

All-in-one Residential ESS



X1-IES

2.5kW / 3.0kW / 3.7kW / 5.0kW /
6.0kW / 8.0kW



Smart Management

- AI ready, forecasting solar generation and home consumption for smart energy management strategy control*
- VPP ready with a variety of compatibility (OpenADR, IEEE2030.5, FCAS, API)**
- Smart loads management (e.g., heat pump, smart EV charger)
- Micro-grid support for real-time grid/off-grid balancing
- Wireless meter compatibility
- Global MPP scan for optimal energy harvest



High Performance

- Max. 50A charge/discharge current
- 200% oversizing and 200% PV input power
- Up to 200% EPS output for 10s
- Low start-up voltage for longer operation
- Cycle life > 6000 cycles



Assured Reliability

- IP66 ingress protection
- Type II SPD on AC&DC side
- AFCI protection (optional)
- UPS-level switchover time <10ms



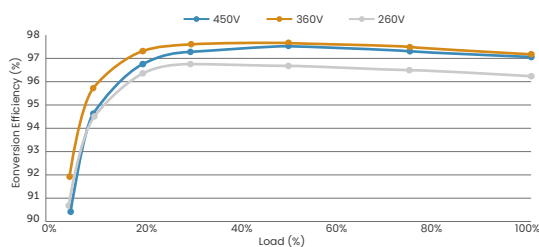
Flexible Adaptability

- All-in-one, plug-and-play design
- Max. 20A DC input current for high power solar panel

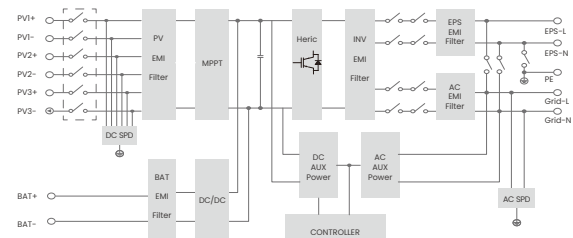
*Additional XHUB required

**Feature to be upgraded in the future

Efficiency Curve

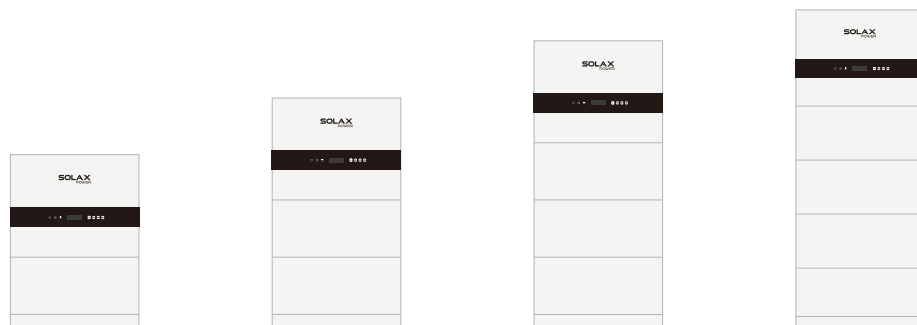


Circuit Diagram



SYSTEM OVERVIEW

System schematic



Rated power	2.5 kW / 3 kW / 3.7 kW / 5.0 kW / 6.0 kW / 8.0 kW			
Number of batteries	1	2	3	4
Rated energy ^①	5.1 kWh	10.2 kWh	15.3 kWh	20.4 kWh
Usable energy ^②	4.6 kWh	9.2 kWh	13.8 kWh	18.4 kWh
Max. charge / discharge power ^③	5.1 kW	8.0 kW	8.0 kW	8.0 kW
Ingress protection	IP66			
Operation temperature range	-30 ~ 53°C			
Relative humidity	5 ~ 95% (No condensation)			
Max. operation altitude	3000 m			
Net weight ^④	87.2 kg	134.2 kg	181.2 kg	134.2 kg / 99.2 kg
Dimension (W x H x D)	730 x 908 x 210 mm	730 x 1226 x 210 mm	730 x 1544 x 210 mm	730 x 1226 x 210 mm / 730 x 809 x 150 mm
Display	LCD			
Cooling concept	Natural cooling			
Topology	Non-isolated			
Communication interface	RS485, Pocket-X, CAN, DO, DI			

① Test conditions: 25°C, 100% depth of discharge (DoD), 0.2C charge & discharge

② System usable energy may vary with inverter different setting

③ The max.charge/discharge power must not exceed the rated output power (the table takes the maximum power inverter as an example)

④ Different inverter models have different weights. The heaviest one is taken as an example

INVERTER

	X1-IES-2.5K	X1-IES-3K	X1-IES-3.7K	X1-IES-5K	X1-IES-6K	X1-IES-8K
PV INPUT						
Max. recommended PV array power	5.0 kWp	6.0 kWp	7.4 kWp	10.0 kWp	12.0 kWp	16.0 kWp
Max. PV input voltage ^①	600 d.c. V					
Rated PV input voltage	360 d.c. V					
Operating voltage range	40 ~ 560 d.c. V					
Start-up voltage	50 d.c. V					
No. of MPP trackers / strings per MPP tracker	2 / (1 / 1)			3 / (1 / 1 / 1)		
Max. input current per MPPT	20 / 20 d.c. A			20 / 20 / 20 d.c. A		
Max. input short circuit current per MPPT	30 / 30 d.c. A			30 / 30 / 30 d.c. A		

BATTERY

GENERAL INFORMATION	
Model name	HS50E
SYS model name	T-BAT HS 5
Nominal voltage	102.4 d.c.V
Operating voltage range	90 ~ 116 d.c.V
Nominal energy	5.1 kWh
Usable energy (90% DOD) ^①	4.6 kWh
Rated power	3.0 kW
Max. power	5.1 kW
Recommend charge / discharge current ^②	30 d.c. A
Max. charge / discharge current ^③	50 d.c. A
Max. short circuit current	3.57 kA (0.333 ms)
Depth of discharge	90%
Cycle life (90% DOD) ^④	> 6000 Cycles
Dimensions (W x H x D)	730 x 558 x 150 mm
Net weight	60.2 kg
ENVIRONMENTAL REQUIREMENTS	
Charge temperature	-30 ~ 53°C (with heating function) 0 ~ 53°C (without heating function)
Discharge temperature	-30 ~ 53°C (with heating function) -20 ~ 53°C (without heating function)
Storage temperature	30°C ~ 50°C (6 months) -20°C ~ 30°C (12 months)
Relative humidity	4 ~ 100% RH (condensing)
Max. operating altitude	3000 m
Installation type	Wall mounting / Floor mounting
Ingress protection	IP66
Environment	Outdoor / Indoor (*Please refer to the user manual for installation condition)
BMS	
Model	TBMS-MCS0800E
Dimensions (W x H x D)	730 x 165 x 150 mm
Net weight	9.3 kg
BATTERY MODULE	
Battery model	TP-HS50E
Battery type	LFP
Scalability	1 ~ 4
Module capacity	5.1 kWh
Dimensions (W x H x D)	730 x 318 x 150 mm
Net weight	47 kg
COMMUNICATION INTERFACES	
Communication interfaces	RS485, CAN
STANDARD	
Certifications	CE, TUV (IEC62619), IEC 60730, IEC 62040, IEC63056, VDE 2510, IEC 60529:2013 (IP66)

ACCESSORIES

BASE	
Dimensions (W x H x D)	730 x 75 x 150 mm
Net weight	3.9 kg

① Test conditions: 90% DOD, 0.2C charge & discharge @+25°C

② The battery can only be discharged and can not be charged when the battery cell's temperature range is between -20°C and 0°C

③ Current is affected by the number of batteries connected in parallel as well as temperature and SOC

④ Test conditions: 25±2°C, 0.5C charge & discharge, 70% EOL

	X1-IES-2.5K	X1-IES-3K	X1-IES-3.7K	X1-IES-5K	X1-IES-6K	X1-IES-8K
AC INPUT & OUTPUT (ON-GRID)						
Rated output apparent power	2500 VA	3000 VA	3680 VA	5000 VA (4600 for VDE4105, 4999 for AS4777)	6000 VA	8000 VA
Rated output current	10.9 a.c. A	13.1 a.c. A	16.0 a.c. A	21.8 a.c. A	26.1 a.c. A	34.8 a.c. A
Max. output apparent power	2500 VA	3300 VA	3680 VA	5000 VA (4600 for VDE4105, 4999 for AS4777, 5000 for C10/11)	6600 VA	8000 VA
Max. output continuous current	10.9 a.c. A	14.4 a.c. A	16.0 a.c. A	21.8 a.c. A	28.7 a.c. A	34.8 a.c. A
Rated AC voltage	220 / 230 / 240 a.c. V					
Max. AC input apparent power	6300 VA	6300 VA	7360 VA	9200 VA	9200 VA	9200 VA
Max. AC input current	27.4 a.c. A	27.4 a.c. A	32.0 a.c. A	40.0 a.c. A	40.0 a.c. A	40.0 a.c. A
Rated AC frequency	50 Hz / 60 Hz					
AC frequency range ②	50 ± 5 Hz / 60 ± 5 Hz					
Adjustable power factor range	~ 1 (0.8 lagging to 0.8 leading)					
BATTERY						
Battery type	Lithium					
Battery voltage range	80 ~ 480 V					
Max. charge / discharge current	50 A					
EPS (OFF-GRID) OUTPUT (WITH BATTERY)						
Rated EPS apparent power	2500 VA	3000 VA	3680 VA	5000 VA	6000 VA	8000 VA
Peak EPS output power	2 times of rated power, 10s					
Rated EPS output voltage, frequency	220 V, 230 V, 240 V, 50 Hz / 60 Hz					
Switchover time	< 10 ms					
EFFICIENCY						
Max. efficiency	97.6%					
European efficiency	97.0%					
ENVIRONMENT LIMIT						
Ingress protection	IP66					
Operating temperature range	-35 ~ 60°C (derating at 45°C)					
Max. operating altitude	3000 m					
Relative humidity	4 ~ 100% RH (condensing)					
Overvoltage category	Mains: III , Battery: II , PV: II					
GENERAL						
Dimensions (W × H × D)	730 × 350 × 210 mm (with cover plate)					
Net weight	26.2 kg			26.4 kg		
Cooling concept	Natural cooling					
Communication interfaces	RS485, Pocket-X, CAN, DO, DI					
Power consumption (night)	< 40 W for hot standby, < 5 W for cold standby					
Topology	Non-isolated					
Certifications	IEC62109-1 / IEC62109-2, VDE 0126-1-1 A1:2012 / VDE-AR-N 4105 / G98 / G99 / AS4777 / EN50549 / CEI 0-21					
PROTECTION						
Protections	Over voltage protection, DC reverse-polarity protection, Residual current detection, Over temperature protection					
Surge protection	DC: Type II , AC: Type II					
Arc-fault circuit interrupter (AFCI)	Optional					

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

② The AC frequency range may vary from different country codes