Smart Energy Center

inter solar award 2019 WINNER

Active Safety

AI Powered
Active Arcing Protection

Higher Yields

Up to 30% More Energy
with Optimizer

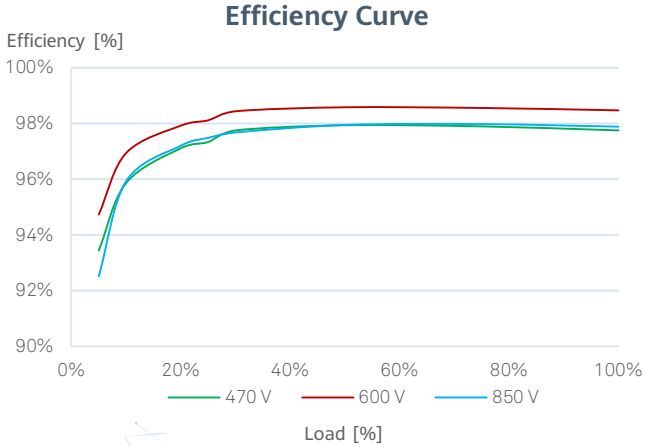
2x POWER Battery Ready

10KW AC Output plus
10KW Battery Charge

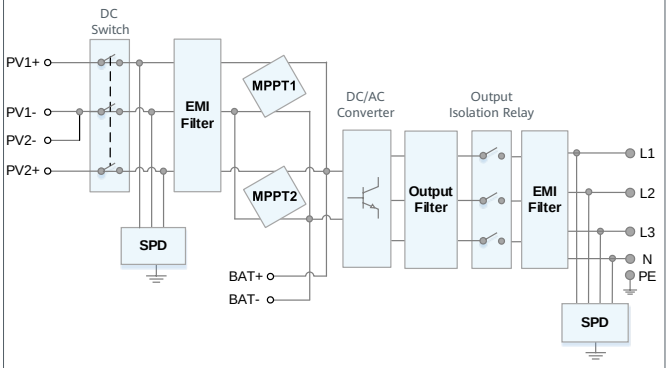
Flexible Communication

WLAN, Fast Ethernet, 4G
Communication Supported

Efficiency Curve



Circuit Diagram



SUN2000-5/10KTL -M1

Technical Specification

Technical Specification	SUN2000 -5KTL-M1	SUN2000 -10KTL-M1
Efficiency		
Max. efficiency	98.4%	98.6%
European weighted efficiency	97.5%	98.1%
Input (PV)		
Recommended max. PV power [1]	7,500 Wp	15,000 Wp
Max. input voltage [2]	1,100 V	
Operating voltage range [3]	140 V ~ 980 V	
Start-up voltage	200 V	
Rated input voltage	600 V	
Max. input current per MPPT	11 A	
Max. short-circuit current	15 A	
Number of MPP trackers	2	
Max. number of inputs	2	
Input (DC Battery)		
Compatible Battery	HUAWEI PowerMate ESS Battery [4]	
Max number of connected battery	2	
Operating voltage range	600 V ~ 980 V	
Max operating current	16 A	
Max charge/discharge Power	10,000 W	
Output		
Grid connection	Three-phase	
Rated output power	5,000 W	10,000 W
Max. apparent power	5,500 VA	11,000 VA [5]
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 3W / N+PE	
Rated AC grid frequency	50 Hz / 60 Hz	
Max. output current	8.5 A	16.9 A
Adjustable power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	≤ 3 %	
Backup power output	Yes (via Backup Box-5000 [4])	
Features & Protections		
Input-side disconnection device	Yes	
Anti-Islanding protection	Yes	
DC reverse polarity protection	Yes	
Insulation monitoring	Yes	
DC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11	
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11	
Residual current monitoring	Yes	
AC overcurrent protection	Yes	
AC short-circuit protection	Yes	
AC overvoltage protection	Yes	
Arc fault protection	Yes	
Ripple receiver control	Yes	
Integrated PID recovery [6]	Yes	
Battery reverse charging from grid	Yes	
General Data		
Operating temperature range	-25 ~ + 60 °C (-13 °F ~ 140 °F) (Derating above 45 °C @ Rated output power)	
Relative operating humidity	0 %RH ~ 100 %RH	
Operating altitude	0 ~ 4,000 m (13,123 ft.) (Derating above 3000 m)	
Cooling	Natural convection	
Display	LED Indicators; Integrated WLAN + FusionSolar App	
Communication	RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE; 4G / 3G / 2G via Smart Dongle-4G (Optional)	
Weight (incl. mounting bracket)	17 kg (37.5 lb)	
Dimension (incl. mounting bracket)	525 x 470 x 166 mm (20.7 x 18.5 x 6.5 inch)	
Degree of protection	IP65	
Optimizer Compatibility		
DC MBUS compatible optimizer	SUN2000-450W-P	
Standard Compliance (more available upon request)		
Certificate	EN/IEC 62109-1, EN/IEC 62109-2, IEC 62116	
Grid connection standards	G98, G99, EN 50438, CEI 0-21, VDE-AR-N-4105, AS 4777, C10/11, ABNT, UTE C15-712, RD 1699, TOR D4, NRS 097-2-1, IEC61727, IEC62116, DEWA 2.0	

*1 Inverter max input PV power is 20,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.
*2 The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.
*3 Any DC input voltage beyond the operating voltage range may result in inverter improper operating.
*4 Available in 2020 Q3.
*5 C10 / 11: 10,000 VA
*6 SUN2000-5~10KTL-M1 raises potential between PV- and ground to above zero through integrated PID recovery function to recover module degradation from PID. Supported module types include: P-type (mono, poly), N-type (nPERT, HIT)

Smart String Inverter

inter solar award 2019 WINNER

Active Safety

AI Powered Arcing Protection

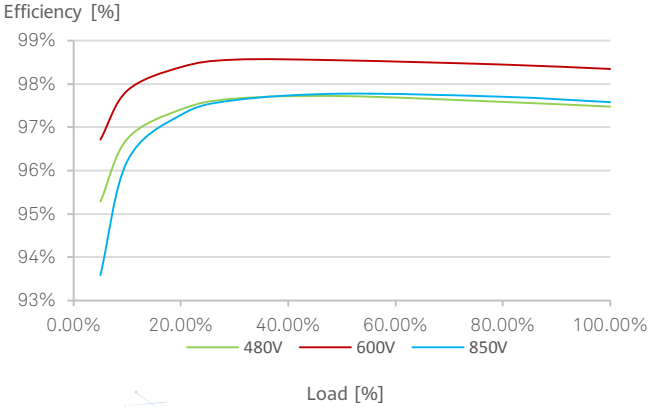
Higher Yields

Up to 30% More Energy with Optimizer

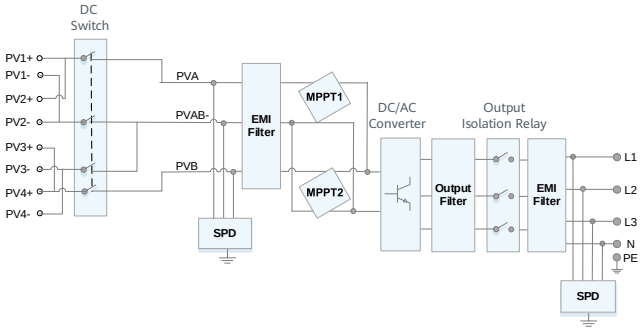
Flexible Communication

WLAN, Fast Ethernet, 4G Communication Supported

Efficiency Curve



Circuit Diagram



Technical Specification

Technical Specification	SUN2000 -12KTL-M2	SUN2000 -20KTL-M2
Efficiency		
Max. efficiency	98.50%	98.65%
European weighted efficiency	98.00%	98.30%
Input		
Recommended max. PV power [1]	18,000 Wp	30,000 Wp
Max. input voltage [2]	1,080 V	
Operating voltage range [3]	160 V ~ 950 V	
Start-up voltage	200 V	
Rated input voltage	600 V	
Max. input current per MPPT	22 A	
Max. short-circuit current	30 A	
Number of MPP trackers	2	
Max. number of inputs	4	
Output		
Grid connection	Three phase	
Rated output power	12,000 W	20,000 W
Max. apparent power	13,200 VA	22,000 VA
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 3W + N + PE	
Rated AC grid frequency	50 Hz / 60 Hz	
Max. output current	20 A	33.5 A
Adjustable power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	≤ 3 %	
Features & Protections		
Input-side disconnection device	Yes	
Anti-islanding protection	Yes	
AC over-current protection	Yes	
AC short-circuit protection	Yes	
AC over-voltage protection	Yes	
DC reverse-polarity protection	Yes	
DC surge protection	TYPE II	
AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11	
Residual current monitoring unit	Yes	
Arc fault protection	Yes	
Ripple receiver control	Yes	
Integrated PID recovery [4]	Yes	
General Data		
Operation temperature range	-25 ~ + 60 °C (-13 °F ~ 140 °F) (Derating above 45 °C @ Rated output power)	
Relative humidity	0 % RH ~ 100% RH	
Max. operating altitude	0 ~ 4,000 m (13,123 ft.) (Derating above 2000 m)	
Cooling	Natural Convection	
Display	LED Indicators; Integrated WLAN + FusionSolar App	
Communication	RS485; WLAN/Ethernet via Smart Dongle-WLAN-FE (Optional) 4G / 3G / 2G via Smart Dongle-4G (Optional)	
Weight (with mounting plate)	25 kg	
Dimensions (W x H x D) (incl. mounting plate)	525 x 470 x 262 mm (20.7 x 18.5 x 10.3 inch)	
Degree of protection	IP65	
Optimizer Compatibility		
DC MBUS compatible optimizer	SUN2000-450W-P	
Standard Compliance (more available upon request)		
Safety	EN/IEC 62109-1, EN/IEC 62109-2	
Grid connection standards	G98, G99, EN 50438, CEI 0-21, CEI 0-16, VDE-AR-N-4105, VDE-AR-N-4110, AS 4777, C10/11, ABNT, UTE C15-712, RD 1699, RD 661, PO 12.3, TOR D4, NRS 097-2-1, IEC61727, IEC62116, DEWA 2.0	

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

Smart PV Optimizer

One-fits-all 60 & 72 Cell Crystalline Silicon PV Module

Hisilicon Chipset Inside <1.5 min Pairing with Inverter

Image Recognition <5s Module Physical View Auto Creation

Arc Fault Pinpoint Alert Along PV Cable

Technical Specification	SUN2000-450W-P
	Input
Rated Input DC Power [1]	450 W
Absolute maximum input voltage	80 V
MPPT operating voltage range	8 - 80 V
Maximum Short Circuit Current (Isc)	13 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 %
	Standard Compliance
Safety	IEC62109-1 (class II safety)
RoHS	Yes
	General Data
Dimension (W x H x D)	71 x 134 x 25 mm (2.8 x 5.3 x 1.0 inch)
Weight (including cables)	0.55 kg (1.2 lb.)
Installation part (optional)	Grounding Plate, Grounding Lug, PV Module Frame Plate
Input connector	MC4
Output connector	MC4
Output wire length	1.2 m (3.9 ft.) [4]
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

Long String Design (Full Optimizer)	SUN2000-2-6KTL-L1	SUN2000-3-10KTL-M1	SUN2000-12-20KTL-M2
Minimum optimizer number per string	4	6	6
Maximum optimizer number per string	25	50	50
Maximum DC power per string	5,000 W	10,000 W	10,000 W

*1 Rated power of the module at STC shall not exceed "Rated Input DC Power" of power optimizer. Modules with power up to +5% power tolerance are acceptable.
*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 Fits PV module in landscape and portrait installation.
*5 Full power capability refers to online smart design tool.