Fusionsolar

Huawei SUN2000-2/3/3.68/4/4.6/5/6KTL-L1

- **Energy management & Backup** | compatible with the new EMMA and SmartGuard
- **‘Battery-ready’ single phase inverter** | compatible with both LUNA-S0 and LUNA-S1 ESS models
- **Plug & Play design** | quick installation and easy commissioning with the FusionSolar App

HUAWEI

Huawei SUN2000-2/3/3.68/4/4.6/5/6KTL-L1

Technical Specification	SUN2000 2KTL-L1	SUN2000 3KTL-L1	SUN2000 3.68KTL-L1	SUN2000 4KTL-L1	SUN2000 4.6KTL-L1	SUN2000 5KTL-L1	SUN2000 6KTL-L1
Efficiency							
Max. efficiency	98.2%	98.3%	98.4%	98.4%	98.4%	98.4%	98.4%
European weighted efficiency	96.7%	97.3%	97.3%	97.5%	97.7%	97.8%	97.8%
Input (PV)							
Recommended max. PV power*1	3 000 Wp	4 500 Wp	5 520 Wp	6 000 Wp	6 900 Wp	7 500 Wp	9 000 Wp
Max. input	600 V						
Start-up voltage	100 V						
MPPT operating voltage range	90 V - 560 V						
Rated input voltage	360 V						
Max. input current per MPPT	13.5 A						
Max. short-circuit current	18 A						
Number of MPP trackers	2						
Max. input number per MPP tracker	1						
Smart String ESS Terminal (DC input/ AC output)							
Compatible HUAWEI battery	LUNA2000-5/10/15-S0, LUNA2000-7/14/21-S1						
Operating voltage range	350 ~ 560 Vdc						
Max. oper. current	15 A						
Charge power	5 000 W*3						
Max. discharge power	2 200 W	3 300 W	3 680 W	4 400 W	4 600 W	5 000 W	5 000 W
Output (On Grid)							
Grid connection	Single phase						
Rated output power	2 000 W	3 000 W	3 680 W	4 000 W	4 600 W	5 000 W	6 000 W
Max. apparent power	2 200 VA	3 000 VA	3 680 VA	4 400 VA	5 000 VA*5	5 500 VA*6	6 000 VA
Rated output voltage	220 Vac / 230 Vac / 240 Vac						
Rated AC grid frequency	50 Hz / 60 Hz						
Max. output current	10 A	15 A	16 A	20 A	23 A*7	25 A*7	27.3 A
Adjustable power factor	0.8 leading ... 0.8 lagging						
Max. total harmonic distortion	≤ 3 %						
Output (Off Grid)							
HUAWEI Backup solution (Optional)	Backup Box - B0, SmartGuard-63A-S0						
Maximum apparent power	2 000 VA	3 000 VA	3 680 VA	4 000 VA	4 600 VA	5 000 VA	5 000 VA
Rated output voltage	220 V / 230V						
Maximum output current	9.1 A	13.6 A	16.7 A	18.2 A	20.9 A	22.7 A	22.7 A
Power factor range	0.8 leading ... 0.8 lagging						
Protection & Features							
Anti-Islanding protection	Yes						
DC reverse polarity protection	Yes						
Insulation monitoring	Yes						
DC/AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11						
Residual current monitoring	Yes						
AC over current / short-circuit protection	Yes						
AC short-circuit protection	Yes						
AC overvoltage protection	Yes						
Over-heat / arc fault protection	Yes						
Battery reverse charging from grid	Yes						
General Data							
Operating temperature range	-25 ~ +60 °C						
Relative operating humidity	0 % RH -100 % RH						
Max. operating altitude	4 000 m (13.123 ft.) (Derating above 2 000 m)						
Cooling	Natural convection						
Display	LED indicators; integrated WLAN + FusionSolar APP						
Communication interfaces	RS485, WLAN via inverter built-in WLAN module Ethernet via Smart Dongle-WLAN-FE (Optional); 4G / 3G / 2G via Smart Dongle-4G (Optional), EMMA (Optional)						
Weight (incl. mounting bracket)	12.0 kg (26.5 lb)						
Dimension (incl. mounting bracket)	365 * 365 * 156 mm (14.4 x 14.4 x 6.1 inch)						
Degree of protection	IP65						
Nighttime power consumption	< 2.5 W						
Smart Module Controller Compatibility							
Compatible HUAWEI optimizer (DC MBUS)	SUN2000-450W-P2, SUN2000-600W-P						
Standard Compliance (more available upon request)							
Safety	EN/IEC 62109-1, EN/IEC 62109-2						
Grid connection standards	G98, G99, EN 50549-1, CEI 0-21, VDE-AR-N-4105, AS 4777.2, C10/11, ABNT, UTE C15-712, RD 1699, TOR Erzeuger Typ A, IEC61727, IEC62116						

*1 Inverter max input PV power is 10 000 Wp when long strings are designed and fullyconnected with SUN2000-450W-P power optimizers.
*3 2 500W @5kWh HUAWEI LUNA battery
*4 AS4777.2: 4 991 W. *5 VDE-AR-N 4105: 4 600 VA / AS47772: 4 999 VA *6 AS4777.2: 4 999 VA *7 AS4777.2: 21.7A.

Fusionsolar

Huawei SUN2000-8/10K-LC0

- **Energy management & Backup** | compatible with the new EMMA and SmartGuard
- **‘Battery-ready’ single-phase inverter** | up to 30% More Energy with Smart Module Controllers (PV Optimizers)
- **Plug & Play design** | quick installation and easy commissioning with the FusionSolar App

HUAWEI

Huawei SUN2000-8/10K-LC0

Technical Specifications	SUN2000-8K-LC0	SUN2000-10K-LC0
	Efficiency	
Max. efficiency	98.1%	
European weighted efficiency	97.5%	
	DC Input (PV)	
Recommended max. PV power*1	12 000 Wp	15 000 Wp
Max. input voltage	600 V	
Start-up voltage	50 V	
MPPT operating voltage range	40 - 560 V	
Rated input voltage	360 V	
Max. input current per MPPT	16 A	
Max. short-circuit current	20 A	
Number of MPP trackers	3	
Max. input number per MPP tracker	3	
	Smart String ESS Terminal (DC input/ AC output)	
Compatible HUAWEI battery	LUNA2000-5/10/15-S0, LUNA2000-7/14/21-S1	
Operating voltage range	350 ~ 560 Vdc	
Max. oper. current	25 A	
Charge power	5 000 W	
Max. Charge power	8 000 W	10 000 W
Max. Discharge power	8 000 W	10 000 W
	Output (On Grid)	
Grid connection	Single phase	
Rated output power	8 000 W	10 000 W
Max. apparent power	8 800 VA	10 000 VA
Rated output voltage	220 Vac / 230 Vac / 240 Vac, L / N + PE	
Rated AC grid frequency	50 Hz / 60 Hz	
Max. output current	40.0 A	45.5 A
Adjustable power factor	0.8 leading ... 0.8 lagging	
Max. total harmonic distortion	≤ 3 %	
HUAWEI Backup solution (Optional)	Yes (via SmartGuard-63A-S0)	
	Features & Protection	
Anti-Islanding protection	Yes	
DC reverse polarity protection	Yes	
Insulation monitoring	Yes	
DC/AC surge protection	Yes, compatible with TYPE II protection class according to EN/IEC 61643-11	
Residual current monitoring	Yes	
AC over current / short-circuit protection	Yes	
AC short-circuit protection	Yes	
AC overvoltage protection	Yes	
Over-heat protection	Yes	
Arc fault protection	Yes	
Battery reverse charging from grid	Yes	
	General Data	
Operating temperature range	–25°C to +60°C (-13 °F ~ 140 °F)	
Relative operating humidity	0% -100 % RH	
Max. operating altitude	4 000 m (13.123 ft.) (Derating above 2 000 m)	
Cooling	Natural convection	Smart Air Cooling
Display	LED indicators; integrated WLAN + FusionSolar APP	
Communication interfaces	RS485, WLAN / Ethernet via Smart Dongle-WLAN-FE (Optional); 4G / 3G / 2G via Smart Dongle-4G (Optional); EMMA (Optional)	
Weight (incl. mounting bracket)	14.5 kg (31.967 lb)	15 kg (33.069 lb)
Dimension incl. mounting bracket (W x H x D)	425 x 376.5 x 150 mm (16.73 x 14.84 x 5.90 inch)	
Degree of protection	IP 66	
	Smart Module Controller Compatibility	
Compatible HUAWEI optimizer (DC MBUS)	SUN2000-450W-P2, SUN2000-600W-P	
	Standard Compliance (more available upon request)	
Certificates	EN/IEC 62109-1, EN/IEC 62109-2	
Grid connection standards	EN 50549-1, UNE 217001/RD244, UNE 217002, NTS, VDE 0126-1-1, ABNT, P140, NRS 097-2-1, IEC 61000-2-2, PEA, MEA, G99, IEC 61727, IEC 62116, IEC 63027, IEEE 1547, PGC Resolution No.07	

*1.The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.

Fusionsolar

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

- **Optimized AC Power** | support Asymmetrical Output Power
- **Seamless System Retrofits** | optimal integration with multiple Residential FusionSolar PV solutions
- **Advanced Safety Features** | innovative Risk reduction & Fault prevention strategies on the DC side

HUAWEI

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

Technical Specification	SUN2000-5K-MAP0	SUN2000-6K-MAP0	SUN2000-8K-MAP0	SUN2000-10K-MAP0	SUN2000-12K-MAP0
	Efficiency				
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 %
	DC Input (PV)				
Recommended max. PV power*1	9 000 Wp	11 000 Wp	14 600 Wp	18 000 Wp	22 000 Wp
Max. input voltage*2	1 100 V				
Operating voltage range*3	160 ~ 1000 V				
Start-up 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. number of inputs	1				
	Smart String ESS Terminal (DC input/ AC output)				
Compatible HUAWEI 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	5 000 W	6 000 W	8 000 W	10 000 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 Vac / 380 Vac, 230 Vac / 400 Vac, 3W / N+PE				
Rated AC grid frequency	50 Hz / 60 Hz				
Max. output current	8.3 A / 380 Vac 8.0 A / 400 Vac 7.7 A / 415 Vac	10.0 A / 380 Vac 9.6 A / 400 Vac 9.2 A / 415 Vac	13.3 A / 380 Vac 12.8 A / 400 Vac 12.2 A / 415 Vac	16.7 A / 380 Vac 15.9 A / 400 Vac 15.3 A / 415 Vac	20.2 A / 380 Vac 19.1 A / 400 Vac 18.5 A / 415 Vac
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3 %				
	Output (Off Grid)				
HUAWEI Backup solution (Optional)	SmartGuard-63A-T0 (three-phase)				
Rated output Power	5 000 W	6 000 W	8 000 W	10 000 W	12 000 W
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 240 Vac / 415 Vac 3W / N + PE				
110% overload	Continuous				
150% overload	5 min (three-phase) / 5 min (Single-phase)			1 min (three-phase) / 5 min (Single-phase)	
200% overload	10 seconds				
Automatic switchoer time	≤ 20 ms (with SmartGuard-63A-T0)				
	Protection Features				
Asymmetric load	Yes, supports 100 % three-phase unbalanced load				
Input-side disconnection device	Yes				
Anti-Islanding protection	Yes				
DC reverse polarity protection	Yes				
Insulation monitoring	Yes				
AC/DC surge protection	Yes, compatible 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 inputs)				
Ripple receiver control	Yes				
Battery reverse charging from grid	Yes				
	General Specification				
Operating temperature range	-25 ~ +60 °C (-13 °F ~ 140 °F)				
Relative operating humidity	0 % -100 % RH				
Max. operating altitude	4 000 m (13 123 ft.)				
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 bracket)	21 kg (46.29 lb)				
Dimension incl. mounting bracket	490 x 460 x 130 mm (19.29 x 18.11 x 5.11 inch) (W x H x D)				
Degree of protection	IP66				
Nighttime power consumption	< 5.5 W				

*1: For Thailand, only SUN2000-5K-MAP0 and SUN2000-10K-MAP0 are available
*2: The max. 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.

Fusionsolar

Huawei SUN5000-8/12K-MAP0

- **Optimized AC Power** | support Asymmetrical Output Power
- **Seamless System Retrofits** | optimal integration with multiple Residential FusionSolar PV solutions
- **Advanced Safety Features** | innovative Risk reduction & Fault prevention strategies on the DC side
- **Full-optimization scenario required** | compatible with Residential Smart Module controllers and the new MERC-600W-P

HUAWEI

Huawei SUN5000-8/12K-MAP0

Technical Specification	SUN2000-8K-MAP0	SUN2000-12K-MAP0
	Efficiency	
Max. efficiency	98.6 %	98.6 %
European weighted efficiency	98 %	98.2 %
	DC Input (PV)	
Recommended max. PV power	14 600 Wp	22 000 Wp
Max. input voltage*1	1 100 V	
Operating voltage range*2	160 ~ 1 000 V	
Start-up 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. number of inputs	1	
	Smart String ESS Terminal (DC input/ AC output)	
Compatible HUAWEI 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	8 000 W	12 000 W
	Output (On Grid)	
Grid connection	Three-phase	
Rated output power	8 000 W	12 000 W
Max. apparent power	8 800 VA	13 200 VA
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 240 Vac / 450 Vac 3W / N+PE	
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)	
HUAWEI Backup solution (Optional)	SmartGuard-63A-T0 (three-phase)	
Rated output Power	8 000 W	12 000 W
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 240 Vac / 450 Vac 3W / N+PE	
110% overload	Continuous	
150% overload	5 min (three-phase) / 5 min (Single-phase)	
200% overload	10 seconds	
Automatic switchoer time	≤ 20 ms (with SmartGuard-63A-T0)	
	Protection Features	
Asymmetric load	Yes, supports 100 % three-phase unbalanced load	
Input-side disconnection device	Yes	
Anti-Islanding protection	Yes	
DC reverse polarity protection	Yes	
Insulation monitoring	Yes	
AC/DC surge protection	Yes, compatible 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 inputs)	
Ripple receiver control	Yes	
Battery reverse charging from grid	Yes	
	General Specification	
Operating temperature range	-25 ~ +60 °C (-13 °F ~ 140 °F)	
Relative operating humidity	0 % -100 % RH	
Max. operating altitude	4 000 m (13 123 ft.)	
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 bracket)	21 kg (46.29 lb)	
Dimension incl. mounting bracket	490 x 460 x 130 mm (19.29 x 18.11 x 5.11 inch) (W x H x D)	
Degree of protection	IP66	
Nighttime power consumption	< 5.5 W	
	Smart Module Controller compatibility	
DC MBUS compatible PV optimizer	SUN2000-450W-P2, SUN2000-600W-P, MERC-600W-P	

*1:The max. 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 malfunction

Fusionsolar

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

- **Energy management & Backup** | compatible with the new EMMA and SmartGuard
- **‘Battery-ready’ three-phase inverter** | compatible with both LUNA-S0 and LUNA-S1 ESS models
- **Plug & Play design** | quick installation and easy commissioning with the FusionSolar App

HUAWEI

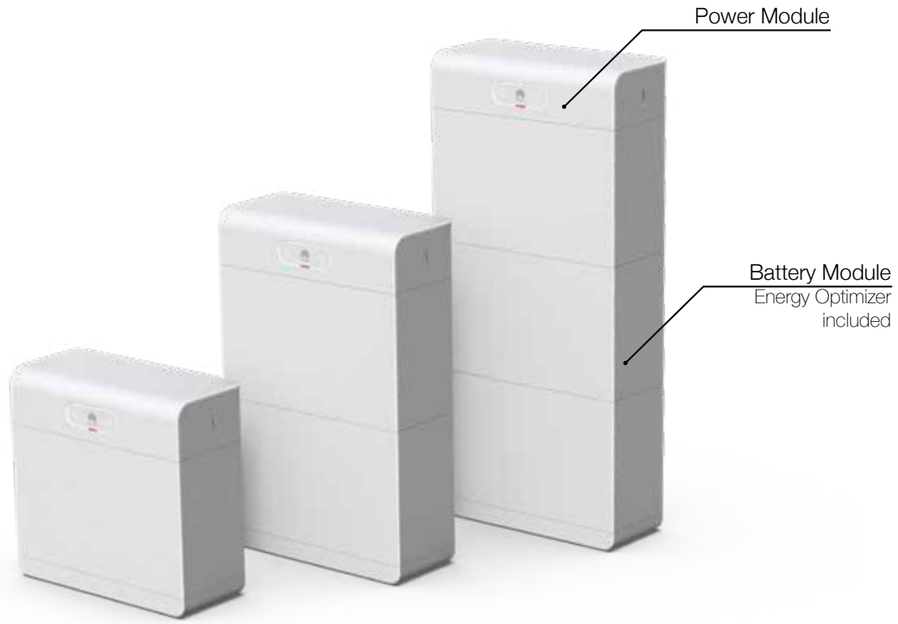
Huawei SUN2000-12/15/17/20/25K-MB0

Technical Specification	SUN2000-12K-MB	SUN2000-15K-MB	SUN2000-17K-MB	SUN2000-20K-MB	SUN2000-25K-MB
	Efficiency				
Max. efficiency	98.4 %	98.4 %	98.4 %	98.4 %	98.4 %
European weighted efficiency	97.9 %	98 %	98.1 %	98.1 %	98.2 %
	DC Input (PV)				
Recommended max. PV power	18 000 Wp	22 500 Wp	22 500 Wp	30 000 Wp	37 500 Wp
Max. input voltage*1	1 100 V				
MPPT operating voltage range*2	200 V ~ 1000 V				
Start-up voltage	200 V				
Rated input voltage	600 V				
Max. input current per MPPT	300 A (two strings) / 20 A (single string)				
Max. short-circuit current	40 A				
Number of MPP trackers	2				
Max. number of inputs	4				
	Smart String ESS Terminal (DC input/ AC output)				
Compatible HUAWEI battery	LUNA2000-5/10/15-S0, LUNA2000-7/14/21-S1				
Operating voltage range	600 V ~ 980 V				
Max. operating current	26.25 A (per string)				
Max. charge 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
	Output (AC)				
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 VA	16 500 VA	18 700 VA	22 000 VA	27 500 VA
Rated output voltage	220 Vac / 380 Vac, 230 Vac / 400 Vac, 240 Vac / 415 Vac; 3W / N + PE				
Rated AC grid frequency	50 Hz / 60 Hz				
Rated output current	18.2 A / 380 Vac 17.3 A / 400 Vac 16.7 A / 415 Vac	22.8 A / 380 Vac 21.7 A / 400 Vac 20.9 A / 415 Vac	25.8 A / 380 Vac 24.5 A / 400 Vac 23.7 A / 415 Vac	30.4 A / 380 Vac 28.9 A / 400 Vac 27.8 A / 415 Vac	38.0 A / 380 Vac 36.1 A / 400 Vac 34.8 A / 415 Vac
Adjustable power factor	0.8 leading ... 0.8 lagging				
Max. total harmonic distortion	≤ 3 %				
	Features & Protections				
Over voltage 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 TYPE II protection class according to EN / IEC 61643-11				
DC insulation resistance detection	Yes				
Residual current monitoring unit	Yes				
Arc fault protection	Yes				
Battery reverse charging from grid	Yes				
	General Data				
Operating temperature range	-25 ~ +60 °C (-13 °F ~ 140 °F)				
Relative operating humidity	0 % RH -100 % RH				
Max. operating altitude	4 000 m (13 123 ft.) (Derating above 2 000 m)				
Cooling-mode	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 (46,297 lb)				
Dimension (W x H x D)	546 x 460 x 241.5 mm (21.49 x 18.11 x 9.50 inch)				
Degree of protection	IP66				
Max. number of paralleled unit (with Smart String ESS)	3				
	Smart Module Controller Compatibility				
Compatible HUAWEI optimizer (DC MBUS)	SUN2000-450W-P2, SUN2000-600W-P / MERC-1100W-P, MERC-1300W-P				
	Standard Compliance (more available upon request)				
Certificates	EN/IEC 62109-1, EN/IEC 62109-2				
Grid connection standards	G98, G99, EN 50438, EN50549-1, CEI 0-21, VDE-AR-N-4105, AS 4777, C10/11, ABNT, UTE C15-712, RD 1699, TOR Erzeuger, IEC61727, IEC62116, DEWA				

*1: For Thailand, only SUN2000-12K-MB0 & SUN2000-15K-MB0 & SUN2000-20K-MB0 are available.
*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.

Fusionsolar

Huawei LUNA2000-7/14/21-S1



- **Modular Capacity Expansion** | from 6.9 to 20.7 kWh per ESS group tower*9
- **More Usable Energy** | Module+ Architecture with built-in energy Optimizer for 100% depth of discharge
- **5-layer Safety Protection** | cell-level, electrical-level, structural-level active Protection, emergency protection
- **Ultimate Use Experience** | max 10.5 kW charging & discharging power per ESS group tower
- **New Plug & Play design** | cable free connection between modules & easy commissioning with FusionSolar App
- **Longest Market service life** | 15-years warranty secure operation

Huawei LUNA2000-7/14/21-S1

	Performance		
Power module	LUNA2000-10KW-C1		
Number of power modules	1		
Battery module	LUNA2000-7-E1		
Battery module energy content	6.9 kWh		
Number of battery Modules	1	2	3
Battery usable energy*1	6.9 kWh	13.8 kWh	20.7 kWh
Max. output power	3.5 kW	7 kW	10.5 kW
Operating voltage range (single phase system)	350 V - 560 V		
Operating voltage range (three phase system)	600 V - 980 V		
	Communication Interfaces		
Display	SOC status indicator, LED indicator		
Communication*2	RS485/ FE/ CAN-BUS (only for parallel operation)		
	General Data		
Dimension (W x D x H)	590 x 255 x 510 mm 23.22 x 10.03 x 20.07 inch	590 x 255 x 870 mm 23.22 x 10.03 x 34.25 inch	590 x 255 x 1 230 mm 23.22 x 10.03 x 48.42 inch
Weight (Floor stand toolkit included)	80 kg (176.37 lb)	148 kg (326.28 lb)	216 kg (476.19 lb)
Power module dimension (W x D x H)	590 x 255 x 150 mm (23.22 x 10.03 x 5.9 inch)		
Power module weight	10 kg (22.04 lb)		
Battery module dimension (W x D x H)	590 x 255 x 360 mm (23.22 x 10.03 x 14.17 inch)		
Battery module weight*3	50 kg (110.23 lb)		
Installation	Floor stand (standard), Wall mount (optional)		
Operating temperature*4	-20 °C ~ +55 °C (-4 °F-131 °F)		
Max. operating altitude*5	4 000 m (13 123 ft.) Derating above 2 000 m		
Environment*6	Outdoor / Indoor (*Please refer to the user manual for installation requirements)		
Relative humidity	5 % ~ 95 %		
Cooling	Natural convection		
Protection rating	IP 66		
Noise emission*7	<29 dB		
Cell technology	Lithium-iron phosphate (LiFePO4)		
Compatible HUAWEI inverters	SUN2000-12/15/17/20/25K-MB0*8, SUN2000-3/4/5/6/8/10KTL-M SUN2000-8/10K-LC0, SUN2000-2/3/3.68/4/4.6/5/6KTL-L1		
Max. Storage Capacity Scalability	Max. 4 ESSs towers in parallel operation (approx. 184 kWh)		
	Standard Compliance (more available upon request)		
Certificates	CE, RCM, CEC, VDE2510-50, IEC62619, IEC 60730, UN38.3, ISO13849, REACH, RoHS		
	Ordering and Deliverable Part		
Product ordering model*7	LUNA2000-7KW-E1, LUNA2000-5-E0, LUNA2000 Wall mounting bracket		

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

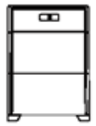
Fusionsolar

Huawei LUNA2000-5-10-15-S0

- More Usable Energy | 100 % depht of discharge pack level energy optimization
- Flexible Investment | 5 kWh modular design scalable from 5 to 30 kWh
- Safe & Reliable | Lithium iron phosphate
- Easy Installation | 12 kg power module
- Quick Commissioning | Automatically

HUAWEI

Huawei LUNA2000-5-10-15-S0

Technical Specification	LUNA2000-5-S0	LUNA2000-10-S0	LUNA2000-15-S0
			
	Performance		
Power module	LUNA2000-5 KW-C0		
Number of power modules	1		
Battery module	LUNA2000-5-E0		
Battery module energy	5 kWh		
Number of battery Modules	1	2	3
Battery usable energy*1	5 kWh	10 kWh	15 kWh
Max. output power	2.5 kW	5 kW	5 kW
Peak output power	3.5 kW, 10 s	7 kW, 10 s	7 kW, 10 s
Nominal voltage (single phase system)	450 V		
Operating voltage range (single phase system)	350 V - 560 V		
Nominal voltage (three phase system)	600 V		
Operating voltage range (three phase system)	600 V - 980 V		
	Communication		
Display	SOC Status, LED indicator		
Communication	RS485, CAN-BUS (only for parallel operation)		
	General Data		
Dimension (W x D x H)	670 x 150 x 600 mm 26.4 x 5.9 x 23.6 inch	670 x 150 x 960 mm 26.4 x 5.9 x 37.8 inch	670 x 150 x 1 320 mm 26.4 x 5.9 x 60.0 inch
Weight (Floor stand toolkit included)	63.8 kg (140.7 lb)	113.8 kg (250.9 lb)	163.8 kg (361.1 lb)
Power module dimension (W x D x H)	670 x 150 x 240 mm (26.4 x 5.9 x 9.4 inch)		
Power module weight	12 kg (26.5 lb)		
Battery module dimension (W x D x H)	670 x 150 x 360 mm (26.4 x 5.9 x 14.0 inch)		
Battery module weight*2	50 kg (110.2 lb)		
Installation	Floor stand (standard), Wall mount (optional)		
Operating temperature*3	-20 °C ~ +55 °C (-4 °F-131 °F)		
Max. operating altitude	4 000 m (13 123 ft.) Derating above 2 000 m		
Environment*4	Outdoor / Indoor (*Please refer to the user manual for installation condition)		
Relative humidity	5 % ~ 95 %		
Cooling	Natural convection		
Protection rating	IP 65		
Noise emission*5	<29 dB		
Cell technology	Lithium-iron phosphate (LiFePO4)		
Scalability	Max. 2 systems in parallel operation		
Compatible inverters	SUN2000L-2/3/3.68/4/4.6/5KTL1, SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-3/4/5/6/8/10KTL-M0*6, SUN2000-3/4/5/6/8/10KTL-M1		
	Standard Compliance (more available upon request)		
Certificates	CE, RCM, CEC, VDE2510-50, IEC62619, IEC 60730, UN38.3		
	Ordering and Deliverable Part		
Product ordering model*7	LUNA2000-5KW-C0, LUNA2000-5-E0, LUNA2000 Wall mounting bracket		

*1: Test conditions: 100 % depth of discharge (DoD), 0.2C rate charge & discharged 25 °C, at the beginning of life. If no PV modules are installed or the system has not detected sunlight for at least 24 hours, the minimum end of discharge SOC is 15%.
*2: The weight of the battery module is subject to the actual product, with a tolerance of ± 3 %
*3: Refer to battery warranty letter for conditional application.
*4: Improper storage system installation may compromise product warranty and operation safety. Please follow the user manual during the installation, use and maintenance of the storage system.
*5: Noise Level (Typical):< 29 dB (A) @1 m, 30 °C, Power On and Run Stably for 2 Hours
*6: Please contact local engineer for the compatibility between the SUN2000-3/4/5/6/8/10KTL-M0 with the LUNA2000.
*7: Storage system is ordered and delivered in the form of power module and battery module separately with corresponding quantity.

Fusionsolar

Huawei SmartGuard-63A-S0

- **Seamless installation** | single-phase home backup, no need of additional switchboard
- **Ultra-fast reaction** | ≤ 20ms backup switchover power mode
- **Reliable operation** | built-in manual bypass against faults
- **Intelligent backup** | supports intelligent load managament with built-in EMMA

HUAWEI

Huawei SmartGuard-63A-S0

Technical Specifications	SmartGuard-63A-S0
General Data	
Dimensions (W x H x D)	485 x 150 x 355 mm (19.09 x 5.9 x 13.97 inch)
Weight	≤ 14 kg (30.86 lb)
Performance	
AC Voltage (Nominal)	220 V /230 V /240 V , L/N+PE
Max. current (from Grid)	63 A
Max. current (from inverter)	60 A
Max. current (to Backup Load)	63 A
Max. current (to Non-Backup Load)*1	63 A
Self-consumption	10 W
Low-Voltage ride-through	Supported
Switchover response	≤ 20ms (in Seamless Mode)
Bypass operation mode	Manual
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 cable lenght distance
Digital Output	×2, ≤ 20m cable lenght distance
Measurement Range	
Current Range	≤ 63 A
Voltage Range	1P (L-N): 85 ~ 299 Vac
Energy/ Measurement Accuracy	±1%
Device Management	
HUAWEI inverters	up to 1
HUAWEI Smart EV Chargers	up to 2
SG-ready Heat pumps	up to 1*2
Shelly device	up to 20
Compatible Device	
HUAWEI inverters	SUN2000-2-6KTL-L1 / SUN2000-8-10K-LC0
AC-Wallbox Smart Charger	SCharger-7KS
Heat pump	SG-ready
Shelly device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM*3
Environment	
Noise emission	≤29 dBA
Cooling method	Natural convection
Relative humidity range	5% ~ 95% RH (non condensing)
Max. operating altitude	4000 m (derating above 2000m)
Protection degree	IP 55
Operating temperature range	-25°C ~ 50°C (- 4 ~ +122 °F) *4

*1: The sum of the output current of the backup port and the non-backup port could not be more than 63A
*2: 1 SG-ready Heat Pump can be connected directly. Others can be connected via shelly devices.
*3: The supported firmware version of shelly devices can be found in user manual
*4: On-grid Mode: 25~30 °C, no derating; 30~40 °C, linear derating from 63A to 50A; 40~50 °C, linear derating from 50A to 40A
Off-grid Mode: 25~40 °C, no derating; 40~50 °C, linear derating from 54.5A to 50A

Fusionsolar

Huawei EMMA-A02

- **Intelligent Energy Managament** | optimal control of PV, ESS, Charger, and third-party home appliances
- **Powered with Artificial Intelligence** | PV use and ESS capacity preparation based on 24h weather prediction
- **FusionSolar App integration** | for real-time monitoring and user's energy profile configuration
- **Communication and measurement** | multiple communication options and with accurate measurement capability

HUAWEI

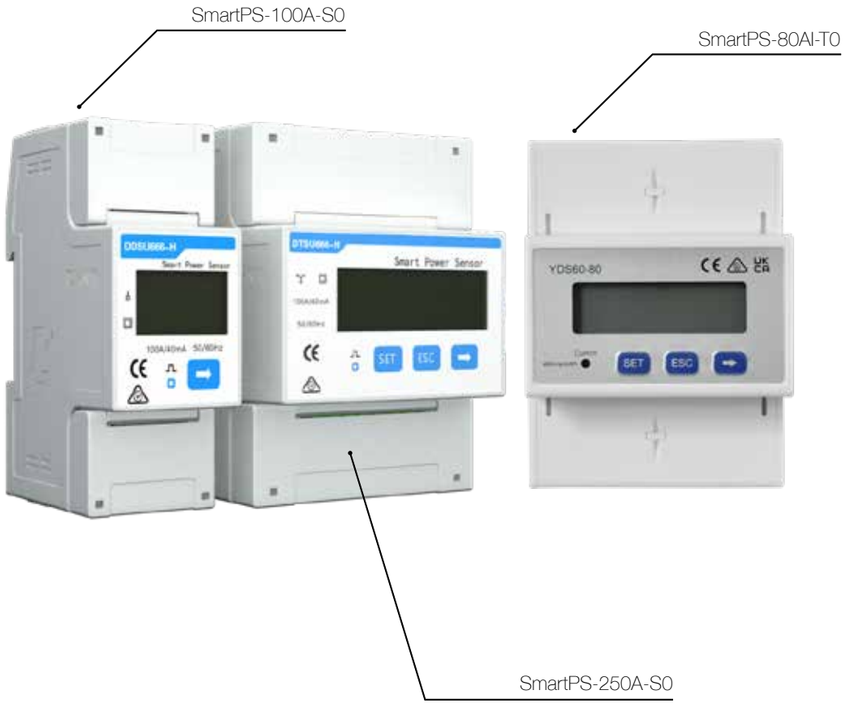
Huawei EMMA-A02

Technical Specifications	EMMA-A02		
General Data			
Dimensions (W x H x D)	108 x 100 x 65 mm (4.25 x 3.93 x 2.55 inch)		
Mounting Type	DIN35 Rail		
Height requirement of cabinet	≤ 47.5 mm (18.70 inch)		
Weight	0.5 kg (1.10 lb)		
Power Supply			
AC Voltage	1P2W: 100 ~ 240V, 50 / 60Hz	3P3W: 346 ~ 415V, 50 / 60Hz	3P4W: 346 ~ 415V, 50 / 60Hz
Typical powe consumption	4 W		
Interface			
Power Output	9.5 ~13.2V @ 100 mA, ≤ 3m		
LAN	10 / 100Mbps,≤ 100m		
WAN	10 / 100Mbps,≤ 100m		
WLAN	AP + STA, 802.11b/g/n (2.412GHz ~ 2.484GHz)		
RS485	9600 / 19200 / 115200bps,× 2, ≤ 50m		
Digital Input	× 2, ≤ 20 m		
Digital Output	× 2, ≤ 20 m		
Interaction			
LED	LED Indicator × 3 RUN, ALM, COM		
Button	RST		
FusionSolar APP	Communication by WLAN for Commissioning		
Measurement Range			
Current Range	Direct connection: ≤ 63 A, external CT*1: > 63 A		
Voltage Range	1P (L-N): 85 ~ 299 Vac; 3P (L L): 148 ~520 Vac		
Energy/ Measurement Accuracy	±1%		
Device Management			
HUAWEI Smart Energy Controllers	up to 3		
HUAWEI Smart EV Chargers	up to 2		
SG-ready Heat pumps	up to 1*2		
Shelly device	up to 20		
Compatible Device			
HUAWEI inverters	SUN2000-2-6KTL-L1 SUN2000-8-10K LC0 SUN2000-3-10KTL-M1 SUN2000-12-25KTL-M5 SUN2000-12-25K-MB0		
AC-Wallbox Smart Charger	SCharger-7KS-S0 / SCharger-22KT-S0		
Heat pump	SG-ready		
Shelly device	Shelly Plus Plug S, Shelly Plus 2PM, Shelly Pro 2PM*3		
Environment			
Operating temperature range	-25 °C ~ +60 °C (-13 °F ~ +140 °F)		
Storage temperature range	-40 °C ~ +85 °C (-104 °F ~ +185 °F)		
Relative humidity range	5% ~ 95% RH (non condensing)		
Max. operating altitude	4000 m (derating above 2000 m)		
Protection degree	IP2X		

*1: 2nd current should be 50mA, length ≤ 30m
*2: 1 Heat Pumps are allowed to directly connect to EMMA-A02. More can be connected via shelly device
*3: The supported firmware version of shelly devices can be found in user manual

Fusionsolar

Huawei Smart Power Sensor



- Highly Accurate | Class 1 measurement accuracy
- Configurable baud rate | for rapid communication updates between devices
- Essential PV component | for PV + ESS + Chargerscenarios

HUAWEI

Huawei Smart Power Sensor

Technical Specification	SmartPS-100A-S0	SmartPS-250A-S0	SmartPS-80AI-T0
	General Specification		
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 80 mm (3.9 x 2.8 x 3.1 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	3P4W / 3P3W	3P4W / 3P3W
Input voltage (phase voltage)	176 Vac ~ 288 Vac		90 Vac ~ 500 Vac
Power consumption	≤ 0.8 W	≤ 1 W	≤ 1,5 W
	Measurement Range		
Line voltage	/	304 Vac ~ 499 Vac	90 Vac ~ 1000 Vac (> 500 with external PT) *1
Phase voltage	176 Vac ~ 288 Vac		52 Vac ~ 577 Vac
Current	0 ~ 100 A	0 ~ 250 A	0 ~ 80 A (> 80 with external CT) *2
	Measurement Accuracy		
Voltage	±0.5 %		
Current / Power / Energy	±1 %		
Frequency	±0.01 Hz		
	Communication		
Interface	RS485		
Baud rate	9 600 bps	4 800/9 600/19 200/115 200 (Default 9600 bps)	
Communication protocol	Modbus-RTU		
	Environment		
Operating temperature range	-25°C ~ 60°C (-13 °F ~ +140 °F)		
Storage temperature range	-40°C ~ 70°C (-104 °F ~ +158 °F)		
Operating humidity	5% RH ~ 95% RH (non-condensing)		
	Others		
Accessories	RS485 cable (10 m / 33 ft.)*3		
	1 CT 100 A/40 mA (5 m/16.4 ft.) 	3 CT 250 A/50 mA (5 m/16.4 ft.) 	

*1: 2nd voltage of PT 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.
*3: SKE recommendation: The supplied cable should not be used as it is not an protected and twisted.cable. Otherwise it can lead to errors!

Fusionsolar

Huawei Smart Module Controller SUN2000-450W-P2/600W-P

- **Optimized PV design** | losses reduction due to performance mismatch, shading and soiling
- **Efficient Troubleshooting** | Pinpoint fault detection
- **Rapid shutdown function** | automatic fire protection measure and 0V fast shutdown (0.2ms)
- **One-fits-all** | compatible with single and three-phase Huawei Smart Energy Controllers

HUAWEI

Huawei Smart Module Controller SUN2000-450W-P2/600W-P

Technical Specification	SUN2000-450W-P2	SUN2000-600W-P
	Input	
Rated Input DC Power*1	450 W	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	1 V	
Shutdown output impedance per optimizer	1 kΩ ± 10 %	
	Communication	
Communication protocol	DC MBUS	
	Standard Compliance	
Safety	IEC62109-1 (class II safety)	
RoHS	Yes	
	General Data	
Dimensions (W x H x D)	75 x 140 x 28 mm (3.0 x 5.5 x 1.1 inch)	
Weight (with mounting plate)	0.6 kg (1.3 lb.)	
Installation part (optional)	Frame Mounting Bracket / T-shaped Bolt*4	
Input connector	Stäubli MC4	
Output connector	Stäubli MC4	
Input wire length	0.15 m (0.5 ft.)	
Output wire length	1.3 m (4.3 ft.)	
Operating temperature / humidity range	-40 °C ~ 85 °C*5 / 0 % RH ~ 100 % RH	
Degree of protection	IP 68	
Compatible product	SUN2000-12/15/17/20/25K-MB0, SUN2000-8K/10K-LC0, SUN2000-2/3/3.68/4/4.6/5/6KTL-L1, SUN2000-3/4/5/6/8/10KTL-M1, SUN2000-30/36/40KTL-M3, SUN2000-12/15/17/20/25KTL-M5	
	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 Code	VDE-AR-N4105, EN 50549-1, EN 50549-2, RD 661, RD 1699, C10/11	

450W-P2 / 600W-P Long String Design Rules (Fully optimized)*6	SUN2000-2-6KTL-L1	SUN2000-8/10K-LC0	SUN2000-3-10KTL-M1	SUN2000-12/15/17/20/25K-MB0
Minimum optimizer number per string	4	4	6	6
Maximum optimizer number per string	25	20	35	35
Maximum DC power per string	6 000 W	6 000 W	10 000 W	12 000 W

*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 inverter in 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.
*6: SUN2000-450W-P2/600W-P and MERC-1100/1300W-P can NOT be used in mixture under the same Smart Energy/PV Controller.

Fusionsolar

Huawei SUN2000-30/36/40KTL-M3

- **Commercial Multi-string inverter** | 4 MPP trackers for 8 PV strings maximum output
- **Robust design** | for outdoor installation
- **Long-string design** | compatible with residential PV optimizers & MERCs
- **Active safety** | AI Powered Active Arcing Protection & Type II surge arresters for DC & AC

HUAWEI

Huawei SUN2000-30/36/40KTL-M3

Technical Specification	SUN2000-30KTL-M3	SUN2000-36KTL-M3	SUN2000-40KTL-M3
	Efficiency		
Max. efficiency	98.7 %		
European efficiency	98.4 %		
	DC Input (PV)		
Max. input voltage*1	1 100 V		
Max. current per MPPT	27 A / 20 A per Input		
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 (AC)		
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 & Features		
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 protection	TYPE II		
AC surge protection	TYPE II		
DC insulation resistance detection	Yes		
Residual current monitoring	Yes		
Arc fault protection	Yes		
Ripple receiver control	Yes		
Integrated PID recovery*4	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	Natural Convection		
Max. operating attitude	4 000 m (13 123 ft.) (Derating above 2 000 m)		
Relative operating humidity	0 % RH~ 100 % RH		
DC connector	Amphenol Helios H4		
AC connector	Waterproof Connector + OT/DT Terminal		
Degree of protection	IP 66		
Topology	Transformerless		
Nightime power consumption	≤ 5.5 W		
	Optimizer Compatibility		
DC MBU compatible optimizer	SUN2000-450W-P2, SUN2000-600W-P / MERC-1100W-P, MERC-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, 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,		
Grid connection standards	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, TOR Erzeuger		

*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: For Austria, German& Ukraine the max. AC Apparent Power will not exceed 30 000 VA (with regard to grid code: VDE-AR-N-4105 & Austria)
*4: 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), N-type (nPERT, HIT)

Fusionsolar

Huawei SUN2000-100KTL-M2

- **Efficient** | Max. efficiency 98.8 % (@480 V)
- **10 MPP trackers** | (20 DC inputs)
- **Smart I-V Curve diagnosis** | supported
- **AFCI & Smart String Level Disconnector** | supported
- **AC MBUS communication** | supported
- **IP 66** | designed for outdoor installation

HUAWEI

Huawei SUN2000-100KTL-M2

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 (PV)
Max. input voltage*1	1 100 V
Max. current per MPPT	30 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 @ 400 Vac, 720 V @ 480 Vac
Number of MPP trackers	10
Max. input number per MPP tracker	2
	Output
Rated AC active power	100 000 W
Max. AC apparent power	110 000 VA
Max. AC active power (cosϕ=1)	110 000 W
Rated output voltage	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 & Features
Input-side disconnection device	Yes
Anti-islanding protection	Yes
AC over-current protection	Yes
DC reverse polarity protection	Yes
PV-array string fault monitoring	Yes
AC/DC surge arrester	Type II
DC insulation resistance detection	Yes
Residual current monitoring	Yes
Arc Fault Protection	Yes
Smart String Level Disconnector	Yes
	Communication
Display	LED indicators; WLAN adaptor + FusionSolar APP
RS485	Yes
USB	Yes
Monitoring BUS (MBUS)	Yes (isolation transformer required)
Smart Dongle-4G	4G / 3G / 2G via Smart Dongle - 4G (Optional)
	General Specification
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 (-13 °F ~ 140 °F)
Cooling method	Smart Air Cooling
Max. operating attitude	4 000 m (13 123 ft.)
Relative humidity	0 % RH ~ 100 % RH
DC connector	Amphenol Helios H4
AC connector	Waterproof Connector + OT/DT Terminal
Protection degree	IP 66
Topology	Transformerless
Nighttime Power Consumption	< 3.5 W
	Standard compliance (more available upon request)
Certificates	EN 62109-1/-2, IEC 62109-1/-2, EN 50530, IEC 62116, IEC 61727, IEC 60068, IEC 61683
Grid Code	VDE-AR-N4105, EN 50549-1, EN 50549-2, RD 661, RD 1699, C10/11, TOR Erzeuger

*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.

Fusionsolar

Huawei SUN2000-115KTL-M2

- **Efficient** | Max. efficiency 98.8 % (@480 V)
- **10 MPP trackers** | (20 DC inputs)
- **Smart I-V Curve diagnosis** | supported
- **Smart String Level Disconnector** | supported
- **AC MBUS communication** | supported
- **IP 66** | designed for outdoor installation

HUAWEI

Huawei SUN2000-115KTL-M2

Technische Daten	SUN2000 115KTL-M2
	Efficiency
Max. efficiency	98.6%@ 400V, 98.8%@480V
European efficiency	98.4%@ 400V, 98.6%@480V
	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	600V @400 Vac, 720V @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	400V/480 V,3W+(N)+PE
Rated AC Grid Frequency	50 Hz / 60 Hz
Nominal Output Current	166.0 A @400 V, 138.4A @480 V
Max. Output Current	182.3 A @400 V, 151.9A @480 V
Adjustable Power Factor Range	0.8 leading... 0.8 lagging
Max. Total Harmonic Distortion (THD)	< 3 %
	Protection & Features
Input-side Disconnection Device	Yes
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Reverse-polarity Protection	Yes
PV-array String Fault Monitoring	Yes
AC/DC 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
Monitoring BUS (MBUS)	Yes (isolation transformer required)
Smart Dongle-4G	4G / 3G / 2G via Smart Dongle - 4G (Optional)
	General Specification
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 (-13 °F ~ 140 °F)
Cooling Method	Smart Air Cooling
Max. Operating Altitude	4 000 m (13 123 ft.)
Relative Humidity	0 % ~ 100 %
DC Connector	Stäubli MC4
AC-Connector	Waterproof Connector + OT/DT Terminal
Protection Degree	IP 66
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.

Fusionsolar

Huawei Smart PV Optimizer MERC-1100/1300W-P

- **Optimized PV design** | losses reduction due to performance mismatch, shading and soiling
- **Efficient Troubleshooting** | Pinpoint fault detection
- **Rapid shutdown function** | automatic fire protection measure and 0V fast shutdown (0.2ms)
- **FusionSolar APP integration** | Module level monitoring and PV-layout visualization

HUAWEI

Huawei Smart PV Optimizer MERC-1100/1300W-P

Technical Specification	MERC-1100W-P	MERC-1300W-P
	Input	
Rated Input DC Power*1	1100 W-P	1300 W-P
Absolute maximum input voltage	125 V	
MPPT operating voltage range	12,5 - 105 V	
Maximum 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	20 A	
Output bypass*2	Yes	
Shutdown output voltage per optimizer*3	1 V	
Shutdown output impedance per optimizer	1kΩ ± 10 %	
	Standard Compliance	
Safety	IEC62109-1 (class II safety)	
RoHS	Yes	
	General Data	
Dimension (W x H x D)	85 x 140 x 50 mm (3.3 x 5.5 x 2.0 inch)	
Weight (including cables)	0,8 kg (1,8 lb.)	
Installation part (optional)	PV Module Frame Plate, T-shaped Bolt	
Input connector	MC4	
Output connector	MC4	
Input wire length	0,1 m	
Output wire length	0,1 m (+), 5,1 m (-)*4	
Operating temperature / humidity range	-40 °C ~ 85 °C *5 / 0 % ~ 100 %	
Schutzart	IP 68	
Compatible product	SUN2000-12/15/17/20KTL-M2 SUN2000-30/36/40/50KTL-M3 SUN2000-12/15/17/20/25KTL-M5	

Long String Design (Full Optimizer)	
Minimum optimizer number per string	6
Maximum optimizer number per string	25
Maximum DC power difference per strings	13 500 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.

Fusionsolar

Huawei LUNA2000 - 200/161/129KWH-2H1
Huawei LUNA2000 - 97KWH-1H1

- **Smart O&M** | Automatic SOC calibration
- **More Energy** | with battery pack and rack level optimization
- **Supports On/Off-grid operation** | Intelligent algorithms (Smart PCS) enhance microgid adaptability and stability
- **4-level Active Safety** | AI predictive fault detection and maintenance alarms

HUAWEI

Huawei LUNA2000 - 200/161/129KWH-2H1
Huawei LUNA2000 - 97KWH-1H1

Technical Specifications per Model Type	LUNA2000-200KWH-2H1	LUNA2000-161KWH-2H1	LUNA2000-129KWH-2H1	LUNA2000-97KWH-2H1
Battery Configuration	12S1 P	10S1 P	8S1 P	6S1 P
Max. battery capacity of the energy storage system	193.5 kWh	161.3 kWh	129.0 kWh	96.8 kWh
Max. Charging power	≤100 kW (with Smart PCS LUNA2000-100KTL-M1)			
Max. Discharging Power	≤100 kW	≤100 kW	≤100 kW	≤100 kW
Dimensions (W x H x D)	1 810 x 2 135 x 1 200 mm			
Dimensions (W x H x D) including Smart Rack Controller and Smart PCS	2 570 x 2 135 x 1 200 mm			
Weight (including the battery packs)	≤ 2 950 kg	≤ 2 690 kg	≤ 2 430 kg	≤ 2 170 kg
Weight (without the battery packs)	≤ 1 070 kg	≤ 1 070 kg	≤ 1 090 kg	≤ 1 130 kg
Operating temperature range	-30 °C ~ 55 °C			
Storage temperature range	-40 °C ~ 60 °C			
Operating humidity range	0 ~ 100% (non-condensing)			
Max. 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	220 Vac, ≤ 4.2 kW			
Communication port	Modbus TCP			
Protection degree	IP 55			
DC Lighting Protection	Type II			
Battery Pack General Specifications				
Model Type	LUNA2000-200KWH-2H1	LUNA2000-161/129KWH-2H1 LUNA2000-97KWH-1H1		
Cell material	Lithium-iron phosphate (LiFePO4)			
Nominal Capacity	16.13 kWh			
Supported Charge & Discharge Rate	≤ 0.5C	≤ 1C		
Weight	140 kg			
Dimensions	442 x 308 x 660 mm			
General Specifications Smart Rack Controller				
Max. Efficiency	≤ 98.5 %			
Rated Voltage	691.2 V			
Operating Voltage Range	40 V ~ 1,050 V			
Min. Start Voltage	350 V			
Max DC Voltage (Bus Side)	1 100 V			
Rated Voltage	665 V			
Rated Current	152.6 A			
Dimensions (W x H x D)	600 x 820 x 270 mm			
Protection Degree	IP 66			
General Specifications Smart PCS LUNA2000-100KTL-M1				
Max. Efficiency	98.4%			
Rated DC Voltage	645 V			
Max. DC Voltage	1 100 V			
Operating DC Voltage Range	570 ~ 1 100 V			
Max. DC Current	215.8 A			
Max. Number of Inputs	1			
Rated AC Active Power	100 kW @ 40°C			
Rated AC Voltage	380 Vac / 400 Vac / 440 Vac			

*1: The four capacity models can be used together. A maximum of 20 ESSs can be connected in parallel. This table only demonstrates the scenario where 5 or less ESSs are connected in parallel.
*2: When different capacity models are connected in parallel, each ESS is charged and discharged according to its respective actual C rate.
*3: 6, 8, 10 and 12 refer to the number of battery packs contained in different models, that is, LUNA2000-97KWH-1H1, LUNA2000-129KWH- 2H1, LUAN2000-161KWH-2H1, LUNA2000-200KWH-2H1.
*4: LUNA2000-161/129KWH-2H1, LUNA2000-97KWH-1H1 are not launched in Chinese Mainland and Japan.

Fusionsolar

Smart PCS
LUNA2000-100KTL-M1

- **Supports On/Off-grid operation** | Intelligent algorithms enhance microgid adaptability and stability
- **Modular Design** | project specific customization for charging and discharging power characteristics
- **Extended inverter compatibility** | SUN2000-30/36/40KTL-M3, SUN2000110KTL-M2, SUN2000-115KTL-M2

HUAWEI

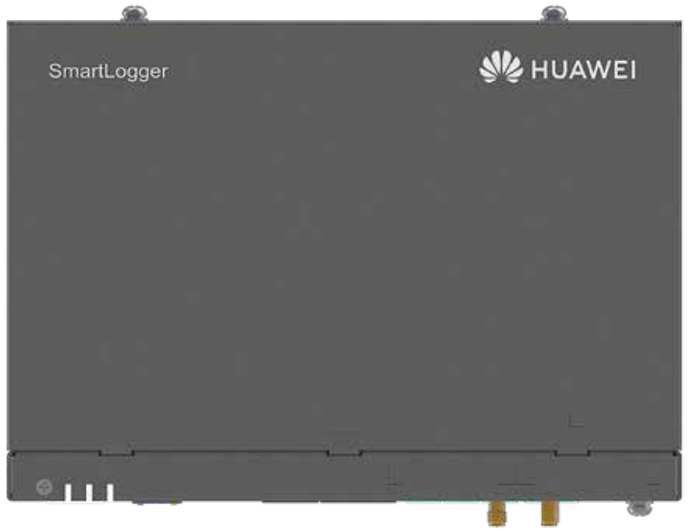
Smart PCS
LUNA2000-100KTL-M1

Efficiency	
Max. Efficiency	98.5 %
DC Side	
Rated DC Voltage	645 V
Max. DC Voltage	1 100 V
Operating DC Voltage Range	570 ~ 1 100 V
Max. DC Current	215.8 A
Max. Number of Inputs	1
AC Side	
Rated AC Active Power	100 000 W @40°C (104° F)
Rated AC Voltage	380 V / 400 V
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 features	
Anti-islanding Protection	Yes
AC Overcurrent Protection	Yes
DC Revser-polarity Protection	Yes
Insulation Resistance Detection	Yes
Earth Fault Protection	Yes
Residual Current Protection	Type II
DC & AC Surge Protection	Type II
Communication	
Display	LED Indicators, WLAN + APP
USB	Yes
RS485	Yes
Ethernet	Yes
General Specifications	
Dimensions (W x H x D)	875 x 820 x 365 mm (34.44 x 32.28 x 14.37 inch)
Weight	< 95 kg
Operating Temperature Range	-25°C ~ +60°C (-13°F ~ +140°F)
Cooling Method	Smart Air Cooling
Max. Operating Altitude without derating	4 000 m (13 123 ft.)
Relative Humidity	0 ~ 100%
DC Connector	Waterproof connector + OT / DT Terminal
AC Connector	Waterproof connector + OT / DT Terminal
Protection Degree	IP66
Topology	Transformerless

*1: The four capacity models can be used together. A maximum of 20 ESSs can be connected in parallel. This table only demonstrates the scenario where 5 or less ESSs are connected in parallel.
*2: When different capacity models are connected in parallel, each ESS is charged and discharged according to its respective actual C rate.
*3: 6, 8, 10 and 12 refer to the number of battery packs contained in different models, that is, LUNA2000-97KWH-1H1, LUNA2000-129KWH- 2H1, LUAN2000-161KWH-2H1, LUNA2000-200KWH-2H1.
*4: LUNA2000-161/129KWH-2H1, LUNA2000-97KWH-1H1 are not launched in Chinese Mainland and Japan.

Fusionsolar

Huawei Smart Logger



- **Robust communication** | Monitors and manages up to 200 devices
- **Simple O&M** | "One-Click" batch commissioning and software updates
- **Excellent performance** | industrial level application and high reliability device

HUAWEI

Huawei Smart Logger

Technical Specification	SmartLogger3000A03EU	SmartLogger3000A01EU
	Device Management	
Max. Number of Connected Devices	80	
	Communication Interface	
WAN	WAN x 1, 10 / 100 / 1 000 Mbps	
LAN	LAN x 1, 10 / 100 / 1 000 Mbps	
RS485	COM x 3, 1 200 / 2 400 / 4 800 / 9 600 / 19 200 / 115 200 bps, 1 000 m	
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]	
AC-MBUS	AC-MBUS x 1, 115.2 kbps, Compatible with PLC	No MBUS Communication Interface
Digital / Analog Input / Output	DI x 4, DO x 2, AI x 4	
Aktive DO	12 V, 100 mA (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	3 x LED	
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.

Fusionsolar

Huawei Smart Logger

Without Smart Modul 1000A

extended antenna

With Smart Modul 1000A

- **Simple commissioning** | features a wizard for configuring components settings and grid parameters
- **Professional Management** | enables the system to be online and accessible within the FusionSolar Management System
- **Central Tool** | centrally monitors and manages PV and energy storage systems, providing real-time information to O&M teams

HUAWEI

Huawei Smart Logger

Technical Specification	SmartLogger3000B	SmartLogger3000B Smart Module 1000A
	Device management	
Max. Number of Manageable Devices	200	
Max. Number of Manageable Inverters	150	
	Communication interface	
WAN	WAN x 1, 10 / 100 / 1 000 Mbps	
LAN	LAN x 1, 10 / 100 / 1 000 Mbps	LAN x 3, 10 / 100 / 1 000 Mbps
Optical Ethernet	SFP x 2, 100 / 1 000 Mbps	19 200 / 115 200 bps
MBus	MBUS x 1, 115.2 kbps, Compatible with PLC	
RS485	COM x 3 1 200 / 2 400 / 4 800 / 9 600 / 19 200 / 115 200 bps	COM x 6hh200 / 2 400 / 4 800 / 9 600 / 19 200 / 115 200 bps
Digital / Analog Input / Output	DI x 4, DO x 2, AI x 4	DI x 8, DO x 2, AI x 7
PT100 / PT1000	0	2
Active DO	12 V, 100 mA (connection with relay, sensor)	
Lighting Protection Module	Yes	
	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	LED Indicator x 5
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	24 V, 0.8 A	
Power consumption	Typical 9 W, Max. 15 W	Typical 10 W, Max. 18 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	350 x 160 x 44 mm (13.8 x 6.3 x 1.7 inch) Without mounting ears
Weight	2 kg (4.4 lb.)	3 kg (6.6 lb.)
Protection degree	IP20	
Installation options	Wall Mounting, DIN Rail Mounting, Tabletop Mounting, Integrated Inside SmartACU2000D	

*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.