

# SMART ENERGY CONTROLLER

SUN2000-5/6/8/10/12K-MAP0



**Asymmetric Load**  
Three-phase asymmetric output  
200% overload



**Active Safety**  
AFCI & RSD (with optimizer)  
Connector temperature detection



**Future Ready**  
LUNA S0 or S1  
Whole home backup (with SmartGuard)

# SUN2000-5/6/8/10/12K-MAP0

## Technical Specification

Technical Specification	SUN2000 -5K-MAP0	SUN2000 -6K-MAP0	SUN2000 -8K-MAP0	SUN2000 -10K-MAP0	SUN2000 -12K-MAP0
Max. efficiency	98.4%	98.6%	98.6%	98.6%	98.6%
European weighted efficiency	97.5%	97.7%	98.0%	98.1%	98.2%
Input (PV)					
Recommended max. PV power	9,000 Wp	11,000 Wp	14,600 Wp	18,000 Wp	22,000 Wp
Max. input voltage <sup>1</sup>	1,100 V				
Operating voltage range <sup>2</sup>	160 - 1,000 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	5,500 W	6,600 W	8,800 W	11,000 W	12,000 W
Output (On Grid)					
Grid connection	Three-phase				
Rated output power	5,000 W	6,000 W	8,000 W	10,000 W	12,000 W
Max. apparent power	5,500 VA	6,600 VA	8,800 VA	11,000 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	8.3 A	10.0 A	13.3 A	16.7 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	5,000 W	6,000 W	8,000 W	10,000 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				
Connector temperature detection	Yes (PV & Battery connectors)				
Ripple receiver control	Yes				
Battery charging from grid	Yes				
General Specification					
Operating temperature range	-25°C - +60°C (-13°F - +140°F)				
Relative operating humidity	0 % - 100% RH				
Max. operating altitude	4,000 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	SUN2000-450W-P2, SUN2000-600W-P				
Safety	EN/IEC62109-1, EN/IEC62109-2				
Grid connection standards	IEC61727, IEC62116, MEA/PEA, G99, 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				

\*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.

# SMART ENERGY CONTROLLER

SUN2000-12/15/17/20/25K-MB0



**Active Safety**  
AFCI Active Arcing  
Protection



**Higher Yields**  
Up to 30% More Energy  
with Optimizer <sup>1</sup>



**Battery Ready**  
2 Battery Terminals;  
Compatible with LUNA2000-S0

# SUN2000-12/15/17/20/25K-MB0

## Technical Specification

Technical Specification <sup>1</sup>	SUN2000-12K-MB0	SUN2000-15K-MB0	SUN2000-17K-MB0	SUN2000-20K-MB0	SUN2000-25K-MB0
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%
DC Input					
Recommended max. PV power	18,000 Wp	22,500 Wp	22,500 Wp	30,000 Wp	37,500 Wp
Max. input voltage <sup>2</sup>	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 <sup>3</sup>	200 V ~ 1,000 V				
Full-load MPPT voltage range	370 V ~ 800 V	410 V ~ 800 V	440 V ~ 800 V	480 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	13.2 kW	16.5 kW	18.7 kW	22.0 kW	25.0 kW
Max. operating current	26.25 A (per string)				
Operating voltage range	600 V ~ 980 V				
Output					
Rated output power	12,000 W	15,000 W	17,000 W	20,000 W	25,000 W
Max. apparent power	13,200 VA	16,500 VA	18,700 VA	22,000 VA	27,500 VA
Max. active power (cosφ = 1)	13,200 W	16,500 W	18,700 W	22,000 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	18.2 A / 380 Vac	22.8 A / 380 Vac	25.8 A / 380 Vac	30.4 A / 380 Vac	38.0 A / 380 Vac
	17.3 A / 400 Vac	21.7 A / 400 Vac	24.5 A / 400 Vac	28.9 A / 400 Vac	36.1 A / 400 Vac
	16.7 A / 415 Vac	20.9 A / 415 Vac	23.7 A / 415 Vac	27.8 A / 415 Vac	34.8 A / 415 Vac
Max. output current	20.2 A / 380 Vac	25.2 A / 380 Vac	28.6 A / 380 Vac	33.6 A / 380 Vac	42.0 A / 380 Vac
	19.1 A / 400 Vac	23.9 A / 400 Vac	27.1 A / 400 Vac	31.9 A / 400 Vac	39.9 A / 400 Vac
	18.5 A / 415 Vac	23.1 A / 415 Vac	26.1 A / 415 Vac	30.8 A / 415 Vac	38.5 A / 415 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				
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.) (Derating above 2,000 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 (21.5 x 18.1 x 9.0 inch)				
Protection level	IP66				
Max. number of paralleled unit (with Smart String ESS)	3				
Optimizer Compatibility					
Compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P, MERC-1100W-P, MERC-1300W-P				
Standards Compliance (More Available Upon Request)					
Certificates	EN/IEC62109-1, EN/IEC62109-2				
Grid connection standards	IEC61727, IEC62116, IEC61683, EN50530, ABNT NBR 16149/16150, MEA/PEA, G99, IRR-DCC-MV/IRR-TIC, 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, CEI-016, C10/C11, EN50549-2, VDE4110				

<sup>1</sup> For Thailand, only SUN2000-12K-MB0 & SUN2000-15K-MB0 & SUN2000-20K-MB0 are available.

<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.

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.

# SMART STRING ENERGY STORAGE SYSTEM

LUNA2000-7/14/21-S1



### Flexible Capacity

6.9 kWh per Battery Module

Scalable from 6.9 kWh to 20.7 kWh per Group  
Max. 4 Groups with 82.8 kWh for an Inverter<sup>8</sup>



### More Usable Energy

Module+ Architecture, Built-in Energy Optimizer  
Ultra-long Service Time  
100% Depth of Discharge



### 5-layer Safety Protection

Cell-level, Electrical-level,  
Structural-level  
Active Protection, Emergency Protection



### Ultimate Use Experience

-20 °C to +55°C Operating Temperature  
Max 10.5kW Charging & Discharging Power  
per Group  
Super Quiet Operation



### Easy Installation

Cable Free Connection Between Modules  
Horizontal Adjustment Design  
Quick Commissioning



### Aesthetically Pleasing Design

Breathing Star Ring Display  
Silky Curve Design  
Simplistic and Borderless

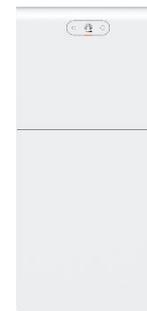
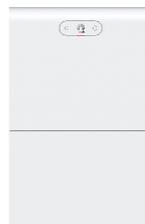
# LUNA2000-7/14/21-S1 Technical Specification

LUNA2000-21-S1

LUNA2000-7-S1



LUNA2000-14-S1



## Performance

Power module	LUNA2000-10KW-C1		
Number of power modules	1		
Battery module	LUNA2000-7-E1		
Battery module energy	6.9 kWh		
Number of battery modules	1	2	3
Battery usable energy <sup>1</sup>	6.9 kWh	13.8 kWh	20.7 kWh
Max. charging & discharging power	3.5 kW	7 kW	10.5 kW
Operating voltage range (single-phase system)	350 – 560 V		
Operating voltage range (three-phase system)	600 – 980 V		

## Communication

Display	SOC status indicator, LED indicator		
Communication <sup>2</sup>	RS485/FE/CAN		

## General Specification

Dimensions (W x D x H)	590 mm x 255 mm x 510 mm	590 mm x 255 mm x 870 mm	590 mm x 255 mm x 1230 mm
Weight (Floor stand toolkit included)	80 kg	148 kg	216 kg
Power module dimension (W x D x H)	590 mm x 255 mm x 150 mm		
Power module weight	10 kg		
Battery module dimensions (W x D x H)	590 mm x 255 mm x 360 mm		
Battery module weight <sup>3</sup>	68 kg		
Installation	Floor stand (standard), Wall mounting (optional)		
Operating temperature <sup>4</sup>	-20°C to +55°C (-4°F to +131°F)		
Max. operating altitude <sup>5</sup>	4,000 m (13,123 ft.) (Derating above 2,000 m)		
Environment <sup>6</sup>	Outdoor/Indoor		
Relative humidity	5% - 95%		
Cooling	Natural convection		
Protection rating	IP 66		
Noise emission	< 29 dB <sup>7</sup>		
Cell technology	Lithium iron phosphate (LiFePO <sub>4</sub> )		
Scalability <sup>8</sup>	Max. 4 systems in parallel operation		
Compatible inverters <sup>9</sup>	SUN2000-12/15/17/20/25K-MB0, SUN2000-3/4/5/6/8/10KTL-M1 SUN2000-5/6/8/10/12K-MAP0, SUN2000-8/10K-LC0, SUN2000-2/3/3.68/4/4.6/5/6KTL-L1 SUN5000-8/12K-MAP0, SUN5000-17/25K-MB0		

## Standards Compliance (more available upon request)

Certificates	CE, RCM, CEC, VDE2510-50, IEC62619, IEC 60730, UN38.3, ISO13849, REACH, RoHS
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## Ordering and Deliverable Part

Available for ordering <sup>10</sup>	LUNA2000-7-E1, LUNA2000-10KW-C1, Wall Mounting Bracket for LUNA2000-7/14/21-S1
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1. Test conditions: 100% depth of discharge (DoD), 0.2C rate charge & discharge at 25°C, at the beginning of service life.

2. CAN is for communication between energy storage in parallel scenarios only. Launch time of FE communication is to be determined, please confirm with your local product manager of Huawei for final version.

3. The weight of the battery modules varies with products, with a tolerance of ±3%.

4. The output power may be affected by temperature. Please refer to the output derating curve for details.

5. The output power may be affected by altitude. Please refer to the output derating curve for details.

6. Outdoor installation is recommended. For indoor installation instructions, please refer to the user manual.

7. The data is from Huawei lab, and the test condition is 1m distance and typical working voltage.

8. Only SUN2000-12/15/17/20/25K-MB0 supports 4 energy storage systems in parallel operation.

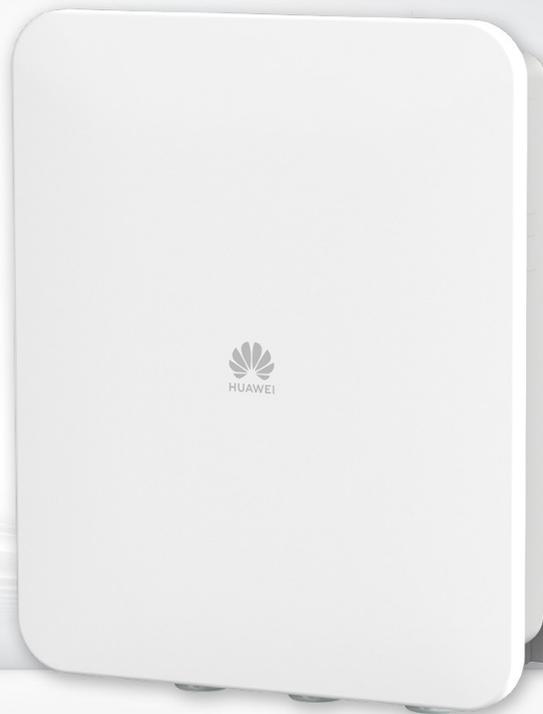
9. LUNA S1 will be compatible with inverter SUN2000 MAP0/L1/LC0 and SUN5000 MAP0/MB0 in 2024.Q3.

10. The power module and battery modules of the storage system are separately order in the required quantity.

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# SMARTGUARD

Model: SmartGuard-63A-T0/AUT0



### Simple

Three-phase whole home backup supported



### Seamless

≤20ms Ultra-fast switchover to power backup mode



### Reliable

Provide bypass mode when a fault occurs



### Intelligent

Ready for DG, intelligent loads management with SA4H-A02

# SmartGuard-63A-T0/AUTO Technical Specifications

Technical Specification	SmartGuard-63A-T0	SmartGuard-63A-AUTO
General Data		
Dimensions (W x H x D)	490 mm × 600 mm × 170 mm	
Weight (not including mounting plate)	17 kg	
Performance		
AC Voltage (Nominal)	380/400/415V, 220/230/240V, L1/L2/L3/N+PE	
Max. current (from/to Grid)	63 A	
Max. current (from/to Inverter)	60 A	
Max. current (to Backup Load)	63 A	
Max. current(to Non-BackupLoad) <sup>1</sup>	63 A	
Low-Voltage ride-through	Supported	
Switchover time	≤ 20ms (MAPO), ≤ 100ms (M1/MB0) <sup>2</sup>	
Bypass operation mode	Manual	
DG mode	Remote control	
Interface		
Power output	9.5–13.2V @ 100mA, ≤ 3m	
LAN	10/100Mbps, ≤ 100m	
WAN	10/100Mbps, ≤ 100m	
WLAN	AP Mode, 802.11b/g/n (2.412GHz–2.484GHz)	
RS485	9600/19200/115200bps, × 2, ≤ 50m	
Digital input	×2, ≤ 20m; Active port <sup>3</sup>	
Digital output	×2, ≤ 20m	
DG Do Port	Passive Port, 1–100mA ≤24V	
ATS	Need prepare the ATS, which supports automatic control and automatic switch-in and reset.	
Measurement Range		
Current range	≤ 63 A	
Energy accuracy	± 1%	
Device Management		
Smart energy controllers	up to 3	
Smart chargers	up to 2	
Heat pump	up to 1 <sup>4</sup>	
Shelly device	up to 20	
Environment		
Cooling	Natural Convection	
Relative humidity range	5%-95% RH (non condensing)	
Max. operating altitude	4000m (derated over 2000m)	
Degree of protection	IP55	
Operating temperature range	-25°C–50°C <sup>5</sup>	
Compatible Device		
Smart energy controller	Max. 3 inverters supported in parallel connection (MAPO) Max. 1 inverter supported (M1/MB0)	
Smart charger	SCharger-7KS/22KT-50	
Heat pump	SG-ready	
Shelly device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM <sup>6</sup>	

<sup>\*1</sup> The sum of the output current of the backup port and the non backup port could not be more than 63A

<sup>\*2</sup> Seamless switching is disabled by default and needs to be manually enabled.

<sup>\*3</sup> The position feedback signal must be a passive port that works with an external circuit and can work at a current of less than or equal to 0.7 mA@12 V.  
The low impedance of the circuit for the position feedback signal is less than or equal to 100 ohms.

<sup>\*4</sup> 1 SG ready Heat Pump can be connected directly. Others can be connected via shelly devices.

<sup>\*5</sup> On grid Mode: 25–30°C, no derating; 30–50°C, linear derating from 63A to 43A;  
Off grid Mode: 25–40°C, no derating; 40–50°C, linear derating from 60A to 50A

<sup>\*6</sup> The supported firmware version of shelly devices can be found in user manual.

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