

# 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



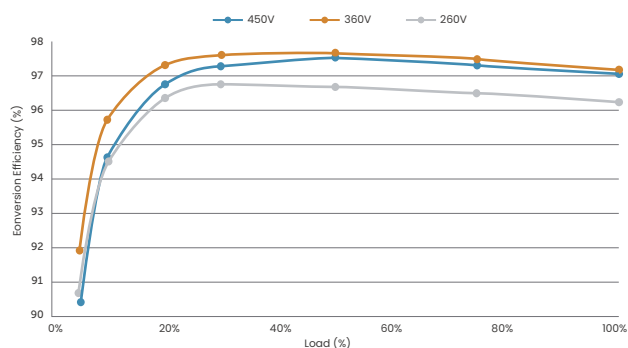
### Flexible Adaptability

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

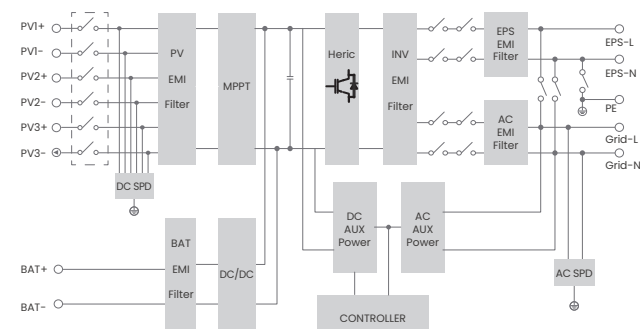
\*Additional XHUB required

\*\*Feature to be upgraded in the future

## Efficiency Curve

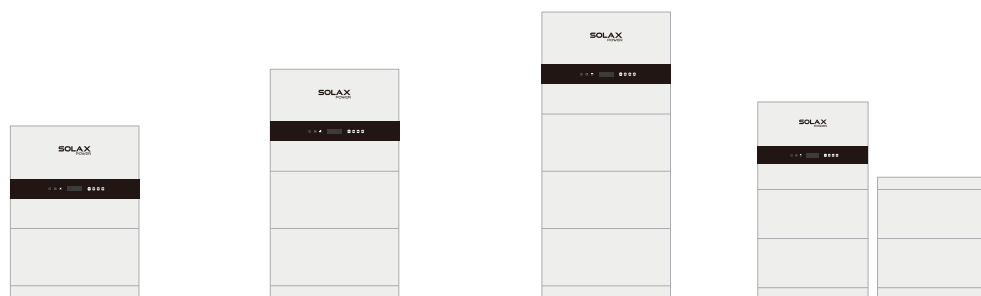


## Circuit Diagram



## SYSTEM OVERVIEW

System schematic



| Rated power                 | 2.5 / 3.0 / 3.7 / 5.0 / 6.0 / 8.0 kW |                     |                     |                                          |
|-----------------------------|--------------------------------------|---------------------|---------------------|------------------------------------------|
| Number of batteries         | 1                                    | 2                   | 3                   | 4                                        |
| Rated energy <sup>①</sup>   | 5.1 kWh                              | 10.2 kWh            | 15.3 kWh            | 20.4 kWh                                 |
| Usable energy <sup>②</sup>  | 4.6 kWh                              | 9.2 kWh             | 13.8 kWh            | 18.4 kWh                                 |
| Max. power <sup>③</sup>     | 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 <sup>④</sup>     | 87.2 kg                              | 134.2 kg            | 181.2 kg            | 134.2 kg / 99.2 kg                       |
| Dimensions (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

**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 <sup>①</sup>                | 600 V                                                                                  |         |         |                                                                       |          |          |
| Rated PV input voltage                            | 360 V                                                                                  |         |         |                                                                       |          |          |
| MPPT voltage range <sup>②</sup>                   | 40 ~ 560 V                                                                             |         |         |                                                                       |          |          |
| Start-up voltage                                  | 50 V                                                                                   |         |         |                                                                       |          |          |
| No. of MPP trackers / Strings per MPP tracker     | 2 / (1 / 1)                                                                            |         |         | 3 / (1 / 1 / 1)                                                       |          |          |
| Max. input current per MPPT                       | 20 A / 20 A                                                                            |         |         | 20 A / 20 A / 20 A                                                    |          |          |
| Max. input short circuit current per MPPT         | 30A / 30A                                                                              |         |         | 30A / 30A / 30 A                                                      |          |          |
| AC INPUT & OUTPUT (ON-GRID)                       |                                                                                        |         |         |                                                                       |          |          |
| Rated output power                                | 2500 W                                                                                 | 3000 W  | 3680 W  | 5000 W<br>(4600 for VDE4105,<br>4999 for AS4777)                      | 6000 W   | 8000 W   |
| Rated output current                              | 10.9 A                                                                                 | 13.1 A  | 16.0 A  | 21.8 A                                                                | 26.1 A   | 34.8 A   |
| Max. output apparent power                        | 2500 VA                                                                                | 3300 VA | 3680 VA | 5000 VA<br>(4600 for VDE4105,<br>4999 for AS4777,<br>5000 for C10/11) | 6600 VA  | 8000 VA  |
| Max. output continuous current                    | 10.9 A                                                                                 | 14.4 A  | 16.0 A  | 21.8 A                                                                | 28.7 A   | 34.8 A   |
| Rated AC voltage                                  | 1 / N / PE, 220 / 230 / 240 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                                                                                 | 27.4 A  | 32.0 A  | 40.0 A                                                                | 40.0 A   | 40.0 A   |
| Rated AC frequency                                | 50 Hz / 60 Hz                                                                          |         |         |                                                                       |          |          |
| AC frequency range <sup>③</sup>                   | 50 ± 5 Hz / 60 ± 5 Hz                                                                  |         |         |                                                                       |          |          |
| Adjustable power factor range                     | ~ 1 (0.8 lagging to 0.8 leading)                                                       |         |         |                                                                       |          |          |
| THDi (rated power)                                | < 3%                                                                                   |         |         |                                                                       |          |          |
| BATTERY                                           |                                                                                        |         |         |                                                                       |          |          |
| Operation voltage range                           | 80 ~ 480 V                                                                             |         |         |                                                                       |          |          |
| Communication interfaces                          | CAN / RS485                                                                            |         |         |                                                                       |          |          |
| BMS module                                        | TBMS-MCS0800E                                                                          |         |         |                                                                       |          |          |
| Battery module                                    | TP-HS50E                                                                               |         |         |                                                                       |          |          |
| Composition                                       | TBMS-MCS0800E + TP-HS50E × n + Base Dimensions + Series Box （Required for two columns） |         |         |                                                                       |          |          |
| Battery type                                      | Li-ion (LFP)                                                                           |         |         |                                                                       |          |          |
| Rated capacity / rated capacity <sup>④</sup>      | 5.1 kWh / 50 Ah                                                                        |         |         |                                                                       |          |          |
| Usable energy <sup>⑤</sup>                        | 4.6 kWh                                                                                |         |         |                                                                       |          |          |
| Rated power                                       | 3 kW                                                                                   |         |         |                                                                       |          |          |
| Max. power                                        | 5.1 kW                                                                                 |         |         |                                                                       |          |          |
| Max. charge / discharge current <sup>⑥</sup>      | 50 A                                                                                   |         |         |                                                                       |          |          |
| Cycle life                                        | > 6000 cycles                                                                          |         |         |                                                                       |          |          |
| Warranty                                          | 10 years                                                                               |         |         |                                                                       |          |          |
| Certifications                                    | CE, RCM, TUV (IEC62619), RoHS, REACH                                                   |         |         |                                                                       |          |          |
| TBMS-MCS0800E dimensions (W × H × D) / net weight | 730 × 165 × 150 mm / 9.3 kg                                                            |         |         |                                                                       |          |          |
| TP-HS50E dimensions (W × H × D) / net weight      | 730 × 318 × 150 mm / 47 kg                                                             |         |         |                                                                       |          |          |
| Base dimensions (W × H × D) / net weight          | 730 × 75 × 150 mm / 3.9 kg                                                             |         |         |                                                                       |          |          |

| BATTERY                                        |                                                                                                                  |         |         |         |         |         |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------|---------|---------|---------|---------|---------|
| Series box dimensions (W × H × D) / net weight | 167 × 91.5 × 121 mm/ 1.3 kg                                                                                      |         |         |         |         |         |
| EPS (OFF-GRID) OUTPUT (WITH BATTERY)           |                                                                                                                  |         |         |         |         |         |
| Rated EPS output voltage, frequency            | 220 V, 230 V, 240 V, 50 Hz / 60 Hz                                                                               |         |         |         |         |         |
| Rated EPS output power                         | 2500 VA                                                                                                          | 3000 VA | 3680 VA | 5000 VA | 6000 VA | 8000 VA |
| Peak EPS output power                          | 2 times of rated power, 10 s                                                                                     |         |         |         |         |         |
| Switchover time                                | < 10 ms                                                                                                          |         |         |         |         |         |
| EFFICIENCY                                     |                                                                                                                  |         |         |         |         |         |
| Max. efficiency                                | 97.6%                                                                                                            |         |         |         |         |         |
| European efficiency                            | 97.0%                                                                                                            |         |         |         |         |         |
| ENVIRONMENT LIMIT                              |                                                                                                                  |         |         |         |         |         |
| Ingress protection                             | IP66                                                                                                             |         |         |         |         |         |
| Operation temperature range                    | -35 ~ 60°C ( > 45°C derating)                                                                                    |         |         |         |         |         |
| Max. operation altitude                        | 3000 m                                                                                                           |         |         |         |         |         |
| Relative humidity                              | 0 ~ 100% RH (condensing)                                                                                         |         |         |         |         |         |
| GENERAL                                        |                                                                                                                  |         |         |         |         |         |
| Dimensions (W × H × D)                         | 717 × 350 × 210 mm                                                                                               |         |         |         |         |         |
| 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 |         |         |         |         |         |
| Active anti-islanding method                   | Frequency shift                                                                                                  |         |         |         |         |         |
| Surge protection                               | DC: Type II , AC: Type II                                                                                        |         |         |         |         |         |

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

② Input voltage exceeding the MPPT voltage range may trigger inverter protection

③ The AC frequency range may vary from different country codes

④ Test conditions: 25°C, 100% depth of discharge (DoD), 0.2C charge & discharge

⑤ System usable energy may vary with inverter different settings

⑥ Discharge: In case of the battery cell's temperature range of -20°C~10°C and 45°C~53°C, the discharge current will be reduced; Charge: In case of the battery cell's temperature range of 0°C~25°C and 45°C~53°C, the charge current will be reduced. Product charge or discharge power depends on the actual temperature of the battery pack