



## Active Safety

AI Powered  
Active Arcing Protection



## Higher Yields

Up to 30% More Energy  
with Optimizer



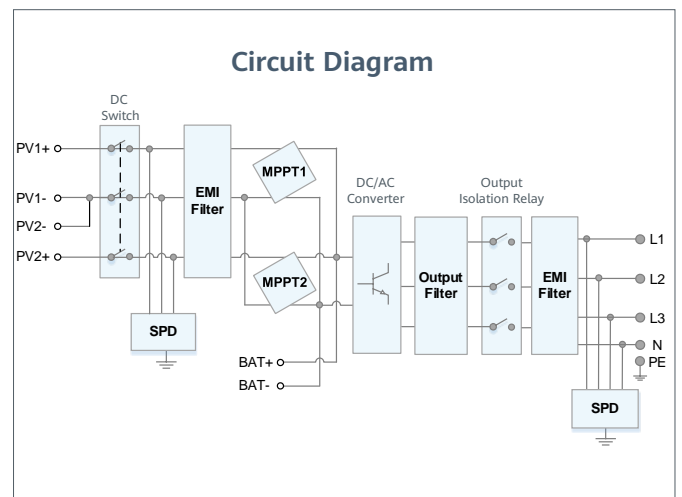
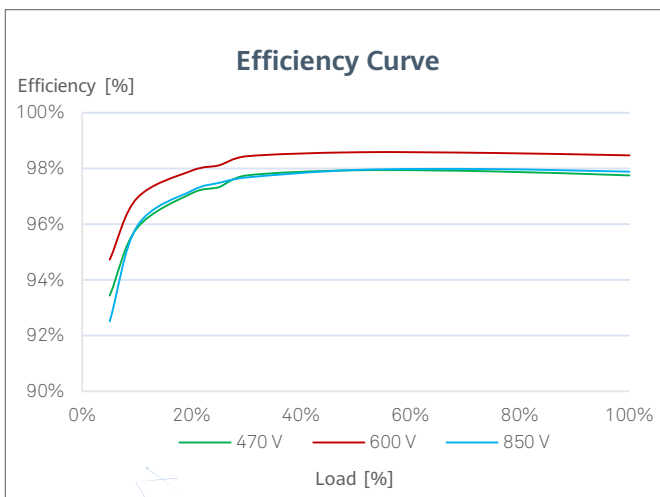
## 2x POWER Battery Ready

10KW AC Output plus  
10KW Battery Charge



## Flexible Communication

WLAN, Fast Ethernet, 4G  
Communication Supported



# SUN2000-5/10KTL -M1

## Technical Specification

Technical Specification	SUN2000 -5KTL-M1	SUN2000 -10KTL-M1
<b>Efficiency</b>		
Max. efficiency	98.4%	98.6%
European weighted efficiency	97.5%	98.1%
<b>Input (PV)</b>		
Recommended max. PV power <sup>1</sup>	7,500 Wp	15,000 Wp
Max. input voltage <sup>2</sup>	1,100 V	
Operating voltage range <sup>3</sup>	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	
<b>Input (DC Battery)</b>		
Compatible Battery	HUAWEI PowerMate ESS Battery <sup>4</sup>	
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	
<b>Output</b>		
Grid connection	Three-phase	
Rated output power	5,000 W	10,000 W
Max. apparent power	5,500 VA	11,000 VA <sup>5</sup>
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 <sup>4</sup> )	
<b>Features &amp; Protections</b>		
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 <sup>6</sup>	Yes	
Battery reverse charging from grid	Yes	
<b>General Data</b>		
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	
<b>Optimizer Compatibility</b>		
DC MBUS compatible optimizer	SUN2000-450W-P	
<b>Standard Compliance (more available upon request)</b>		
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	

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

<sup>2</sup> The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.

<sup>3</sup> Any DC input voltage beyond the operating voltage range may result in inverter improper operating.

<sup>4</sup> Available in 2020 Q3.

<sup>5</sup> C10 / 11: 10,000 VA

<sup>6</sup> 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



## Active Safety

AI Powered Arcing Protection



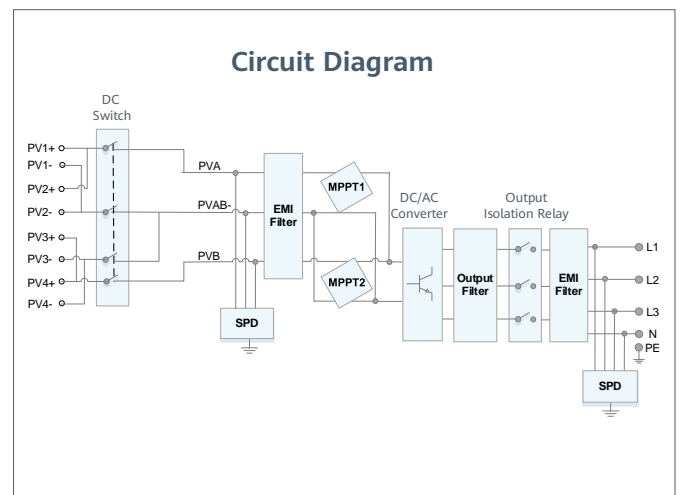
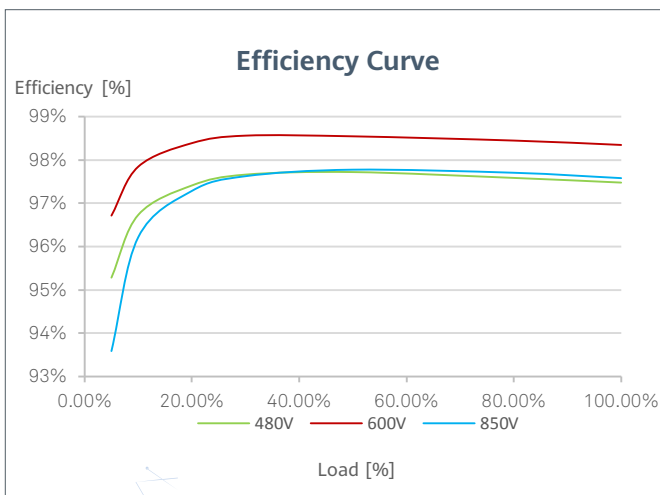
## Higher Yields

Up to 30% More Energy with Optimizer



## Flexible Communication

WLAN, Fast Ethernet, 4G  
Communication Supported



# SUN2000-12/20KTL-M2 Technical Specification

Technical Specification	SUN2000-12KTL-M2	SUN2000-20KTL-M2
<b>Efficiency</b>		
Max. efficiency	98.50%	98.65%
European weighted efficiency	98.00%	98.30%
<b>Input</b>		
Recommended max. PV power <sup>1</sup>	18,000 Wp	30,000 Wp
Max. input voltage <sup>2</sup>		1,080 V
Operating voltage range <sup>3</sup>		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
<b>Output</b>		
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 %
<b>Features &amp; Protections</b>		
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 <sup>4</sup>		Yes
<b>General Data</b>		
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	
<b>Optimizer Compatibility</b>		
DC MBUS compatible optimizer	SUN2000-450W-P	
<b>Standard Compliance (more available upon request)</b>		
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	

<sup>\*1</sup> Inverter max input PV power is 40,000 Wp when long strings are designed and fully connected with SUN2000-450W-P power optimizers.

<sup>\*2</sup> The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.

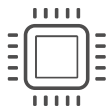
<sup>\*3</sup> Any DC input voltage beyond the operating voltage range may result in inverter improper operating.

<sup>\*4</sup> 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		
<b>Input</b>			
Rated Input DC Power <sup>1</sup>	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		
<b>Output</b>			
Max. output voltage	80 V		
Max. output current	15 A		
Output bypass <sup>2</sup>	Yes		
Shutdown output voltage per optimizer <sup>3</sup>	0 V		
Shutdown output impedance per optimizer	1k ohm ± 10 %		
<b>Standard Compliance</b>			
Safety	IEC62109-1 (class II safety)		
RoHS	Yes		
<b>General Data</b>			
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.) <sup>4</sup>		
Operating temperature / humidity range	-40 °C ~ 85 °C <sup>5</sup> / 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

<sup>\*1</sup> 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.

<sup>\*2</sup> Power optimizer is bypassed in the string connected to an operating inverter when it fails to work

<sup>\*3</sup> Power optimizer output 0Vdc when disconnecting to the inverter or inverter is shutdown.

<sup>\*4</sup> Fits PV module in landscape and portrait installation.

<sup>\*5</sup> Full power capability refers to online smart design tool.