1	2	1	2
Number of SmartPID2000	0	0	0	1	2
SmartIMD Function	-			Optional	
Environment					
Operating Temperature Range	-40°C ~ 60°C				
Relative Humidity	4% ~ 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, Optional: 24 V DC[2]				
Mechanical					
Cable Entries	Bottom in & out				
Maintenance	Front				
Dimensions (W x H x D)	640 x 770 x 315 mm			880 x 770 x 369 mm	
Weight	32 kg	29 kg	32 kg	49 kg	61 kg
Protection Degree	IP65				
Installation Options	Wall Mounting, Rack Mounting, Pole Mounting				

1: Compatible with communication mode of PLC (Power Line Communication).
2: 24 V DC power supply is optional to power devices that require 24 V DC input and output.

SmartLogger3000B



Without SmartModule1000A



With SmartModule1000A

Smart

Connecting up to 200 devices,
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 String Inverters [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 string inverter 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.

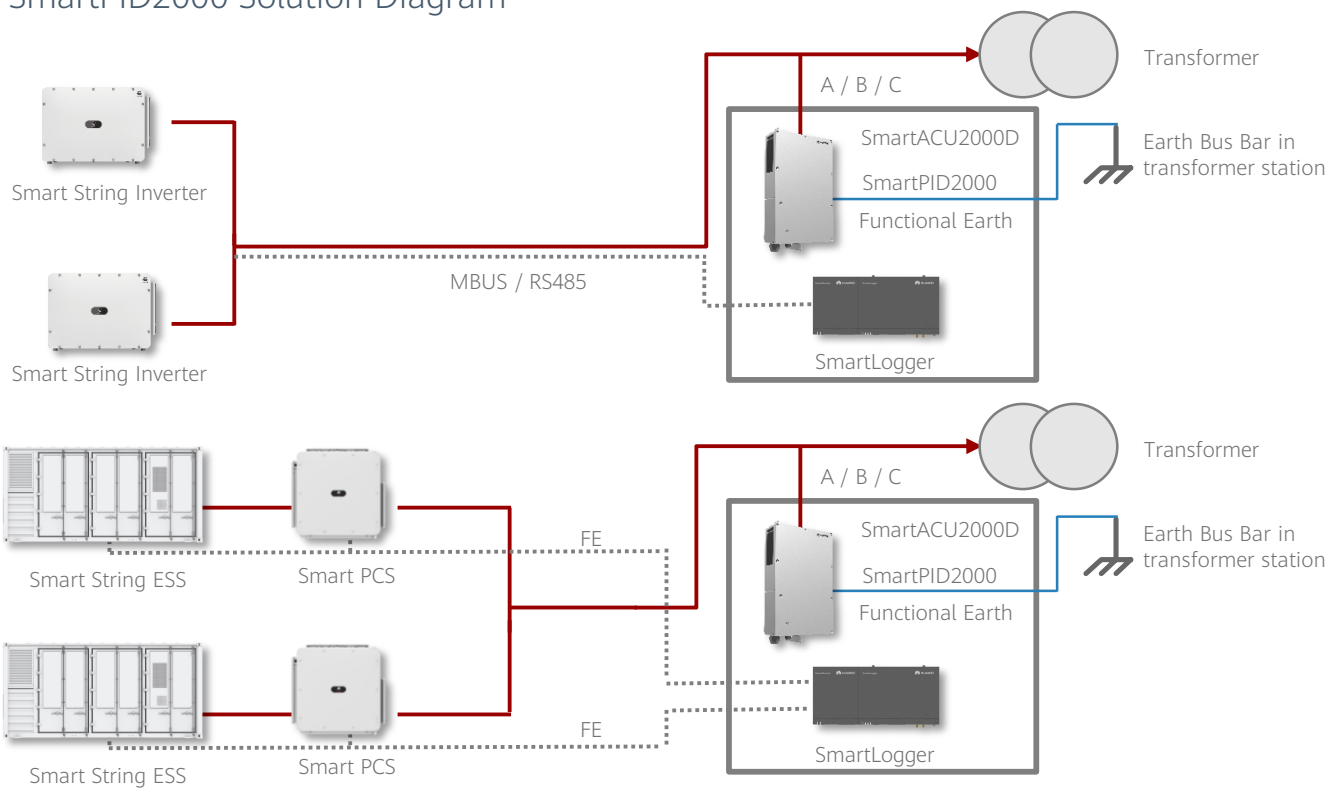
Smart

Data read and software upgrade through USB or the embedded Web

Safe & Reliable

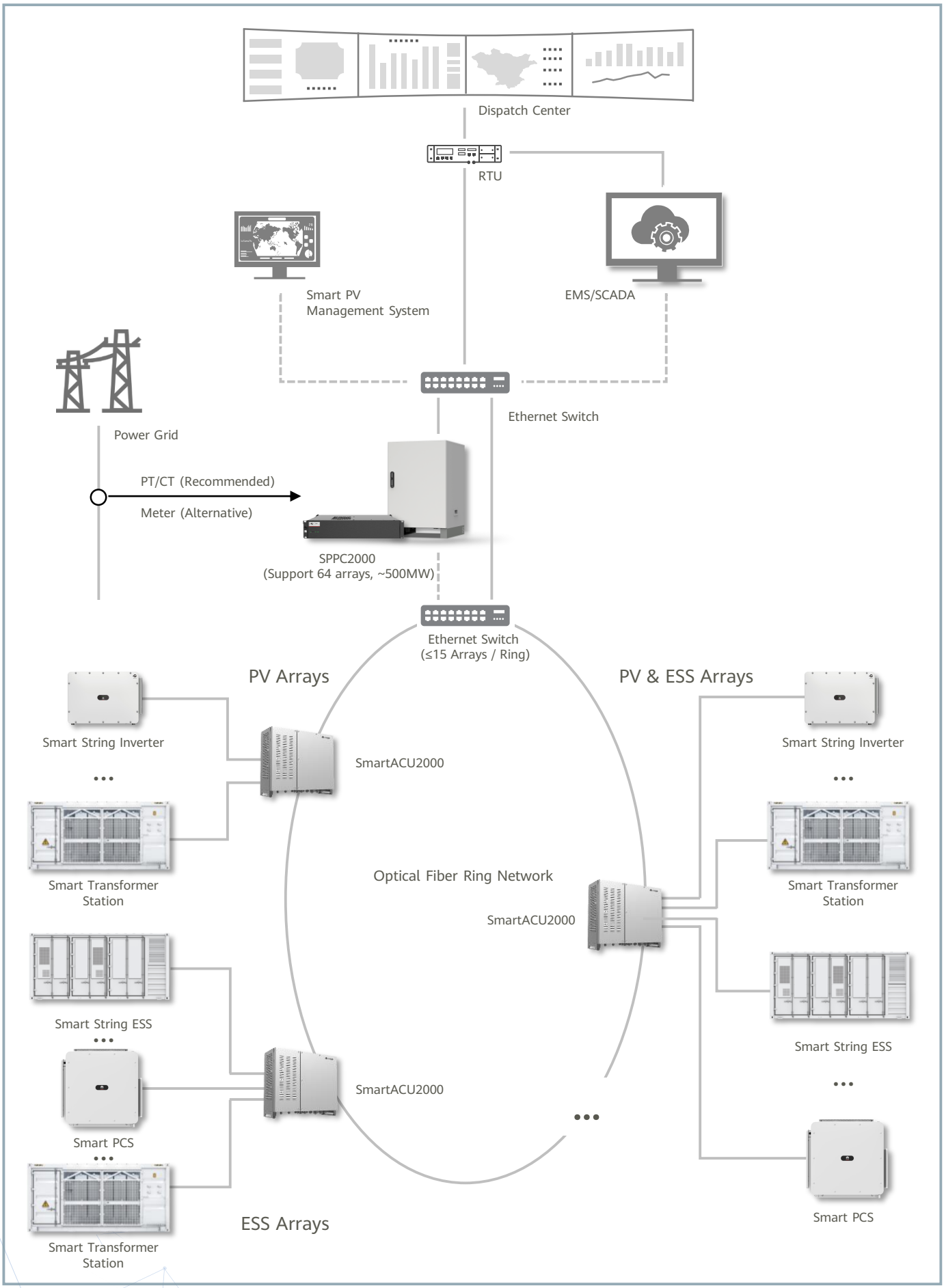
Anti-PID with higher safety by injecting LV AC voltage to earth
Continuous DC & AC insulation detection with optional SmartIMD

SmartPID2000 Solution Diagram



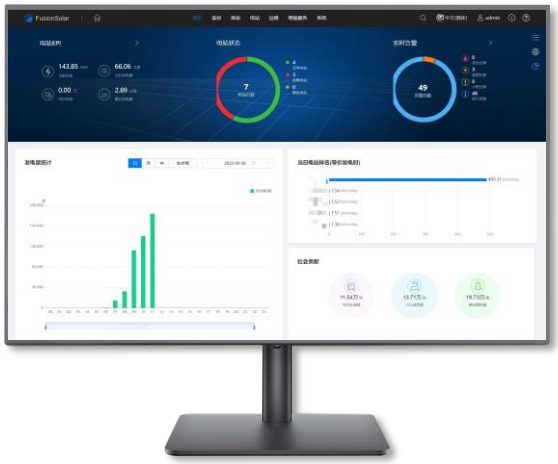
Note:
1 - The SmartPID module could ONLY be deployed in utility scenarios where the LV sides of transformer stations are IT system.
2 - The SmartPID module must work with FusionSolar SmartLoggers and smart string inverters / smart PCS.

Network Applications



*For details about the project configuration and sales area, contact Huawei engineers.

Smart PV Management System



Refined

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

Efficient

- Alarm classification and providing handling advice
- Check the status of the power station per APP

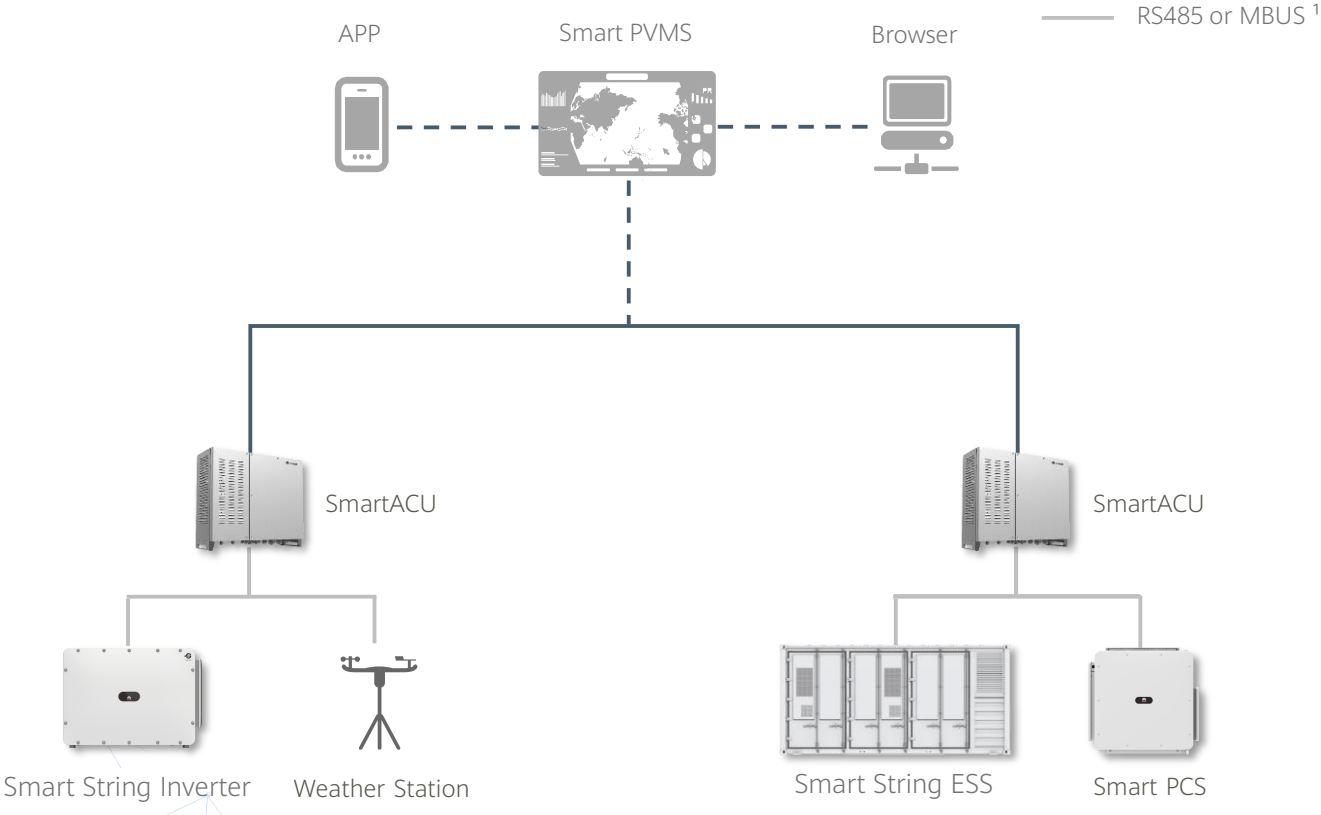
Safe

- ESS Early warning of thermal runaway, minimizing the risk

Friendly

- Unified management of power stations
- 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

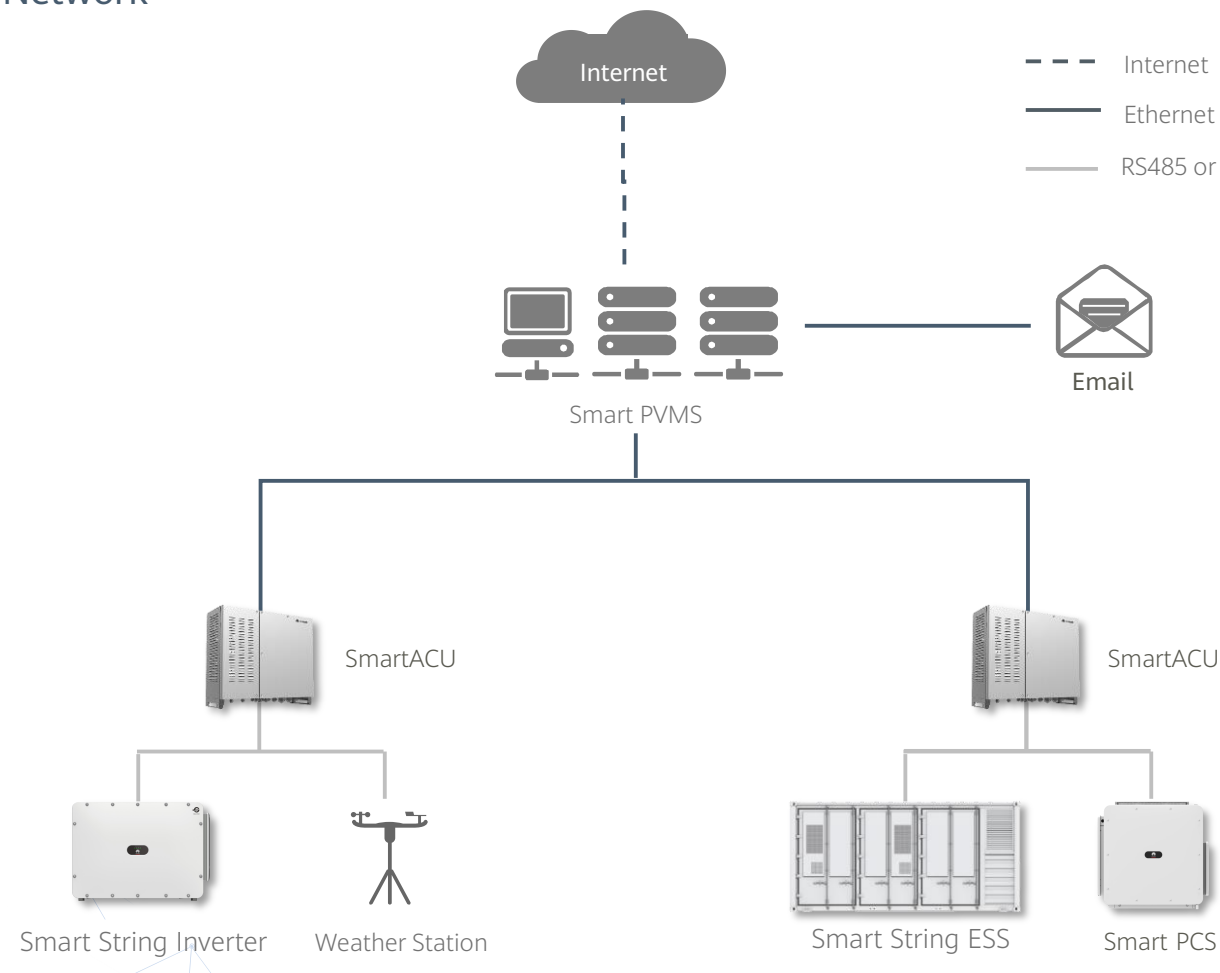
Efficient

Quick location of abnormal strings
Fault alarms via E-mail

Simple

Quick Construction
3D View of ESS

Network



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℃ ~ 40℃
Dimensions (H x W x D)	86.1 x 447 x 748 mm
Weight	29 kg
Certification	CE, UL, FCC, CCC, RoHS

Smart PVMS Server Premium Version

30000 Equivalent devices supported

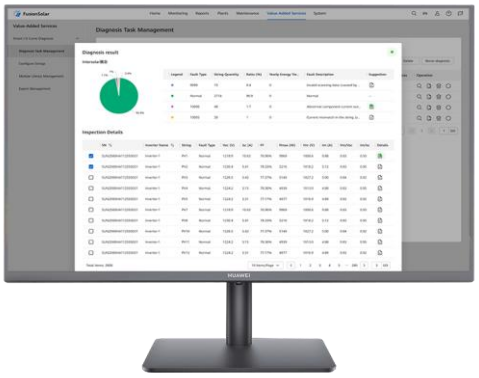
Software pre-installation, saving installation time by 70%

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℃ ~ 40℃
Dimensions (H x W x D)	86.1 x 447 x 748 mm
Weight	30 kg
Certification	CE, UL, FCC, CCC, RoHS

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.



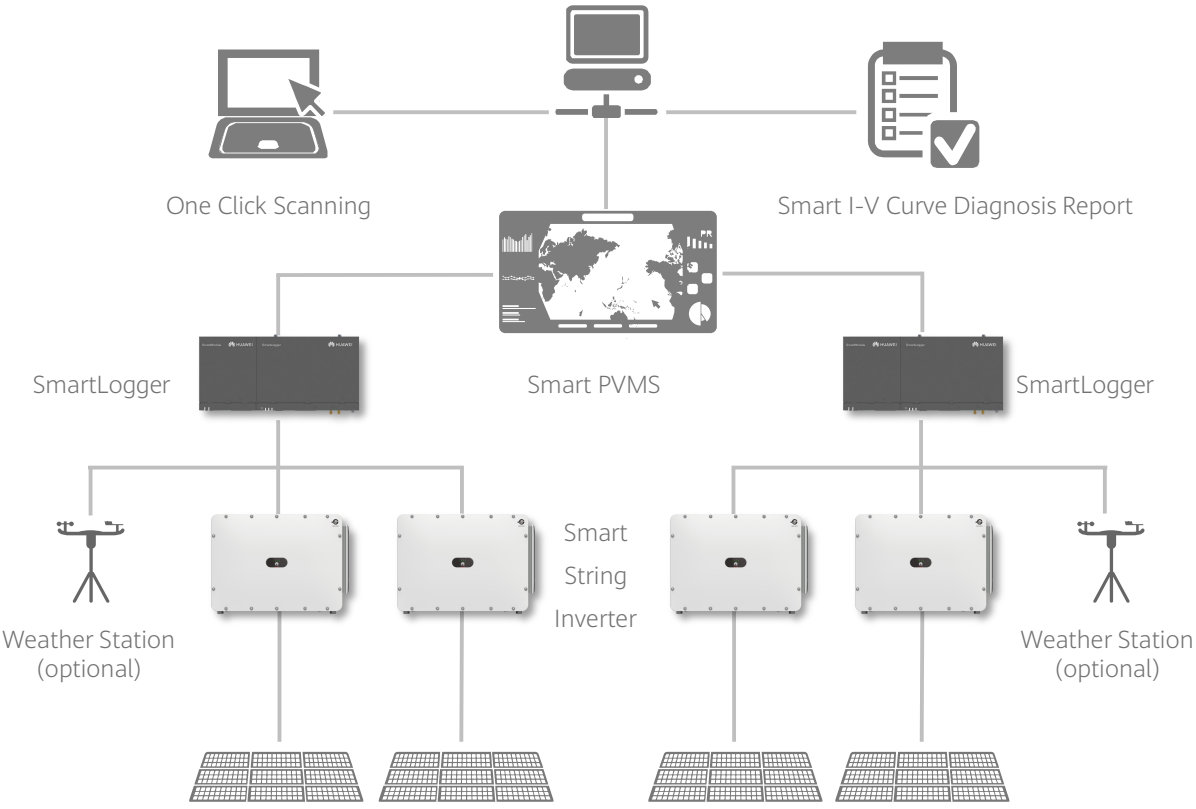
Smart

- Support plant-level, array-level and inverter-level analysis and diagnosis
- Support scheduled scanning and proactive presentation of reports
- Automatically identify different failure types and provide recovery suggestion
- Support export of ROI estimation reports and assist in accurate O&M

Efficient

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

Network Structure



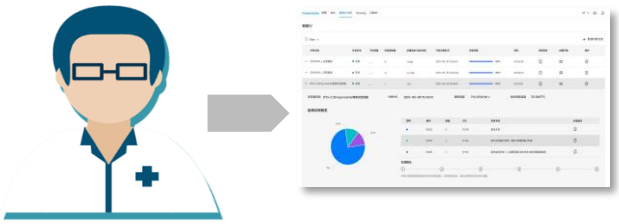
Smart I-V Curve Diagnosis

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 Verified by TÜV

String-level Management

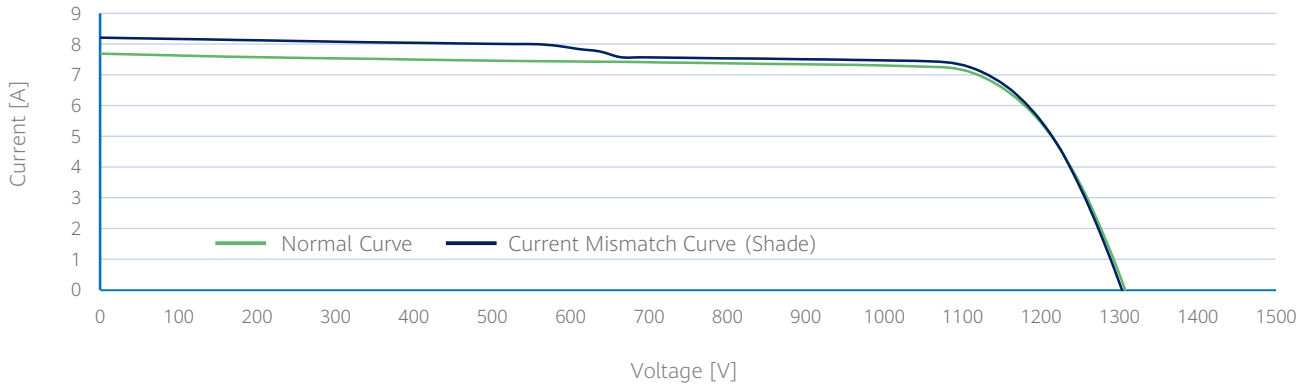
Real Time Detection

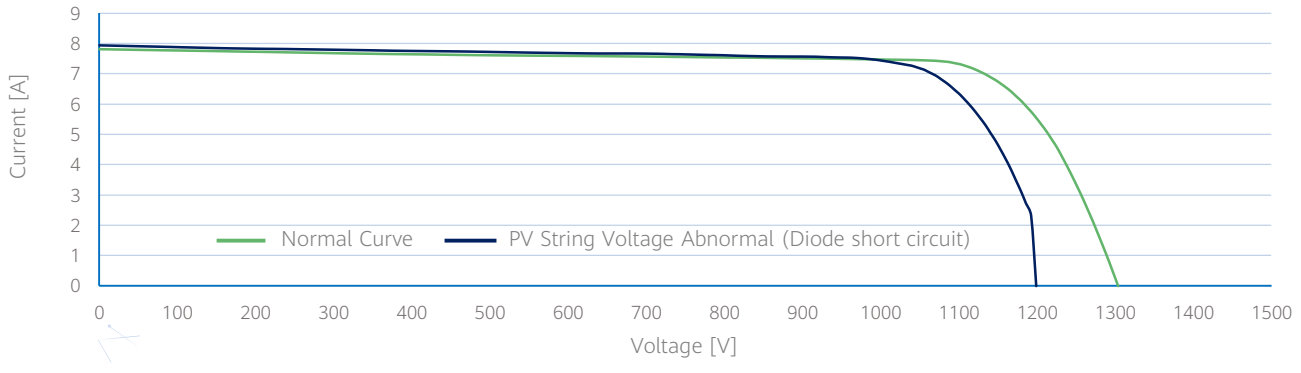
Smart I-V Curve Diagnosis



Fault Analysis

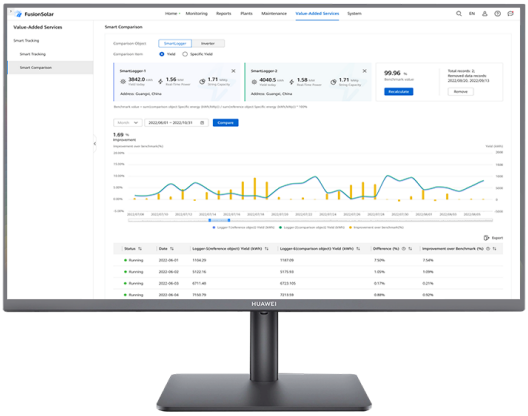
String I-V Curve Comparison





Smart Tracker Control Algorithm (SDS)

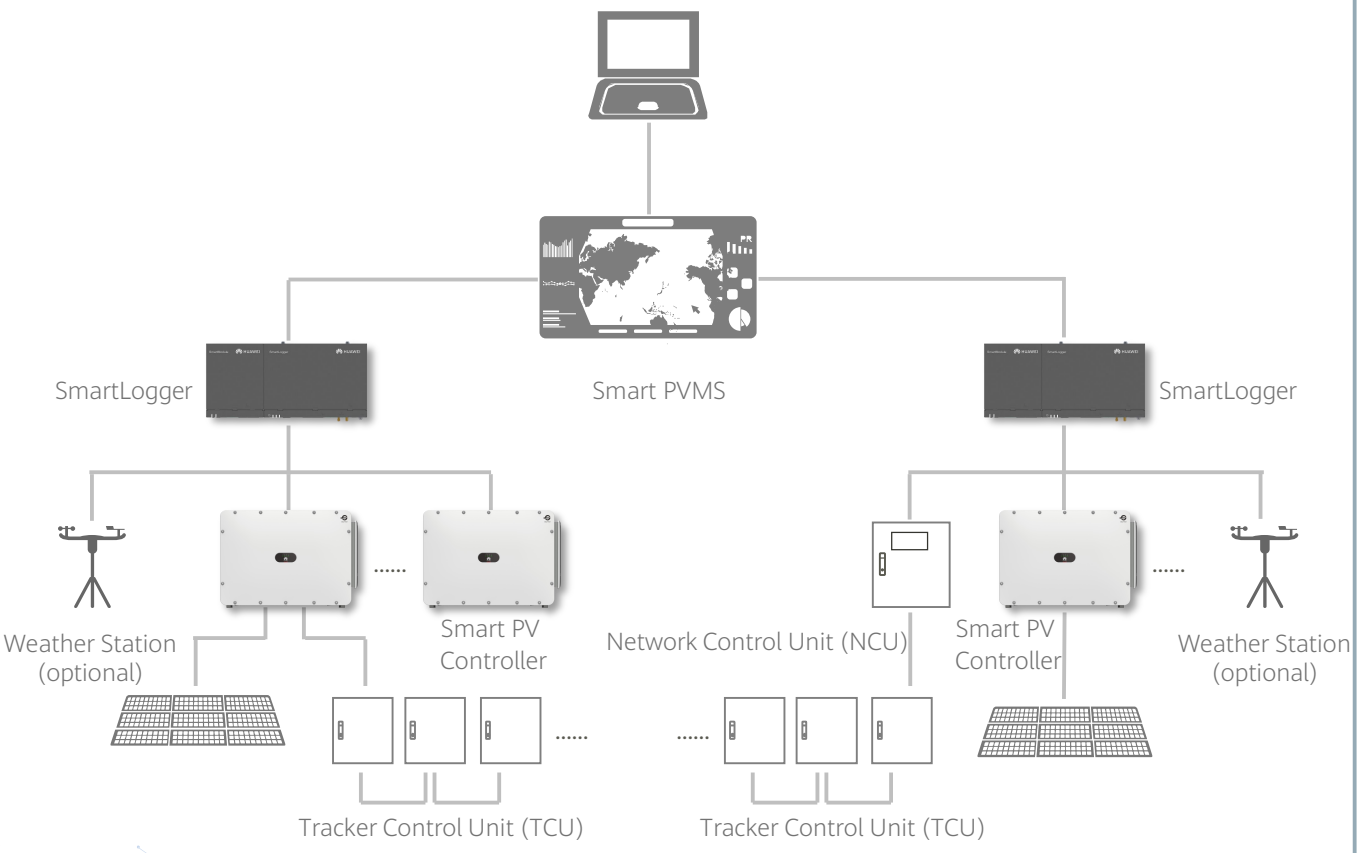
Smart Tracker Control Algorithm (SDS) is a valuable software based and closed-loop control. By using the SDS, together with Smart PVMS, SmartLogger and SUN2000 inverters, the trackers' angle can be automatically controlled and optimally adjusted to achieve higher yields. The yields can be increased by ~1% especially in complex terrain and weather scenarios, and it will bring higher revenue to the customer.



- System level closed-loop control to keep the system operating in the state of maximum irradiation and optimal power output of PV module

- Automatic tracking angle optimization and control by using AI technology, automatic sensing of shading and weather information. No need for additional sensing equipment, free from manual and empirical dependence

Network Structure

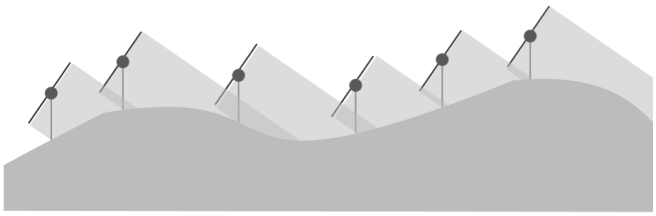
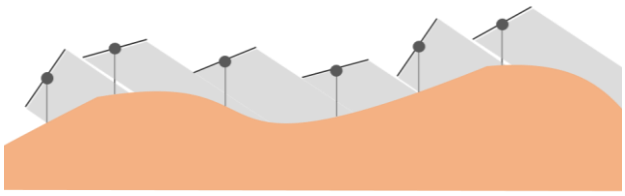


Smart Tracker Control Algorithm (SDS)

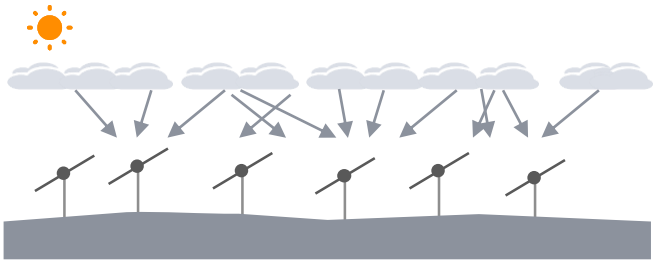
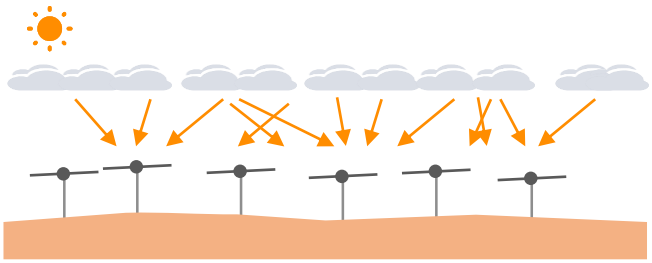
Technical Specifications	
Smart String Inverter	SUN2000-215KTL-H0, SUN2000-215KTL-H3...
Data Logger	SmartLogger3000 series...
Management System	Smart PVMS
Tracking Angle Accuracy	0.5°
	Smart Tracker Control Algorithm Verified by TÜV

Comparison of Tracker Algorithms and Angles

Reverse-tracking stage in the morning and at dusk

Traditional Tracker Algorithm	Smart Tracker Control Algorithm
Shadows in the front and back rows of modules, without consideration of complex terrain	The SDS algorithm allows trackers to find the optimal angle for each, effectively avoiding shadow occlusions.
	

Cloudy and rainy days

Traditional Tracker Algorithm	Smart Tracker Control Algorithm
Tracking the angle of the sun is not the best way to get maximum irradiation when without consideration that direct sunlight becomes diffuse reflection in this scenario.	Trackers are flattened at a small angle to receive more diffuse light, so as to get maximum irradiation.
	

Success Cases

400 MW PV + 1.3 GWh BESS

World's largest microgrid in Saudi Arabia

Solution Configuration

- 1890 x SUN2000-200KTL-H2
- 1318 x LUNA2000-200KTL-H1
- 605 x LUNA2000-2.0MWH-4H1
- 2 x LUNA2000-1.0MWH-1H1
- 30 x JUPITER-9000K-H0, 6 x STS-3000K-H1

COD: Dec., 2022 *(Phase I)*
Location: Saudi Arabia

0.7 MW PV + 1MWh BESS

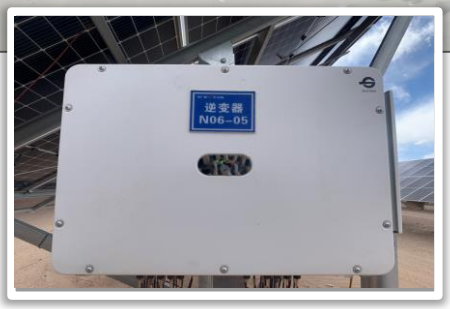
Enterprise green power supply & disaster back up

Solution Configuration

- 5 x SUN2000-125KTL-JPH0
- 1 x LUNA2000-1.0MWH-1H1
- 3 x LUNA2000-100KTL-NHH1

COD: Dec, 2022
Location: Japan

Success Cases



150MW

Ali "Zero Carbon" High Land Project

Solution Configuration

- 500 x SUN2000-300KTL-H0

COD: Dec, 2022
Location: Tibet, China

200MW

Tianmen Chen Lake Fishery and PV Integration Project

Solution Configuration

- 667x SUN2000-300KTL-H0

COD: Dec, 2022
Location: Hubei, China

Success Case

25MW/50MWh

First Large Scale String Inverter + String Energy Storage Demonstration Project in Hainan

Solution Configuration

- 25 x LUNA2000-2.0MWH-2H1
- 125 x LUNA2000-200KTL-H0

COD: Apr, 2022
Location: Hainan, China

115MW/146MWh

Spinning Reserve, Frequency Regulation

Solution Configuration

- 73 x LUNA2000-2.0MWH-1H1
- 575 x LUNA2000-200KTL-H0

COD: Nov, 2022
Location: Singapore

HUAWEI TECHNOLOGIES CO., LTD.

Huawei Industrial Base, Bantian Longgang
Shenzhen 518129, P.R. China
Tel: 400-822-9999
Solar.Huawei.com