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# Sunny Boy Smart Energy-US

3.8 / 4.8 / 5.8 / 7.7
9.6 / 11.5

## The ideal solution for new and repowering installations

powered by ennexOS

SMA Smart Connected

SMA ShadeFix
STRING LEVEL OPTIMIZATION

### Ultimate flexibility
- 200% DC/AC design capability
- PV and Hybrid use cases
- 3 or 4 MPPT optimizing channels

### Easy installation
- Smaller and lighter, eases mounting
- 2-in-1 solution saves time, wall space and electrical upgrades
- Rapid commissioning via built-in SunSpec Certified RSD transmitter

### Complete reliability
- No need for complex microinverters or optimizers
- 10-year warranty, extendable to 25
- SMA Backup Secure provides energy security with or without a battery

### New, modern design
- Fresh aesthetic look, with more functional capabilities
- Curved, easy-open cover

### Quick commissioning
- SMA 360° app saves installers time and money
- Scan, tap and connect multiple devices from your mobile device or tablet

**For over 40 years, SMA has been the leader in solar energy and the new SMA Home Energy Solution will continue this trajectory. Installers choose SMA for reliability, performance and innovation.**

At the center of the SMA Home Energy Solution is the Sunny Boy Smart Energy hybrid inverter. This groundbreaking inverter combines the functions of a PV and battery inverter into a single unit, keeping electrical upgrades to a minimum. The Sunny Boy Smart Energy features modular add-on options such as the SMA Energy Meter, Backup Secure and Backup Select*. These enhancements improve the system's performance and provide homeowners with tailored solutions to meet their specific needs.

The Sunny Boy Smart Energy is packed with new technology including an integrated system manager, SunSpec RSD transmitter, SMA ShadeFix, SMA Smart Connected and compatibility with both the SMA 360° and Energy Apps.

Trust in SMA America, your leader in residential energy - building reliable, high-performance and innovative solutions, with support you can depend on.

* Upcoming

| Technical data | SBSE 3.8 | SBSE 4.8 | SBSE 5.8 | SBSE 7.7 | SBSE 9.6 | SBSE 11.5 |
|---|---|---|---|---|---|---|
| **Input PV (DC)** | | | | | | |
| Max. PV array power (200% oversizing) | 7680 Wp | 9600 Wp | 11520 Wp | 15360 Wp | 19200 Wp | 23040 Wp |
| Max. DC voltage | 600 V | | | | | |
| Rated MPP voltage range | 91 V - 480 V | 112 V - 480 V | 136 V - 480 V | 180 V - 480 V | 168 V- 480 V | 200 V - 480 V |
| Min. / Startup DC Voltage | 60 V / 66 V | | | | | |
| Max. usable current input per MPPT | 15 A | | | | | |
| Max. short-circuit current input per MPPT | 30 A (the sum at all inputs must not exceed 60 A[2] and 90 A[3]) | | | | | |
| Independent MPPT inputs / inputs per MPPT | 3 / 1 | | | | 4 / 1 | |
| Connection of MPPT inputs in parallel | A and B* | | | | A and B / C and D* | |
| **Input battery (DC)** | | | | | | |
| Battery type | BYD Battery-Box Premium HVL 12.0, 16.0, 20.0, 24.0, 28.0, 32.0 (UL9540) | | | | - | |
| Voltage range | 90 V to 500 V | | | | | |
| Max. charging current / max. discharging current | 30 A / 30 A | | | | | |
| Number of independent battery inputs | 1 | | | | | |
| Max. charging power / max. discharging power | 10000 W / 4042 W | 10000 W / 5053 W | 10000 W / 6063 W | 10000 W / 8084 W | 12000 W / 10105 W | 12000 W / 12000 W |
| **Output (AC)** | | | | | | |
| Max. apparent AC power | 3840 VA | 4800 VA | 5760 VA | 7680 VA | 9600 VA | 11520 VA |
| AC Rated power (at 240 V, 60 Hz) | 3840 W | 4800 W | 5760 W | 7680 W | 9600 W | 11520 W |
| AC Rated power (at 208 V, 60 Hz) | 3328 W | 4160 W | 4992 W | 6656 W | 8320 W | 9984 W |
| AC voltage rated and range | 240 V (211 V to 264 V) or 208 V (183 V to 229 V) | | | | | |
| AC grid frequency / range | 60 Hz / 55 Hz to 66 Hz | | | | | |
| Max. rated output current | 16 A | 20 A | 24 A | 32 A | 40 A | 48 A |
| Breaker (overcurrent protection) | 20 A | 25 A | 30 A | 40 A | 50 A | 60 A |
| Power factor at rated power | 1 / adjustable 0.8 overexcited to 0.8 underexcited | | | | | |
| **Efficiency** | | | | | | |
| Max. efficiency | 98.1% | | | | 98% | |
| CEC efficiency (240/208V) | 96.5% / 97% | 97% / 97% | 97.5% / 97% | | 97.5%/97% | |
| **Protective devices** | | | | | | |
| DC disconnect / DC reverse polarity protection | ● / ● | | | | | |
| DC AFCI arc-fault protection | ● | | | | | |
| Ground fault monitoring / Grid monitoring | ● / ● | | | | | |
| AC short circuit current capability | ● | | | | | |
| All-pole-sensitive residual-current monitoring unit | ● | | | | | |
| Protection class | I | | | | | |
| Overvoltage category grid / battery / PV | IV / II / II | | | | | |
| **General data** | | | | | | |
| Dimensions (W / H / D) / Weight | 19.7 x 23.1 x 9.2 in / 38.6 lb | | | | 19.7 x 26.8 x 9.2 in / 48.5 lb | |
| Operating temperature range | −13 °F to +140 °F (−25 °C to +60 °C) with derating | | | | | |
| Topology / cooling method | Transformerless / Natural convection | | | | | |
| Environmental protection rating | Type 3R | | | | | |
| **Equipment** | | | | | | |
| Communication protocols | Modbus (SMA, SunSpec), Speedwire / Webconnect, SMA Battery Interface | | | | | |
| Interfaces: WLAN / Ethernet / BAT-CAN / RS-485 | ● / ● / ● / ● | | | | | |
| 2.4 GHz WLAN | ● | | | | | |
| Ethernet ports / Number of outputs | 2 / 1 (Multi function relay 30 Vdc /1 A) | | | | | |
| Warranty: 10 / +5 / +10 / +15 years | ● / ○ / ○ / ○ | | | | | |
| Certificates and approvals | UL 1741 SB/SA, UL 62109-1, UL 1998, UL 1699B Ed. 1, UL9540[1], IEEE1547, FCC Part 15 (Class A & B), CAN CSA-C22.2, CA Rule 21, HECO Rule 14H, PV Rapid Shutdown System Equipment in accordance with UL1741, NEC 2020, NEC 2023 compliant | | | | | |
| SMA Smart Connected | ● | | | | | |
| SMA ShadeFix (integrated shade optimization) | ● | | | | | |
| SunSpec certified transmitter (Rapid Shutdown) | ● | | | | | |
| **Integrated System Manager** | | | | | | |
| Max number supported Inverters/ Energy Meter | 5/1 | | | | | |
| Centralized commissioning of all devices in the system | ● | | | | | |
| **SMA Backup Secure**** (grid outage mode, with or without battery) | | | | | | |
| Rated power (at 120 V, 60 Hz) | 1920 W | | | | | |
| Max. apparent AC power | 1920 VA | | | | | |
| Nominal AC voltage | 120 V | | | | | |
| AC grid frequency | 60 Hz | | | | | |
| Activation mode | Manual | | | | | |
| ● Standard features ○ Optional features | | | | | | |
| Type designation | SBSE3.8-US-50 | SBSE4.8-US-50 | SBSE5.8-US-50 | SBSE7.7-US-50 | SBSE9.6-US-50 | SBSE11.5-US-50 |

* Upcoming ** SMA Backup Start module required to enable SMA Backup Secure in installations bound by NEC rapid shutdown requirements. [1] Not yet available for SBSE 9.6/11.5 [2] SBSE 3.8-7.7 [3] SBSE 9.6, 11.5

## Accessories

SMA Energy Meter
EMETER-US-50

SMA Backup Start
BU-STRT-US-50

SMA Shutdown
Initiator
RSI-US-50