/ SBSE3.6-50 / SBSE4.0-50 / SBSE5.0-50 / SBSE6.0-50



Sunny Boy Smart Energy

3.6 / 4.0 / 5.0 / 6.0

Higher yields. Faster charging.
Easy installation. Full control.

powered by ennexOS

SMA Smart Connected · SMA ArcFix · SMA ShadeFix

Maximum energy yields
- Rapid charging and discharging of connected batteries
- PV system oversizing for higher energy yields
- Integrated yield optimization with SMA ShadeFix

Easy installation, fast commissioning
- Connection via standard cables
- SMA Easy Lock for effortlessly opening and closing the cover
- Step-by-step commissioning via the SMA 360° app (depending on software version)

Unmatched flexibility
- Three MPP trackers for flexible roof layouts
- Low startup voltage
- Integrated secure power supply
- Optional battery-backup function[1)]

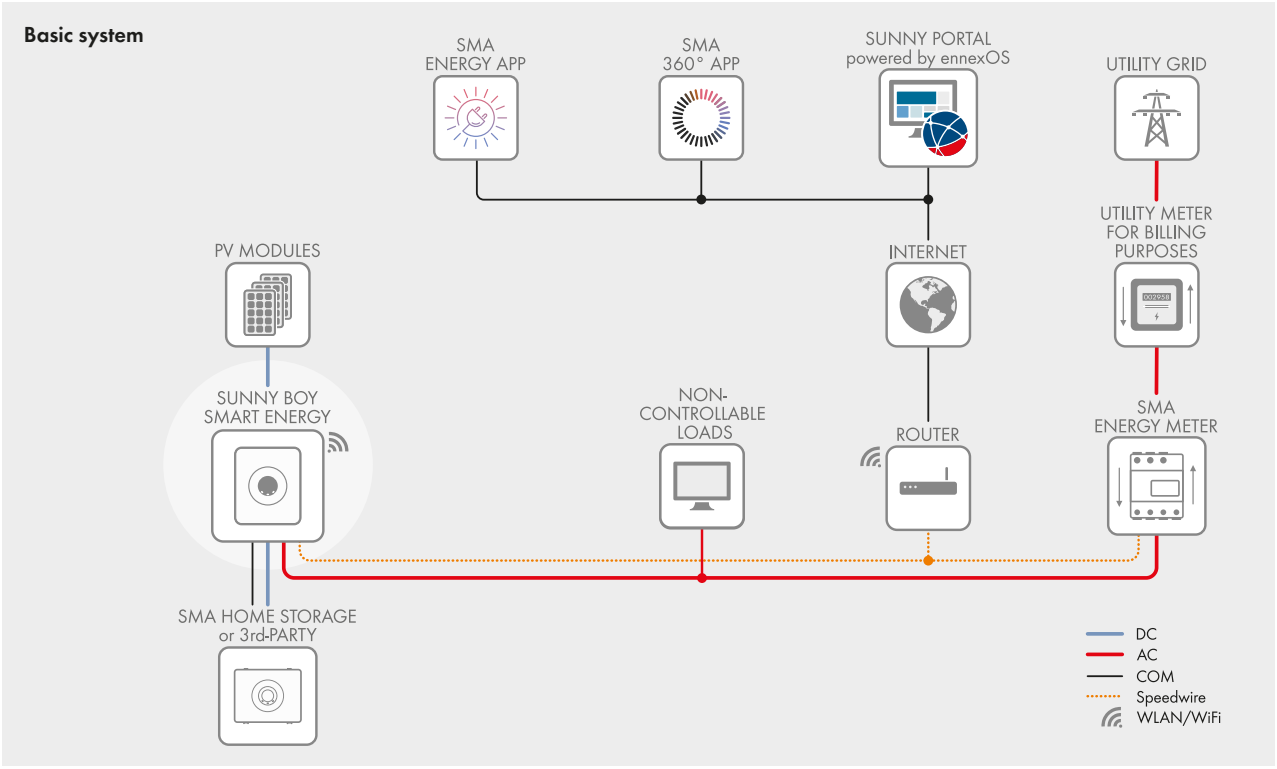
Improved storage options
- Compatible with SMA Home Storage battery
- Compatible with high-voltage batteries from major manufacturers (depending on software version)

The SMA Sunny Boy Smart Energy single-phase hybrid inverter is the two-in-one solution for the generation and flexible use of solar power at home.

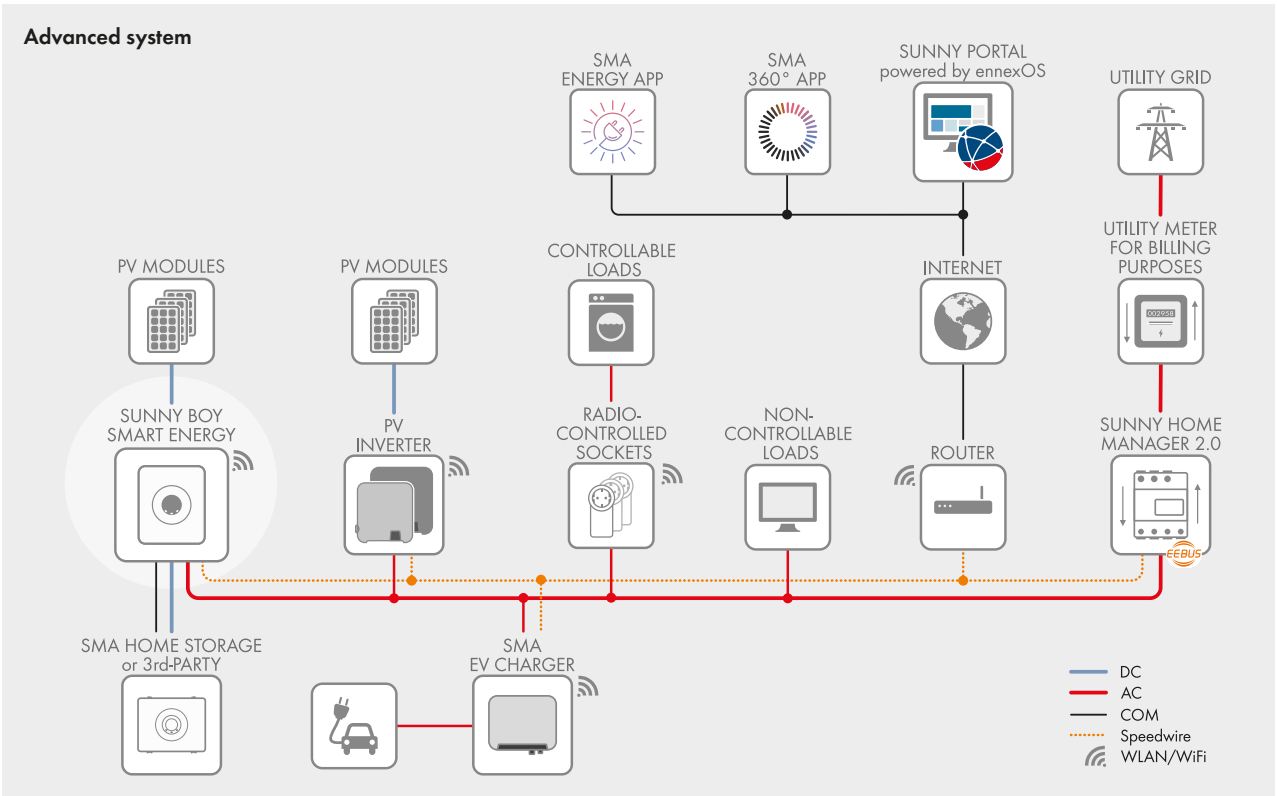
The Sunny Boy Smart Energy is the ideal gateway to an all-round energy transition in the home. As a PV and battery inverter in one, it ensures a reliable and sustainable supply of energy. Thanks to the integrated secure power supply function and an optional battery backup function[1)], it will continue to run even if the utility grid fails.
Three MPP trackers allow varying roof orientations to be incorporated into plans for solar power production. The hybrid inverter offers very fast charging for connected batteries and makes the most of days with few hours of sunshine.
Heat pumps, charging solutions for electric vehicles and smart energy management can be flexibly integrated into the energy system at any time. This means greater independence from rising energy costs and conventional energy supplies. With the Sunny Boy Smart Energy, users can expect the high standard of quality that comes with a product made in Germany.

1) Available with an additional hardware component at a later date

Basic system



Advanced system



Enjoy smart energy management with the Sunny Home Manager 2.0

For optimized self-consumption and even greater independence, the Sunny Home Manager 2.0 links the PV system with electrical appliances and, optionally, a battery storage system with a comprehensive energy system. And thanks to the power of AI, it can even manage energy flows in the home automatically if the user so desires.

Technical data	Sunny Boy Smart Energy 3.6	Sunny Boy Smart Energy 4.0	Sunny Boy Smart Energy 5.0	Sunny Boy Smart Energy 6.0
Input PV (DC)				
Max. PV array power	7200 Wp	8000 Wp	10000 Wp	12000 Wp
Max. input voltage	600 V			
Min. input voltage	60 V			
MPP voltage range	60 V to 480 V			
Startup input voltage	66 V			
Max. usable input current input A / B / C	15 A			
Max. DC short-circuit current input A / B / C	up to 30 A[6]			
Number of independent MPP inputs / inputs per MPP	3 / 1			
Connection of MPP inputs in parallel possible	A and B[4]			
Input battery (DC)				
Battery type	Lithium-Ion batteries[1]			
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	10000 W			
Max. discharging power	3789 W	4211 W	5263 W	6316 W
Output (AC)				
Rated power (at 230 V, 50 Hz)	3600 W	4000 W	5000 W [2]	6000 W [2]
Max. apparent AC power (at 230 V, 50 Hz)	3600 VA	4000 VA	5000 VA [2]	6000 VA [2]
Rated AC voltage	230 V / 240 V			
AC voltage range	184 V to 253 V			
AC grid frequency / range	50 Hz / 60 Hz / 44 Hz to 66 Hz			
Rated / Max. output current	15,7 A / 16 A	17.4 A / 20 A	21.7 A / 25 A	26.1 A / 30 A
Power factor at rated power / adjustable displacement power factor	1 / 0.8 overexcited to 0.8 underexcited			
Efficiency				
Max. efficiency	98.1 %			
SPS Output (AC backup) during off-grid mode				
Rated power (at 230 V)	3680 W			
Max. apparent AC power (at 230 V, 50 Hz)	3680 VA			
Nominal AC voltage	230 V / 240 V			
AC frequency	50 Hz / 60 Hz			
Switching mode	Manual			
Backup output[3] (AC backup) during off-grid mode, single-phase				
Rated power (at 230 V, 50 Hz)	7300 W			
Max. apparent AC power (at 230 V, 50 Hz)	7300 VA			
Output power / Output apparent power < 100 ms	11040 W / 11040 VA			
Output power / Output apparent power < 30 s	9200 W / 9200 VA			
Nominal AC voltage	230 V / 240 V			
AC frequency	50 Hz / 60 Hz			
Switching mode	automatic			
Protective devices				
Input-side disconnection point	●			
Arc-fault circuit interrupter (AFCI)	●			
Ground fault monitoring / grid monitoring	● / ●			
DC reverse polarity protection / AC short-circuit current capability	● / ●			
All-pole-sensitive residual-current monitoring unit	●			
Protection class	I			
Overvoltage category grid / battery / PV	III / II / II			
DC Type II SPD with monitoring (external, 3rd party)	○			
General data				
Dimensions (W/H/D)	500 mm / 586 mm / 236 mm (19.7 / 23.1 / 9.3 in)			
Weight	17.5 kg (38.6 lb)			
Operating temperature range	-25°C to +60°C (-13°F to +140°F) with derating			
Noise emission, max.	35 dB(A)			
Self-consumption (at night)	6 W			
Topology / cooling method	transformerless / natural convection			
Degree of protection (as per IEC 60529) / climate category (as per IEC 60721-3-4)	IP65/4K26			
Max. permissible value for relative humidity (non-condensing)	100 %			
Equipment				
PV connection / BAT connection	Lever clamp / Push in clamp			
Display via smartphone, tablet, laptop	●			
Communication protocols	Modbus (SMA, Sunspec), Speedwire/Webconnect, SMA Battery Interface, MODBUS RTU			
Interfaces: WLAN / Ethernet / BAT-CAN / RS-485	● / ● / ● / ●			
Ethernet ports	2			
Number of digital outputs	1 (SG Ready (Multifunction relay, 30 Vdc /1 A)[4])			
Shade management: SMA ShadeFix (integrated)	●			
Warranty: 5/10/15/20 years	● / ●[5] / ○ / ○			
Planned certificates and permits (more available upon request)	AS4777-2; C10/11; CEI0-21; EN50549-1; IEC 62109-1 / IEC 62109-2; TED749; VDE-AR-N4105			
Country availability of SMA Smart Connected	BE, DE, ES, LU, NL, IT			
Type designation	SBSE3.6-50	SBSE4.0-50	SBSE5.0-50	SBSE6.0-50

● Standard features ○ Optional Information refers to nominal conditions Status as of: 05 /2024 1) See "List of Approved Batteries" at www.SMA-Solar.com
2) 4600 W / 4600 VA according to VDE-AR-N 4105 3) Available with a later hardware release 4) Available with a later firmware release 5) Device registration within 30 days via SMA product registration at my.sma-service.com. The conditions of the SMA limited factory warranty apply. You can find additional information at SMA-solar.com. 6) the sum at all inputs must not exceed 60 A

Sunny Boy Smart Energy



SMA ShadeFix – Intelligent energy yield optimization

Established product features and integrated software solutions will provide yield optimization throughout the system's entire service life. That applies even in the shade. SMA ShadeFix is a proprietary inverter software that optimizes energy yield in nearly every situation. SMA Smart Connected inverter monitoring offers additional safety by detecting errors at an early stage and automatically reporting them to the installer.



SMA ArcFix – Effectively preventing electric arcs

The arc-fault circuit interrupter (AFCI) effectively detects electric arcs in the PV system and the inverter stops feed-in operation before a fire can develop. SMA was one of the pioneers introducing AFCI's in the U.S. and has kept steadily improving this solution over the last decade. We will be equipping all our string inverters worldwide with our AFCI solution SMA ArcFix in the future. In this way, we will consistently raise the already high safety standard of PV systems yet further.



SMA Smart Connected – Proactive communication in the event of faults

SMA Smart Connected* allows you to monitor your inverter via the SMA Sunny Portal for free. If an inverter fails, SMA will proactively inform the system operator and installer. This saves valuable working time and costs.

With SMA Smart Connected, the installer benefits from rapid diagnostics by SMA. This allows the installer to rectify the fault quickly and offer customers a range of additional and highly attractive services.

*For details, see document "Description of Services - SMA SMART CONNECTED."

SBSExx-50-DS-en-12 SMA and Sunny Boy are registered trademarks of SMA Solar Technology AG. Printed on FSC paper. All products and services described, as well as technical data, are subject to change, including for reasons of country-specific requirements, at any time without notice. SMA assumes no liability for mistakes or printing errors. For the latest information, please visit www.SMA-Solar.com.
Solar inverter made in Germany by SMA Solar Technology AG.