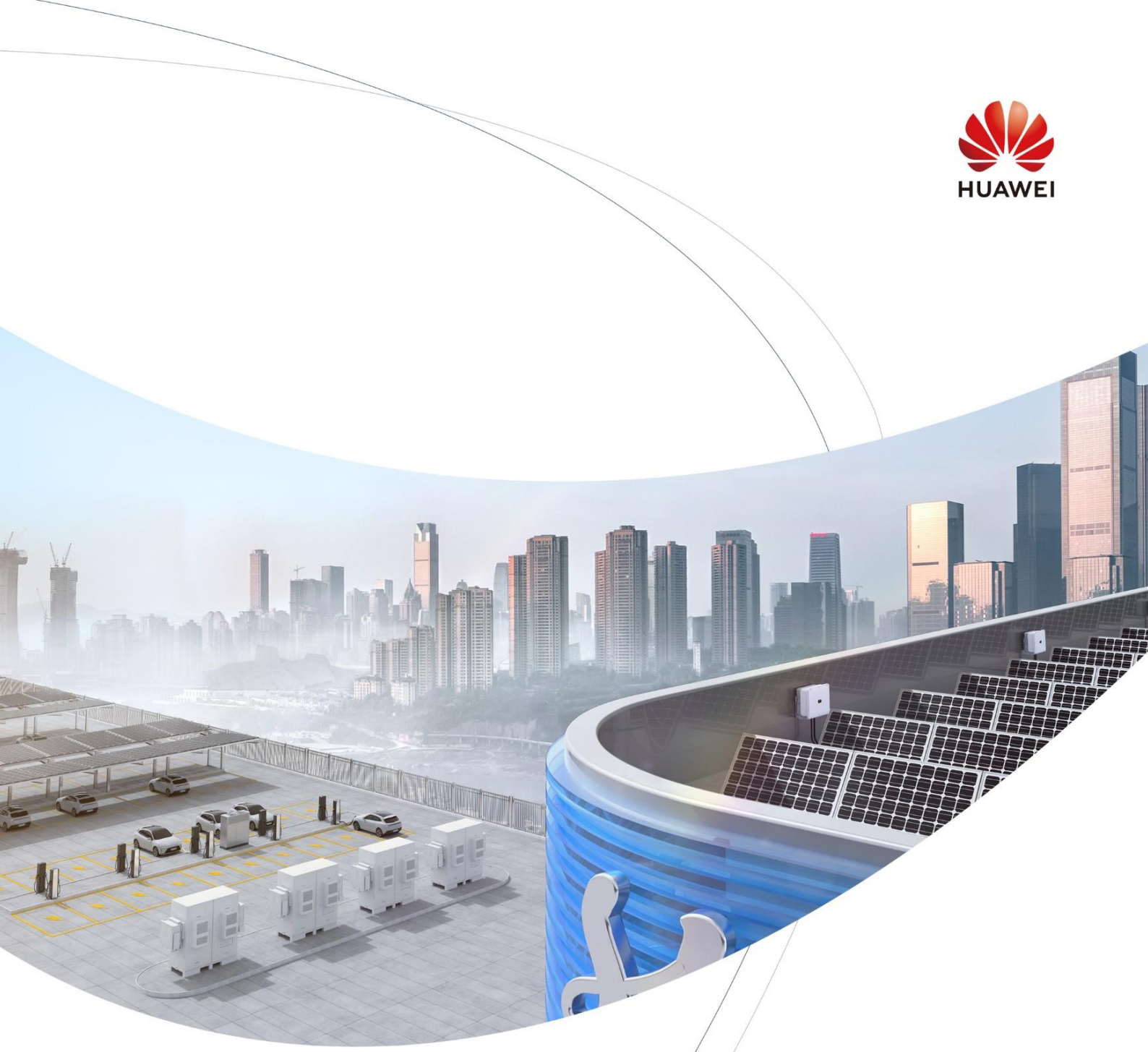


FusionSolar Commercial & Industrial Smart PV Solution

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
53.4%

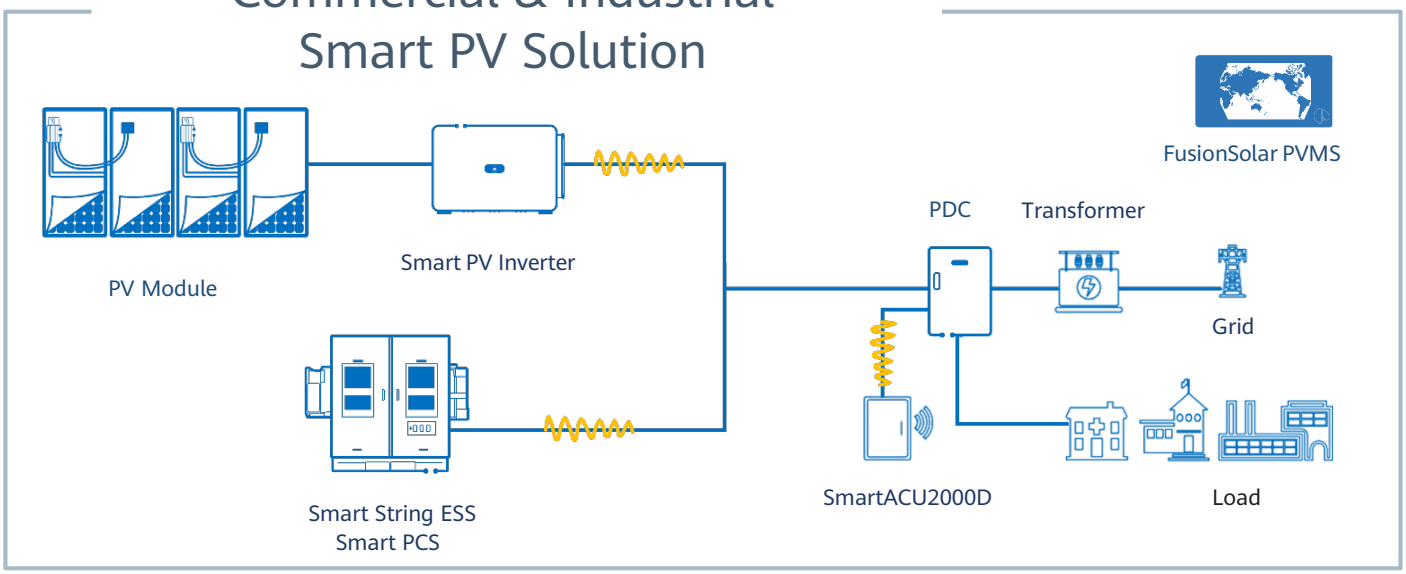
Countries
170+

Brands Global Brands
86

R&D Investment
4

Most Innovative Companies
8

Commercial & Industrial Smart PV Solution



Active Safety	Higher Yields	Maintenance Free
Level 4 AFCI, ahead in the industry 0V voltage shutdown 4 layer protections	2 Strings per MPPT, More Energy Yields Built-in PID Recovery, Secure Better Module Performance	No Fuse & Other Quick-wear Parts, Inverter Touch Free Online Smart I-V Curve Diagnosis, Module Touch Free

SUN2000-12/15/17/20/25KTL-M5

Smart PV Controller

Active Safety

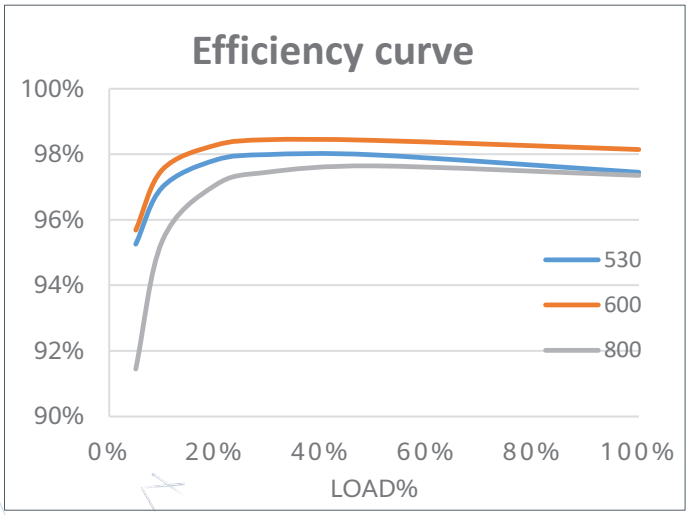
AI Powered Arcing Protection

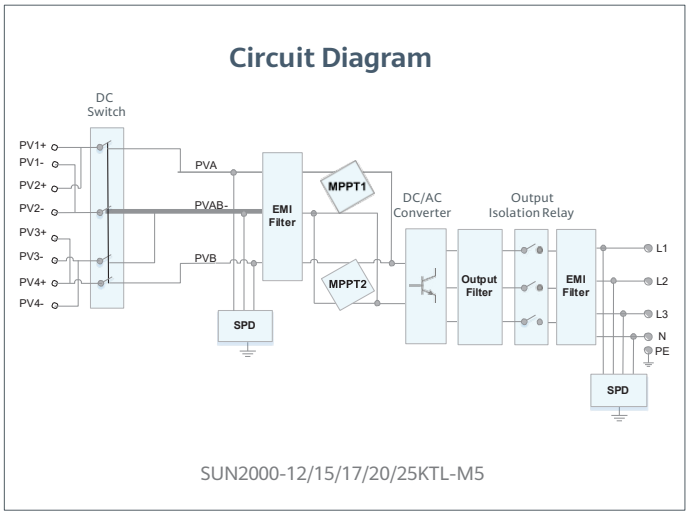
Higher Yields

Up to 30% More Energy with Optimizer

Flexible Communication

WLAN, Fast Ethernet, 4G Communication Supported





SUN2000-12/15/17/20/25KTL-M5

Technical Specification

Technical Specification	SUN2000 -12KTL-M5	SUN2000 -15KTL-M5	SUN2000 -17KTL-M5	SUN2000 -20KTL-M5	SUN2000 -25KTL-M5
Efficiency					
Max. efficiency	98.4%	98.4%	98.4%	98.4%	98.4%
European weighted efficiency	97.9%	98.0%	98.1%	98.1%	98.2%
Input					
Recommended max. PV power [1]	18,000 Wp	22,500 Wp	25,500 Wp	30,000 Wp	37,500 Wp
Max. input voltage [2]	1100 V				
Full-load MPPT voltage range	370V~800V	410V~800V	440V~800V	480V~800V	530~800V
MPPT Operating voltage range [3]	200 V ~ 1000 V				
Start-up voltage	200 V				
Rated input voltage	600 V				
Max. input current per MPPT	30 A (two string) / 20 A (single string)				
Max. short-circuit current	40 A				
Number of MPP trackers	2				
Max. number of inputs	4				
Output					
Grid connection	Three phase				
Rated output power	12,000 W	15,000 W	17,000 W	20,000 W	25,000 W
Max. apparent power	13,200 W	16,500 VA	18,700 VA	22,000 VA	27,500 VA
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 239.6 Vac / 415Vac, 3W + N + PE				
Rated AC grid frequency	50 Hz / 60 Hz				
Max. output current	18.2A/380Vac 17.3A/400Vac 16.7A/415Vac	25.2A/380Vac 23.9A/400Vac 23.1A/415Vac	28.6A/380Vac 27.1A/400Vac 26.1A/415Vac	33.6A/380Vac 31.9A/400Vac 30.8A/415Vac	42.0A/380Vac 39.9A/400Vac 38.5A/415Vac
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3 %				
Features & Protections					
Overvoltage Category	PV Ⅱ/AC Ⅲ				
Input-side disconnection device	Yes				
Anti-islanding protection	Yes				
AC over-current protection	Yes				
DC reverse-polarity protection	Yes				
String fault detection	Yes				
DC surge protection	TYPE II				
AC surge protection	CLASS II				
Residual current monitoring unit	Yes				
Arc fault protection	Yes				
Ripple control ripple control	Yes				
Integrated PID recovery [4]	Yes				
General Data					
Operation temperature range	-25 ~ + 60 °C (-13 °F ~ 140 °F)				
Relative humidity	0 % RH ~ 100% RH				
Max. operating altitude	0 ～ 4,000 m (13,123 ft.) (Derating above 2000 m)				
Cooling	Smart air cooling				
Display	LED Indicators; Integrated WLAN + FusionSolar App				
Communication	RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional)				
Weight (with mounting plate)	21kg (46.4 lb)				
Dimensions (W x H x D) (incl. mounting plate)	546 x 460 x 228mm (21.5 x 18.1 x 9.0 inch)				
Degree of protection	IP66				
DC Connector	Staubli MC4				
Optimizer Compatibility					
DC MBUS compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P,MERC-1100W/1300W-P				
Standard Compliance (more available upon request)					
Safety	EN/IEC 62109-1, EN/IEC 62109-2				
Grid connection standards	G99, EN 50549, CEI 0-21, CEI 0-16, VDE-AR-N-4105, VDE-AR-N-4110, C10/11, ABNT, VFR 2019, UNE 217001, UNE 217002, RD 244, TOR D4, IEC61727, IEC62116				

*1 Inverter max input PV power is 40,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.
*2 The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.
*3 Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
*4 SUN2000-12~20KTL-M2 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly)

SUN2000-30/36/40KTL-M3

Smart PV Controller

Smart

8 strings intelligent monitoring

Efficient

Max. efficiency 98.7%

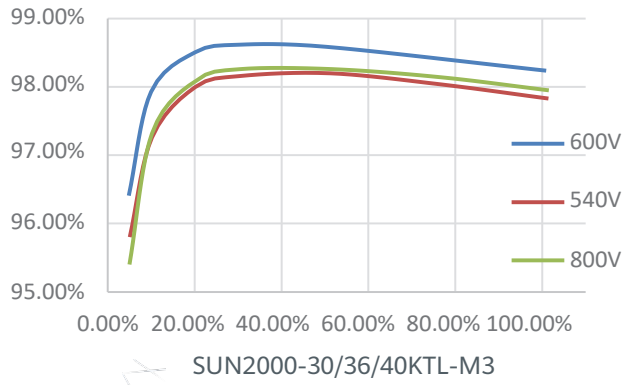
Safe

Fuse free design

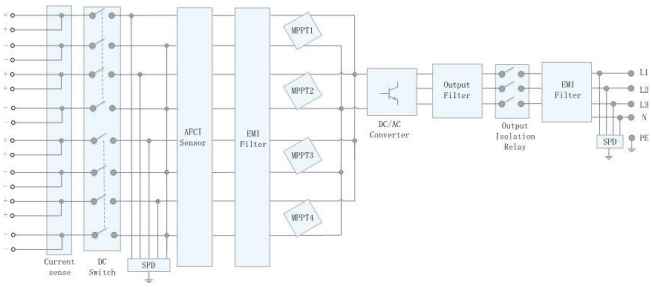
Reliable

Type II surge arresters for DC & AC

Efficiency Curve



Circuit Diagram



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 [3]	40,000 VA	44,000 VA
Rated Output Voltage	230 Vac / 400 Vac / 480 Vac, 3W/N+PE		
Rated AC Grid Frequency	50 Hz / 60 Hz		
Rated Output Current	43.3 A	52.0 A	57.8 A
Max. Output Current	47.9 A	58.0 A	63.8 A
Adjustable Power Factor Range	0.8 LG ... 0.8 LD		
Max. Total Harmonic Distortion	< 3%		
Protection			
Input-side Disconnection Device	Yes		
Anti-islanding Protection	Yes		
AC Overcurrent Protection	Yes		
DC Reverse-polarity Protection	Yes		
PV-array String Fault Monitoring	Yes		
DC Surge Arrester	Yes		
AC Surge Arrester	Yes		
DC Insulation Resistance Detection	Yes		
Residual Current Monitoring Unit	Yes		
Arc Fault Protection	Yes		
Ripple Receiver Control	Yes		
Integrated PID Recovery [3]	Yes		
Communication			
Display	LED Indicators, Integrated WLAN + FusionSolar APP		
RS485	Yes		
Smart Dongle	WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional)		
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)		
Operating Temperature Range	-25 ~ + 60 °C (-13 °F ~ 140 °F)		
Cooling Method	Natural Convection		
Max. Operating Altitude	4,000 m (13,123 ft.) (Derating above 2000 m)		
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-P2, SUN2000-600W-P,MERC-1100W/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		

1. The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.
2. Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
3. SUN2000-30~40KTL-M3 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly)

SUN2000-50KTL-M3

Smart PV Controller

Higher Yields

Up to 30% More Energy
with Optimizer

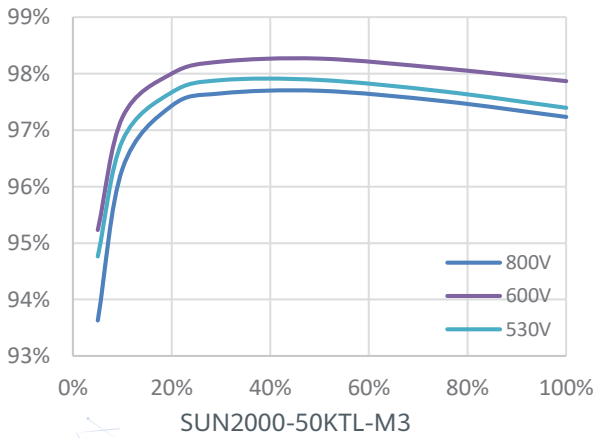
Active Safety

AI Powered
Active Arcing Protection

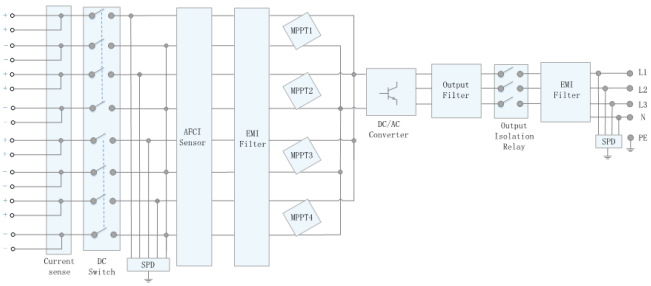
Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported

Efficiency Curve



Circuit Diagram



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. Current per Input	20 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
Max. AC Active Power (cosϕ=1)	55,000 W
Rated Output Voltage	400 Vac / 480 Vac, 3W+(N) + PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Rated Output Current	72.2 A @ 400Vac, 60.1 A @ 480Vac
Max. Output Current	79.8 A @ 400Vac, 66.5 A @ 480Vac
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[4]	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 HH4
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 0-16, 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, DEWA

1. The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.
2. Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
3. SUN2000-30~50KTL-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)

SUN2000-100KTL-M2

Smart PV Controller

10
MPP Trackers

98.8% (@480V)
Max. Efficiency

String-level
Management

Smart I-V Curve Diagnosis
Supported

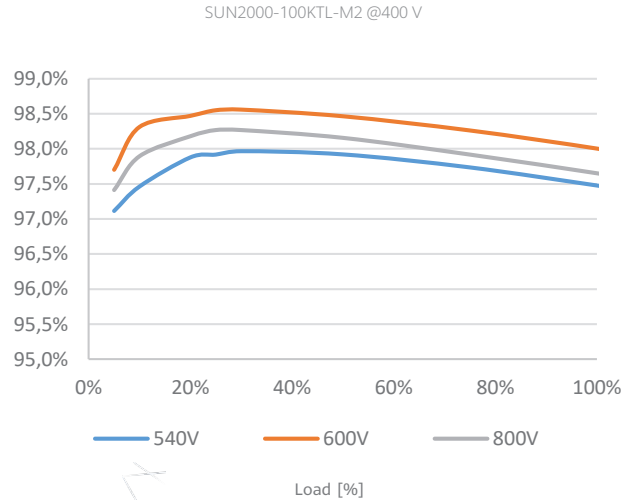
MBUS
Supported

Support AFCI &
Smart String Level
Disconnector

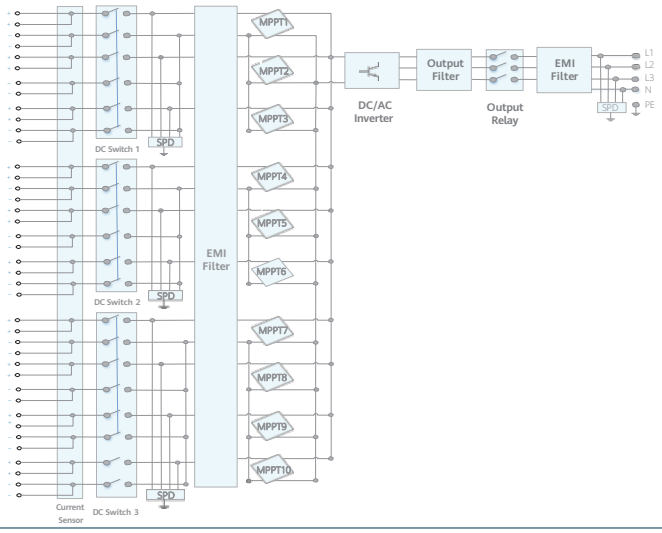
Surge Arresters for
DC & AC

IP66
Protection

Efficiency Curve



Circuit Diagram



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. Current per Input [3]	20 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
Max. AC Active Power (cosϕ=1)	110,000 W
Nominal Output Voltage	380 V/ 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 Disconnector	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)	1,035 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.
*3 Single-string access.

SUN2000-115KTL-M2

Smart PV Controller

10
MPP Trackers

98.8% (@480V)
Max. Efficiency

String-level
Management

Smart I-V Curve Diagnosis
Supported

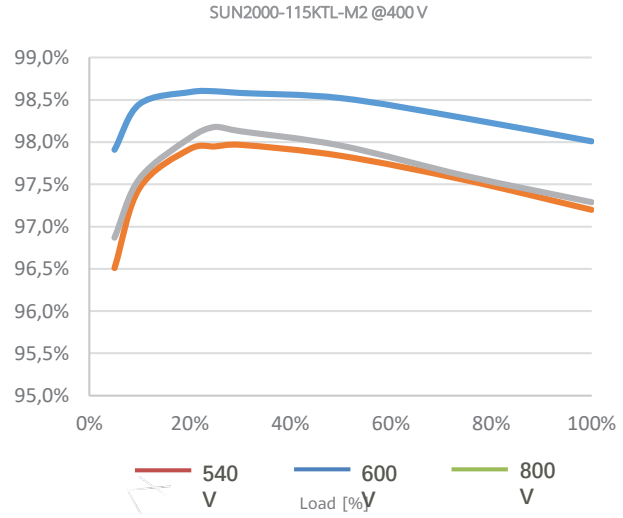
MBUS
Supported

Support
Smart String Level
Disconnector

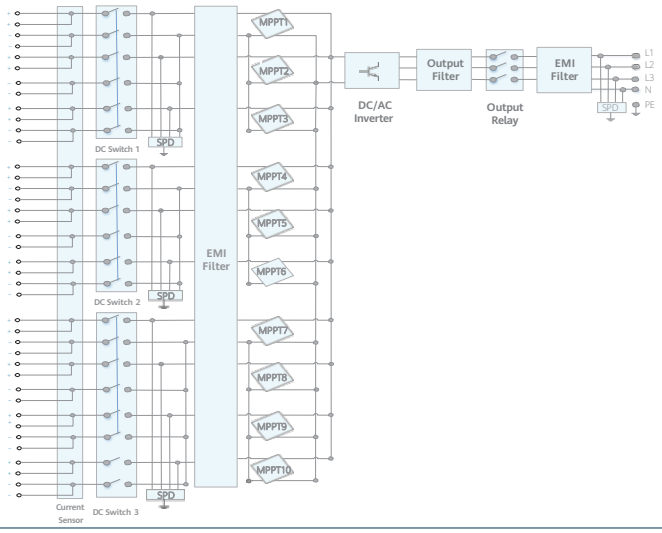
Surge Arresters for
DC & AC

IP66
Protection

Efficiency Curve



Circuit Diagram



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. Current per Input	20 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
Max. AC Active Power (cosϕ=1)	125,000 W
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 Disconnector	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 ℃ ~ 60 ℃
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, VDE 4110, 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.

LUNA2000-200KWH-2H1

Smart String ESS

More Energy

Simple O&M

Safe & Reliable

Energy Storage System Parameters	
Battery Configuration	12S1P
Maximum Battery Capacity of the Energy Storage System	193.5 kWh
Rated Power	100 kW
Dimensions (W x H x D), including DC/DC and PCS	2570mm×2135mm×1200mm
Dimensions (W x H x D)	1810mm×2135mm×1200mm
Weight (including the battery module)	≤2950kg
Weight (without the battery module)	≤1070kg
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	230Vac，<=4.2kVA
Communication Port	Ethernet / SFP
Communication Protocol	Modbus TCP
Protection Degree	IP55
EMC Protection Rating	ClassA
DC Lightning Protection	Type II

Standards	
Environment	RoHS6
Certification Standards	GBT 36276-2018；IEC62619; UL9540A;UN38.3

Battery Pack & Smart Rack Controller
Smart String ESS

Battery Pack	
General	
Cell Material	LFP
Nominal Capacity	16.13 kWh
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	≥ 98.5.0%
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

Max. Efficiency 98.4%

Modular Design

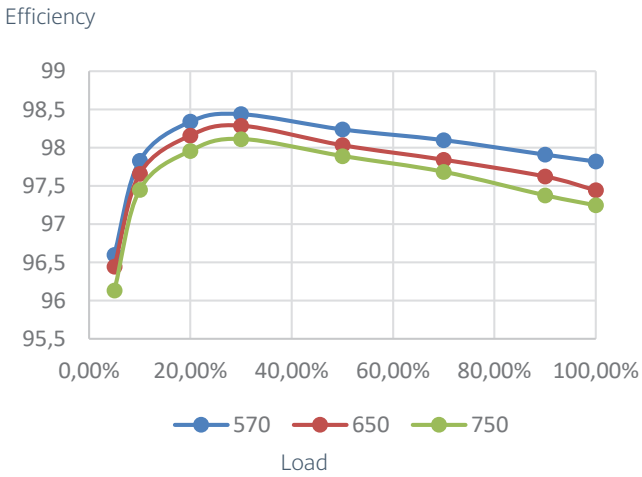
IP66 Protection

Surge Arresters for DC & AC

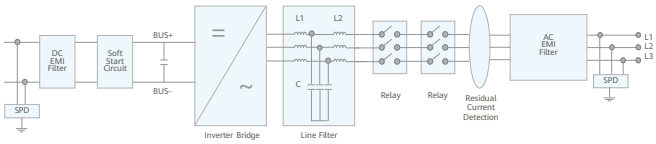
Ethernet Communication

Smart Grid Algorithm

Efficiency Curve



Circuit Diagram



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 / 440Vac
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
Earth Fault Protection	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
Better for C&I Scenarios

Up to 20 A Input Current
Fit All Type Module

< 5s
Module Auto-Mapping

Temperature Detection
Safety Enhanced

1V Safe Voltage Shutdown
Easier for Detection

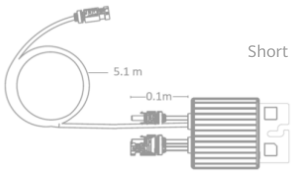
Arc Fault Pinpoint Positioning
Along PV Cable

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
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 2.0 in.)	
Weight (including cables)	1.05 kg (2.2 lb.)	
Installation part (optional)	PV Module Frame Plate, T-shaped Bolt	
Input connector	MC4	
Input wire length	0.1 m (short input cable version)[4]	
Output connector	MC4	
Output wire length	0.1 m (+), 5.1 m (–) (short input cable version)[4]	
Operating temperature/humidity range	–40°C to +85°C [5]/ 0%–100% RH	
Degree of protection	IP68	
Compatible Inverter	SUN2000-8/10/12/15/17/20KTL-M2 SUN2000-20/29.9/30/36/40KTL-M3 SUN2000-12/15/17/20/23/25KTL-M5 SUN2000-50KTL-M3	

String Configuration (Full Optimizer Configuration) * **MERC-1100/1300W-P support full optimizer configuration only**	SUN2000-12-20KTL-M2		SUN2000-12-25KTL-M5		SUN2000-20-40KTL-M3		SUN2000-50KTL-M3
Minimum optimizers per string	6		6		6		6
Maximum optimizers per string	25		25		25		20
Recommend strings per inverter * Only one string can be connected to each MPPT. * The DC/AC ratio is 1.0 to 1.3 for this recommended configuration. For other ratios, refer to the user manual.	12KTL	15-20KTL	12KTL	15-25KTL	30/36KTL	40KTL	4
	1	2	1	2	3	4	
Maximum DC power per string * It is recommended that strings have equal capacity. The capacity difference between strings should ≤ 2 kW. Otherwise, the energy yield might be adversely affected.	20,000 W		20,000 W		20,000 W		20,000 W



Short Input Cable Version

*1 The rated power of modules under standard test conditions (STC) shall not exceed the rated DC input power of optimizers. The module power can be 5% higher than the rated optimizer power.
*2 Failed optimizers will be bypassed so that other optimizers and inverters will not be affected.
*3 When the optimizer output is an open circuit or the inverter connected to the optimizer is shut down, the default optimizer output is 1 V DC voltage.
*4 For the short input cable version (Input cable 0.1m (+/-), output cable 0.1m(+), 5.1m(-)), ensure that the PV module cables are long enough to connect to the optimizers. For split junction box module with a short cable, the long-input cable version of optimizer is available (input cables: 1.3 m (+/–); positive output cable: 0.1 m; negative output cable: 2.9 m) on request.
*5 When the operating temperature of the optimizer is 70°C to 85°C, the optimizer may shut down for overtemperature protection and report an overtemperature alarm. After the operating temperature drops to 70°C or below, the optimizer automatically recovers with no risk of damage.
*6 The SUN2000-450/600W-P cannot be mixed with the MERC-1100/1300W-P under the same inverter.
*7 The temperature detection function is only available on the short output cable (0.1 m).
*8 It is allowed to connect single PV module to the MERC-1100/1300W-P.

SUN2000-600W-P

Smart Module controller

One-Fits-All Optimizer
Easier Business

<5s Module Auto-Mapping

Arc Fault Pinpoint
Positioning Along PV Cable

Technical Specification	SUN2000-600W-P
Input	
Rated Input DC Power [1]	600 W
Absolute maximum input voltage	80 V
MPPT operating voltage range	10 - 80 V
Maximum Short Circuit Current (Isc)	14.5 A
Max. efficiency	99.5 %
Weighted efficiency	99.0 %
Overvoltage category	II
Output	
Max. output voltage	80 V
Max. output current	15 A
Output bypass [2]	Yes
Shutdown output voltage per optimizer [3]	0 V
Shutdown output impedance per optimizer	1k ohm ± 10 %
Communication	
Communication Method	MBUS
Standard Compliance	
Safety	IEC62109-1 (class II safety)
RoHS	Yes
General Data	
Dimension (W x H x D)	75 x 140 x 28 mm (3.0 x 5.5 x 1.1 inch)
Weight (including cables)	0.6 kg (1.3 lb.)
Installation part (optional)	Frame Mounting Bracket / T-shaped Bolt [4]
Input connector	MC4
Input wire length	0.15m (0.49 ft.)
Output connector	MC4
Output wire length	1.3 m (4.3 ft.) [5]
Operating temperature / humidity range	-40 ℃～85 ℃ [5] / 0 %RH～100 %RH
Degree of protection	IP68
Compatible product	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-12/15/17/20KTL-M2, SUN2000-30/36/40KTL-M3

Long String Design (Full Optimizer)	SUN2000-2-6KTL-L1	SUN2000-3-10KTL-M1	SUN2000-12-20KTL-M2	SUN2000-30-40KTL-M3
Minimum optimizer number per string [6]	4	6	6	6
Maximum optimizer number per string	25	35	35	25
Maximum DC power per string	6,000 W	10,000 W	12,000 W	12,000 W

*1 In the STC environment, The rated power of the module shall not exceed 1.05 times of the optimizer rated input power.
*2 Power optimizer is bypassed in the string connected to an operating inverter when it fails to work
*3 Power optimizer output 0Vdc when disconnecting to the inverter or inverter is shutdown.
*4 Allow PV module frame installation / extruded aluminum profile installation
*5 Fits PV module in landscape and portrait installation.
*6. Require standard 60 cells module to meet the inverter minimum startup voltage
*7 Full power capability refers to online smart design tool.

Smart Dongle-WLAN-FE

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

Simple
Plug & Play
Support max. 10 devices

Reliable
IP65
Support auto reconnection

Technical Specification	SDongleA-05(AP+STA)
General Data	
Max. Devices Supported	10
Max. Inverters Supported	10
Connection interface	USB
Ethernet Interface	10/100M Ethernet
Installation	Plug-and-play
Indicator	LED Indicator
Dimensions (W * H * D)	146 x 48 x 33 mm (5.1 x 1.9 x 1.3 inch)
Weight	90 g (0.2 lb.)
Degree of protection	IP65
Power consumption (typical)	2.5 W
Operation Mode	AP + STA
Encryption Algorithm	Encryption Mechanism: WPA/WPA2 Encryption: TKIP/CCMP/AES
Wireless Parameter	
Supported standards & frequencies	802.11b/g/n (2.412G—2.484G)
Environment	
Operating temperature range	-30 ℃ to +65 ℃ (-22 ℉ to 149 ℉)
Relative humidity range	5 - 95% RH
Storage temperature range	-40 ℃ to +70 ℃ (-40 ℉ to 158 ℉)
Max. operating altitude	4,000 m (13,123 ft.)
Standard Compliance (more available upon request)	
Certificate	SRRC, CE, RCM
Inverter Compatibility	
Inverter Model	SUN2000-2/3/3.68/4/4.6/5/6-L1 SUN2000-3/4/5/6/8/10-M1 SUN2000-12/15/17/20KTL-M2 SUN2000-12/15/17/20/25KTL-M5 SUN2000-30/36/40/50KTL-M3 SUN2000-100/115KTL-M2 SUN2000-110KTL-INM2

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

Smart Dongle-4G

Smart

4G communication [1]

Support 3rd-party monitoring system [2]

Simple

Plug & Play

WLAN-AP for local deploying [3]

Reliable

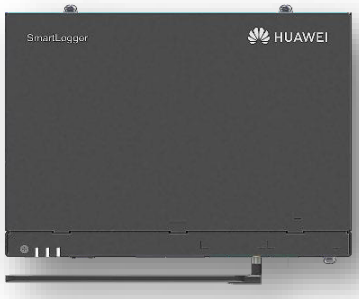
IP65

Support auto reconnection

Technical Specification	SDongleB-06-EU	SDongleB-06-AU	SDongleB-06-NH
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 ℃ to +65 ℃ (-22 ℉ to 149 ℉)		
Relative humidity range	5 - 95% RH		
Storage temperature range	-40 ℃ to +70 ℃ (-40 ℉ to 158 ℉)		
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 SUN2000-110KTL-INM2 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.
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.

SmartLogger3000A



Smart
Smart zero export control design

Simple
Easy to install on site

Reliable
Safety by lightning protection module

Technical Specification	SmartLogger3000A03EU	SmartLogger3000A01EU
Device Management		
Max. Number of Connected Devices	80	
Communication Interface		
WAN	WAN x 1, 10 / 100 / 1000 Mbps	
LAN	LAN x 1, 10 / 100 / 1000 Mbps	
RS485	COM x 3, 1200 / 2400 / 4800 / 9600 / 19200 / 115200 bps, 1000 m	
MBUS	MBUS x 1, 115.2 kbps, Compatible with PLC	No MBUS Communication Interface
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	Communication by WLAN for Commissioning	
Environment		
Operating Temperature Range	-40°C ~ 60°C (-40°F ~ 140°F)	
Storage Temperature	-40°C ~ 70°C (-40°F ~ 158°F)	
Relative Humidity (Non-condensing)	5% ~ 95%	
Max. Operating Altitude	4,000 m (13,123 ft.)	
Electrical		
AC Power Supply	100 V～240 V, 50 Hz / 60 Hz	
DC Power Supply	12 V / 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.

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 Specification	SmartACU2000D-D-00	SmartACU2000D-D-02	SmartACU2000D-D-01	SmartACU2000D-D-03
Configuration				
Smart Logger	SmartLogger3000B x 1			
SmartModule1000A	Optional			Standard with SmartModule1000A x 1
RS485	Supported			
No. of MBUS[1]	1	2	1	2
No. of SmartPID2000	0	0	1	2
Environment				
Operating Temperature Range	-40°C ~ 60°C (-40°F ~ 140°F)			
Relative Humidity	4% ~ 100%			
Max. Operating Altitude	4,000 m (13,123 ft.)			
Electrical				
AC Input Voltage for SACU	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 / 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 (25.2 x 30.3 x 12.4 inch)		880 x 770 x 369 mm (34.6 x 30.3 x 14.5 inch)	
Weight	29 kg (63.9 lb.)	32 kg (70.5 lb.)	49 kg (108.0 lb.)	61 kg (134.5 lb.)
Protection Degree	IP65			
Installation Options	Wall Mounting, Rack Mounting, Pole Mounting			

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

Smart Power Sensor

Accurate
Class 1 measurement accuracy

Simple & Easy
LCD display, easy to set and check

Energy Efficient
Overall power consumption ≤ 1 W

Technical Specification	DDSU666-H	DTSU666-H	DTSU666-H 250A/50mA
General Data			
Dimension (H x W x D)	100 x 36 x 65.5 mm (3.9 x 1.4 x 2.6 inch)	100 x 72 x 65.5 mm (3.9 x 2.8 x 2.6 inch)	100 x 72 x 65.5 mm (3.9 x 2.8 x 2.6 inch)
Mounting type	DIN35 Rail		
Weight (including cables)	1.2 kg (2.6 lb)	1.5 kg (3.3 lb)	1.5 kg (3.3 lb)
Power Supply			
Power grid type	1P2W	3P3W/3P4W	3P3W/3P4W
Input voltage (phase voltage)	176 Vac ~ 288 Vac		
Power consumption	≤ 0.8 W	≤ 1 W	≤ 1 W
Measurement Range			
Line voltage	/	304 Vac ~ 499 Vac	304 Vac ~ 499 Vac
Phase voltage	176 Vac ~ 288 Vac		
Current	0 ~ 100 A	0 ~ 100 A	0 ~ 250 A
Measurement Accuracy			
Current / Voltage	±0.5 %		
Power / Energy	±1 %		
Frequency	±0.01 Hz		
Communication			
Interface	RS485		
Baud rate	9,600 bps		
Communication protocol	Modbus-RTU		
Environment			
Operating temperature range	-25 ℃ ~ 60 ℃		
Storage temperature range	-40 ℃ ~ 70 ℃		
Operating humidity	5 %RH ~ 95 %RH (non-condensing)		
Others			
Accessories	RS485 Cable (10 m / 33 ft.)		
	1 CT 100A / 40mA (5 m / 16.4 ft.) 	3 CT 100A / 40mA (5m / 16.4 ft.) 	3 CT 250A / 50mA (5m / 16.4 ft.) 

Smart Power Sensor

Accurate
Class 1 measurement accuracy

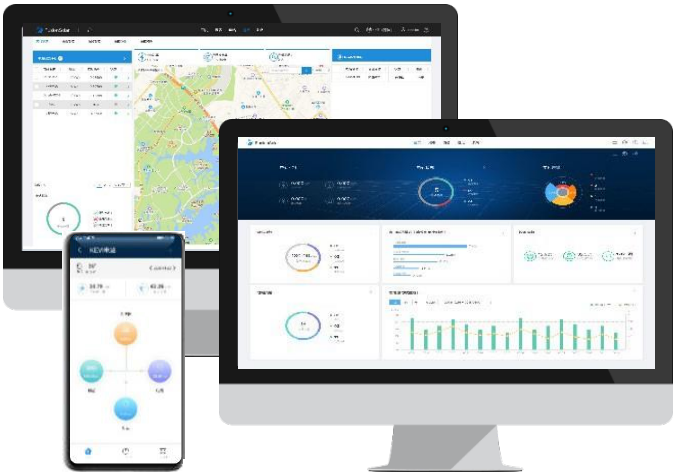
Simple & Easy
LCD display, easy to set and check

Energy Efficient
Overall power consumption ≤ 1.5 W

Technical Specification	DTSU666-HW/YDS60-80
	General Data
Dimension (H x W x D)	100 x 72 x 80 mm (3.9 x 2.8 x 3.1 inch)
Mounting type	DIN35 Rail
Weight (including cables)	< 0.5 kg
	Power Supply
Power grid type	3P4W/3P3W
Input voltage (line voltage)	90 ~ 500 Vac
Power consumption	≤ 1.5 W
	Measurement Range
Line voltage	90 Vac ~ 1000 Vac (> 500 with external PT [1])
Phase voltage	52~577 Vac
Current	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 ℃ ~ 60 ℃
Storage temperature range	-40 ℃ ~ 70 ℃
Operating humidity	5 %RH ~ 95 %RH (non-condensing)
	Others
Accessories	RS485 Cable (10 m / 33 ft.)

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

FusionSolar Smart PV Management System



Better experience

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

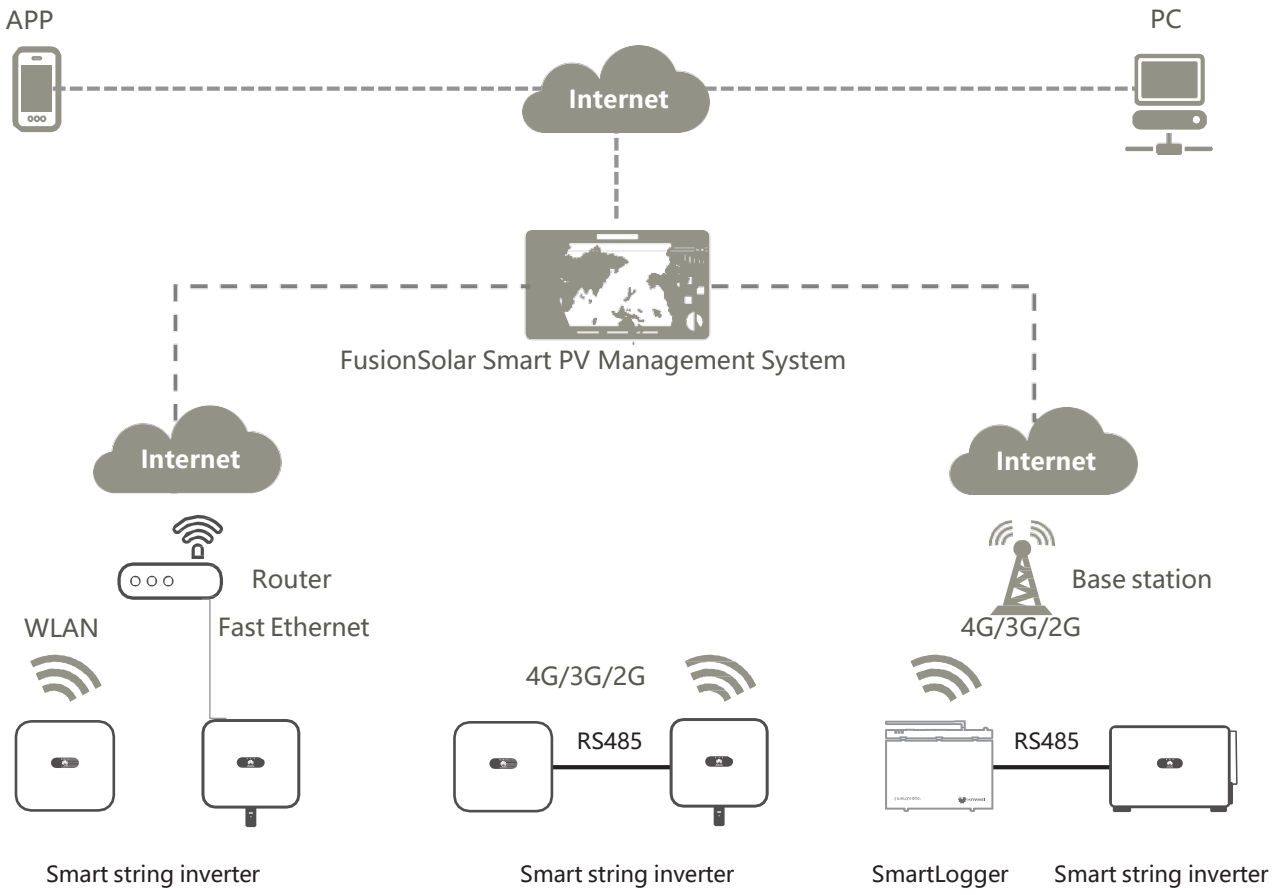
Energy visualization

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

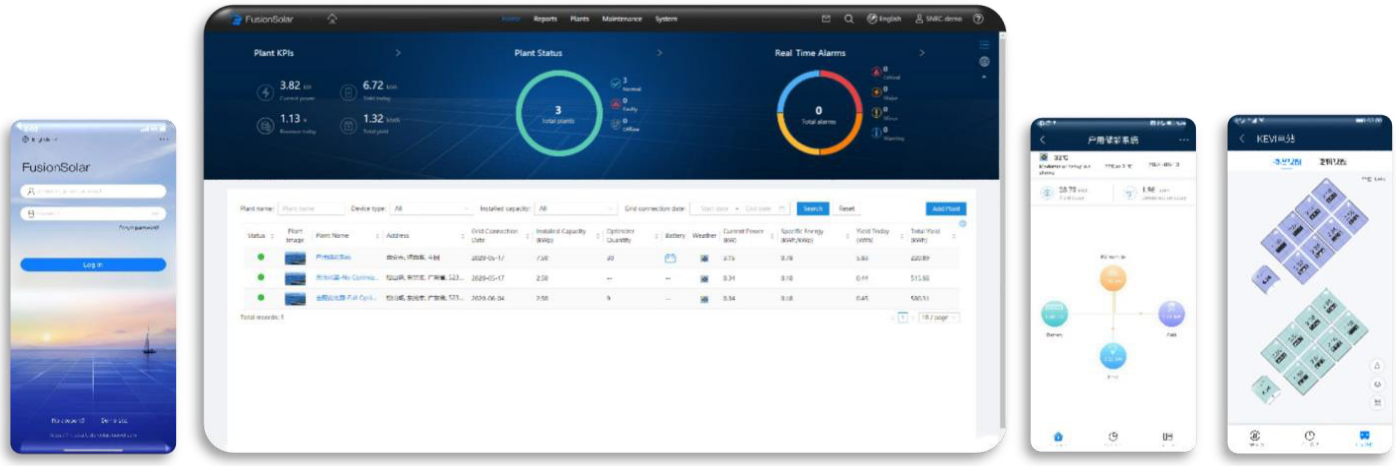
Smart O&M

- 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 diagnosis

Networking



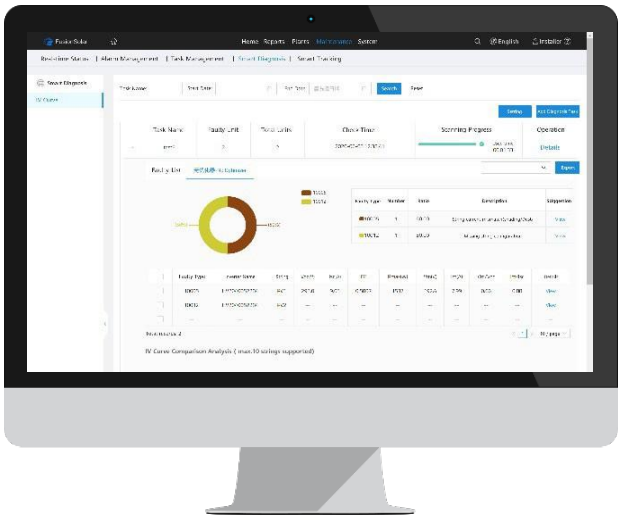
FusionSolar Smart PV Management System



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	●	
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	●	●

Smart I-V Curve Diagnosis

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



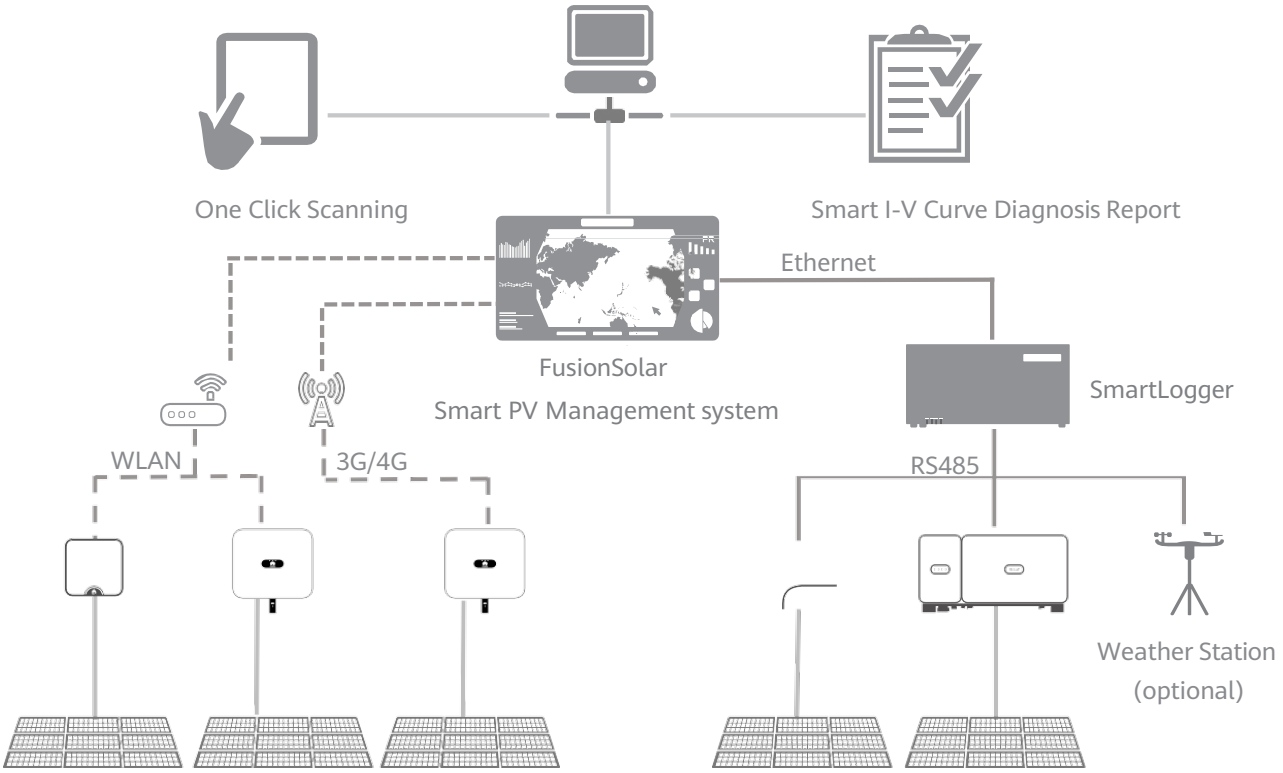
Smart

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

Efficient

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

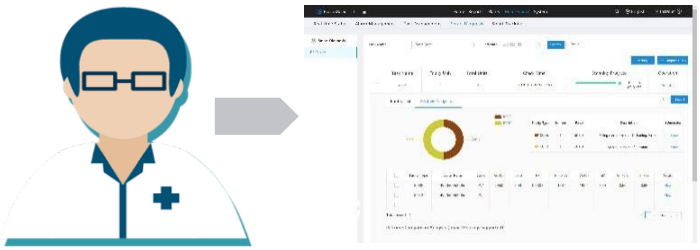
Network



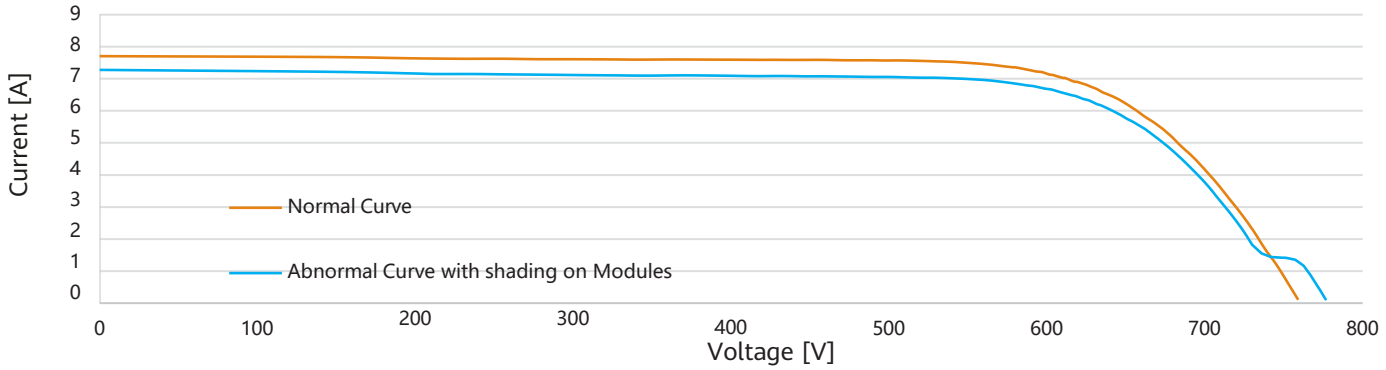
Smart I-V Curve Diagnosis

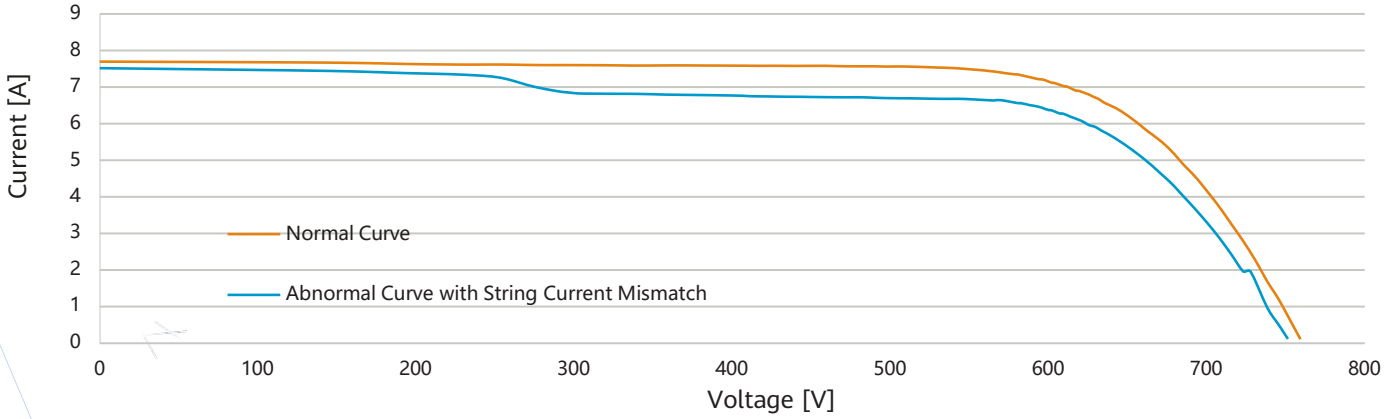
Technical Specifications	Smart I-V Curve Diagnosis
Smart PV Inverter	SUN2000-2/3/3.68/4/4.6/5/6KTL-L1*, SUN2000-3/4/5/6/8/10KTL-M0, SUN2000-12/15/17/20KTL-M0, SUN2000-33KTL-A/36KTL, SUN2000-60KTL-M0, SUN2000-100KTL-M1
Communication	SmartLogger3000A, Smart Dongle-WLAN-FE/4G
Management System	FusionSolar Smart PV Management System, NetEco1000s
Scanning Time	< 1s (1 string)
Sampling Points per I-V Curve	128
Certification	TÜVRheinland® TUV

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

String-level Management	Smart I-V Curve Diagnosis
	
Real time monitoring	Fault Analysis

String I-V Curve Comparison





Case Reference

85.8KWp

Distributed PV System in Brazil

System Configuration

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

COD
Feb, 2018

2.8MWp

Distributed PV system at Singapore Changi Airport

System Configuration

- SUN2000-36KTL

COD
Dec, 2016

Case Reference

1MWp

Distributed PV System in Kuala Lumpur，Malaysia

System Configuration

- SUN2000-36KTL

COD
Mar 2016

1.25MWp

Distributed PV System in South Africa

System Configuration

- **SUN2000-60KTL**

COD
Sep, 2019

Case Reference

200kWh

ESS Program of Charging Station in Zhejiang, China

System Configuration

- **LUNA2000-200KWH**

COD
Oct 2022

11.6MWp

Shera Rooftop Program Saraburi, Thailand

System Configuration

- **SUN2000-60KTL**

COD
Mar, 2020

Case Reference

1.1MWp

Shanghai Xinguo Food Factory Model Site, China

System Configuration

- **SUN2000-40KTL**
- **SUN2000-600W-P**

COD
Jul 2022

131kWp

PV Energy Storage EV Charger Battery Swapping Demo Station , Shenzhen

System Configuration

- **SUN2000-50/60KTL**

COD
Mar, 2023

Notes

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