HUAWEI

FUSIONSOLAR RESIDENTIAL SMART PV SOLUTION

SUN5000 Series

Efficiency Evolution
Creating Profitable Return
Module-level Optimization
Increase Yield by 5% to 30%

Safety Evolution
Protecting Electricity Usage Safety
On/Under the Rooftop
AFCI + RSD

Convenience Evolution
Embracing PV Lifestyle
Module-level Management
Disconnection Detection and Location

Technical Specification	SUN2000-450W-P2	SUN2000-600W-P
Input		
Rated input DC power [1]	450 W	600 W
Absolute max. input voltage	80 V	
MPPT operating voltage range	10–80 V	
Max. 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	
Output voltage during standby [3]	0 V	
Output impedanceduring standby	1 kΩ ± 10%	
Communication		
Communication protocol	MBUS	
Standards Compliance		
Safety	IEC62109-1 (class II safety)	
RoHS	Yes	
Fire Safety	VDE-AR-E 2100-712:2018-12	
General Specifications		
Dimensions (W x H x D)	75 mm x 140 mm x 28 mm (3.0 in. x 5.5 in. x 1.1 in.)	
Weight (including cables)	0.6 kg (1.3 lb.)	
Installation part (optional)	Frame mounting bracket/T-shaped bolt [4]	
Input connector	Staubli MC4	
Input wire length	0.15 m (0.49 ft.)	
Output connector	Staubli MC4	
Output wire length	1.3 m (4.3 ft.)	
Operating temperature/humidity range	–40°C to +85°C [5]/0%-100%	
IP rating	IP68	

*1 The maximum power of PV module at STC shall NOT exceed the "Rated Input DC Power" of the power optimizer. PV modules with up to +5% power tolerance are allowed.
*2 Any power optimizer, which is connected to an operating inverterin a PV string, will be bypassed when it fails.
*3 Once the power optimizer stops working, its output voltage is reduced to 0 V.
*4 It is for PV module frame/extruded aluminum profile racking system installation.
*5 When the operating temperature of the SUN2000-450W-P2/600W-P reaches 70 °C to 85 °C, it may shut down due to over-temperature protection and report an over-temperature alarm. After the temperature decreases, it can automatically resume working without causing any damage.

Technical Specification

Technical Specification	SUN5000-8K-MAP0	SUN5000-12K-MAP0
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, MERC-600W-PA0	
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 [4]	SUN5000-8K/12K-MAP0
Min. string length (power optimizers)	6
Max. string length (power optimizers)	35
Max. DC power per string	12,000 W

*1 The max. input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage the inverter.
*2 Any DC input voltage beyond the operating voltage range may result in inverter malfunction.
*3 The SUN5000 Series Inverters must be fully equipped with optimizers, otherwise the system will report errors and can not work.
*4 SUN2000-450W-P2/600W-P, MERC-600W-PA0 can NOT be used in mixture under the same Smart Energy/PV Controller.

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.

HUAWEI

FUSIONSOLAR RESIDENTIAL SMART PV SOLUTION

SUN5000 Series

Efficiency Evolution
Creating Profitable Return
Module-level Optimization
Increase Yield by 5% to 30%

Safety Evolution
Protecting Electricity Usage Safety
On/Under the Rooftop
AFCI + RSD

Convenience Evolution
Embracing PV Lifestyle
Module-level Management
Disconnection Detection and Location

Technical Specification	SUN2000-450W-P2	SUN2000-600W-P
Input		
Rated input DC power [1]	450 W	600 W
Absolute max. input voltage	80 V	
MPPT operating voltage range	10–80 V	
Max. 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	
Output voltage during standby [3]	0 V	
Output impedanceduring standby	1 kΩ ± 10%	
Communication		
Communication protocol	MBUS	
Standards Compliance		
Safety	IEC62109-1 (class II safety)	
RoHS	Yes	
Fire Safety	VDE-AR-E 2100-712:2018-12	
General Specifications		
Dimensions (W x H x D)	75 mm x 140 mm x 28 mm (3.0 in. x 5.5 in. x 1.1 in.)	
Weight (including cables)	0.6 kg (1.3 lb.)	
Installation part (optional)	Frame mounting bracket/T-shaped bolt [4]	
Input connector	Staubli MC4	
Input wire length	0.15 m (0.49 ft.)	
Output connector	Staubli MC4	
Output wire length	1.3 m (4.3 ft.)	
Operating temperature/humidity range	–40°C to +85°C [5]/0%-100%	
IP rating	IP68	

*1 The maximum power of PV module at STC shall NOT exceed the "Rated Input DC Power" of the power optimizer. PV modules with up to +5% power tolerance are allowed.
*2 Any power optimizer, which is connected to an operating inverterin a PV string, will be bypassed when it fails.
*3 Once the power optimizer stops working, its output voltage is reduced to 0 V.
*4 It is for PV module frame/extruded aluminum profile racking system installation.
*5 When the operating temperature of the SUN2000-450W-P2/600W-P reaches 70 °C to 85 °C, it may shut down due to over-temperature protection and report an over-temperature alarm. After the temperature decreases, it can automatically resume working without causing any damage.

Technical Specification

Technical Specification	SUN5000-17K-MB0	SUN5000-25K-MB0
Efficiency		
Max. efficiency	98.4%	98.4%
European weighted efficiency	98.1%	98.2%
DC Input		
Recommended max. PV power	25,500 Wp	37,500 Wp
Max. input voltage [1]	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 [2]	200 V–1,000 V	
Full-load MPPT voltage range	440 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, LUNA2000-7/14/21-S1	
Number of terminals	2	
Max. charging power	21 kW (Single string) / 25 kW (Two strings)	
Max. discharge power	18.7 kW	25.0 kW
Max. operating current	26.25 A (per string)	
Operating voltage range	600 V–980 V	
Output		
Rated output power	17,000 W	25,000 W
Max. apparent power	18,700 VA	27,500 VA
Max. active power (cosϕ = 1)	18,700 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	24.5 A / 400 Vac	36.1 A / 400 Vac
Max. output current	28.6 A / 380 Vac	42.0 A / 380 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	
RSD function	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.) (Derated 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); EMMA (Optional)	
Weight	21 kg	
Dimensions (W x H x D)	546 x 460 x 228 mm	
Protection level	IP66	
Max. number of paralleled unit (with Smart String ESS)	3	
Optimizer Compatibility		
DC MBUS Compatible optimizer [3]	SUN2000-450W-P2, SUN2000-600W-P, MERC-600W-PA0	
Standards Compliance (More Available Upon Request)		
Certificates	EN/IEC62109-1, EN/IEC62109-2	

PV System Design [4]	SUN5000-17/25K-MB0
Min. string length (power optimizers)	6
Max. string length (power optimizers)	35
Max. DC power per string	12,000 W

*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 The SUN5000 Series Inverters must be fully equipped with optimizers, otherwise the system will report errors and can not work.
*4 SUN2000-450W-P2/600W-P, MERC-600W-PA0 can NOT be used in mixture under the same Smart Energy/PV Controller.

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.