

# FUSIONSOLAR RESIDENTIAL SMART PV SOLUTION

## SUN5000 Series



### Efficiency Evolution

Creating Profitable Return  
Module-level Optimization  
Increasing Yield by 5% to 30%



### Safety Evolution

Protecting Electricity Usage Safety  
On the Rooftop  
AFCI + RSD



### Convenience Evolution

Embracing PV Lifestyle  
Module-level Management  
Disconnection Detection and Location

| Technical Specification                    | SUN2000-450W-P2                                      | SUN2000-600W-P |
|--------------------------------------------|------------------------------------------------------|----------------|
| Input                                      |                                                      |                |
| Rated input DC power <sup>1</sup>          | 450 W                                                | 600 W          |
| Absolute max. input voltage                | 80 V                                                 |                |
| MPPT operating voltage range               | 10–80 V                                              |                |
| Max. 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 <sup>2</sup>                 | Yes                                                  |                |
| Output voltage during standby <sup>3</sup> | 0 V                                                  |                |
| Output impedanceduring standby             | 1 kΩ ± 10%                                           |                |
| Communication                              |                                                      |                |
| Communication protocol                     | MBUS                                                 |                |
| Standards Compliance                       |                                                      |                |
| Safety                                     | IEC62109-1 (class II safety)                         |                |
| RoHS                                       | Yes                                                  |                |
| Fire Safety                                | VDE-AR-E 2100-712:2018-12                            |                |
| General Specifications                     |                                                      |                |
| Dimensions (W x H x D)                     | 75 mm x 140 mm x 28 mm (3.0 in. x 5.5 in. x 1.1 in.) |                |
| Weight (including cables)                  | 0.6 kg (1.3 lb.)                                     |                |
| Installation part (optional)               | Frame mounting bracket/T-shaped bolt <sup>4</sup>    |                |
| Input connector                            | Staubli MC4                                          |                |
| Input wire length                          | 0.15 m (0.49 ft.)                                    |                |
| Output connector                           | Staubli MC4                                          |                |
| Output wire length                         | 1.3 m (4.3 ft.)                                      |                |
| Operating temperature/humidity range       | –40°C to +85°C <sup>5</sup> /0%-100%                 |                |
| IP rating                                  | IP68                                                 |                |

\*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.

## Technical Specification

| Technical Specification                                | SUN5000-17K-MB0                                                                                                                | SUN5000-25K-MB0  |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------|
| Efficiency                                             |                                                                                                                                |                  |
| Max. efficiency                                        | 98.4%                                                                                                                          | 98.4%            |
| European weighted efficiency                           | 98.1%                                                                                                                          | 98.2%            |
| DC Input                                               |                                                                                                                                |                  |
| Recommended max. PV power                              | 25,500 Wp                                                                                                                      | 37,500 Wp        |
| Max. input voltage <sup>1</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>2</sup>              | 200 V–1,000 V                                                                                                                  |                  |
| Full-load MPPT voltage range                           | 440 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                                   | 18.7 kW                                                                                                                        | 25.0 kW          |
| Max. operating current                                 | 26.25 A (per string)                                                                                                           |                  |
| Operating voltage range                                | 600 V–980 V                                                                                                                    |                  |
| Output                                                 |                                                                                                                                |                  |
| Rated output power                                     | 17,000 W                                                                                                                       | 25,000 W         |
| Max. apparent power                                    | 18,700 VA                                                                                                                      | 27,500 VA        |
| Max. active power (cosφ = 1)                           | 18,700 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                                   | 24.5 A / 400 Vac                                                                                                               | 36.1 A / 400 Vac |
| Max. output current                                    | 28.6 A / 380 Vac                                                                                                               | 42.0 A / 380 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                                                                                                                            |                  |
| RSD function                                           | 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.) (Derated above 2000 m)                                                                                    |                  |
| Cooling                                                | Smart air cooling                                                                                                              |                  |
| Display                                                | LED indicators, Integrated WLAN + FusionSolar APP                                                                              |                  |
| Communication                                          | RS485; WLAN / Ethernet via Smart Dongle-WLAN-FE (Optional)<br>4G / 3G / 2G via Smart Dongle-4G (Optional); SA4H-A02 (Optional) |                  |
| Weight                                                 | 21 kg                                                                                                                          |                  |
| Dimensions (W x H x D)                                 | 546 x 460 x 228 mm                                                                                                             |                  |
| Protection level                                       | IP66                                                                                                                           |                  |
| Max. number of paralleled unit (with Smart String ESS) | 3                                                                                                                              |                  |
| Optimizer Compatibility                                |                                                                                                                                |                  |
| DC MBUS Compatible optimizer <sup>3</sup>              | SUN2000-450W-P2, SUN2000-600W-P                                                                                                |                  |
| Standards Compliance (More Available Upon Request)     |                                                                                                                                |                  |
| Certificates                                           | EN/IEC62109-1, EN/IEC62109-2                                                                                                   |                  |
| PV System Design <sup>4</sup>                          |                                                                                                                                |                  |
| SUN5000-17/25K-MB0                                     |                                                                                                                                |                  |
| Min. string length (power optimizers)                  | 6                                                                                                                              |                  |
| Max. string length (power optimizers)                  | 35                                                                                                                             |                  |
| Max. DC power per string                               | 12,000 W                                                                                                                       |                  |

<sup>\*1</sup> The maximum input voltage is the upper limit of the DC voltage. Any higher input DC voltage would probably damage inverter.

<sup>\*2</sup> Any DC input voltage beyond the operating voltage range may result in inverter improper operating.

<sup>\*3</sup> The SUN5000 Series Inverters must be fully equipped with optimizers, otherwise the system will report errors and can not work.

<sup>\*4</sup> SUN2000-450W-P2/600W-P, MERC-600W-PA0 can NOT be used in mixture under the same Smart Energy/PV Controller.

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.