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Sunny Tripower Hybrid X

5 / 6 / 8 / 10 / 12 / 15

Three-phase hybrid inverter for flexible, reliable, and future-proof energy supply in residential homes.

powered by ennexOS

SMA Energy Management · SMA ArcFix · SMA ShadeFix

Flexible Power for any System Configuration
- 3 MPP trackers
- Low PV input voltage (90 V)
- Parallel operation of up to 5 hybrid inverters
- Optional: SMA Backup emergency power solution for the entire building

Easy Commissioning
- Commissioning in just 5 minutes via the SMA 360° App
- Integrated System Manager for up to 10 devices

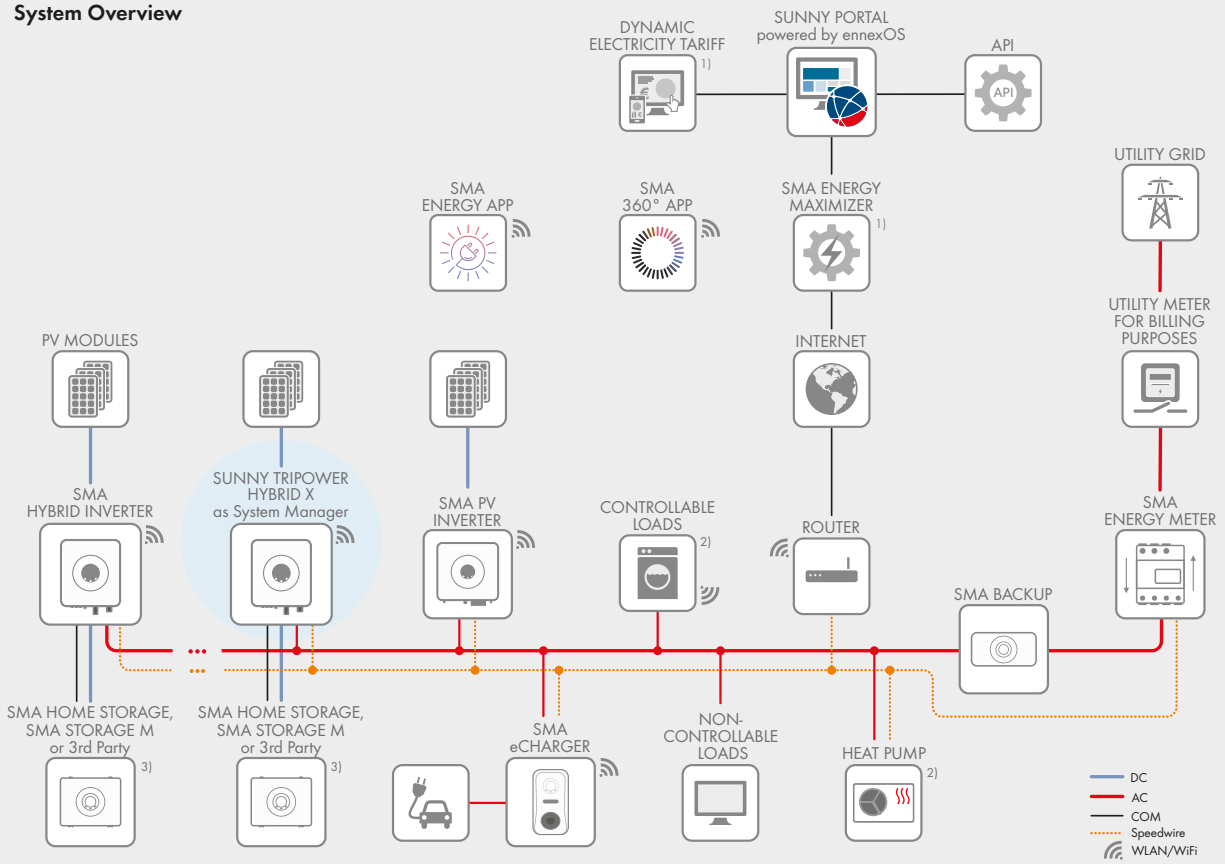
Integrated Cloud-based Energy Management
- SMA Energy Maximizer: automatic and convenient optimization for the lowest possible energy costs*
- SMA Energy Planner: Basic features always available with manual planning
- Cybersecurity architecture developed and operated by SMA (cloud operations within an ISO 27001 certified organizational unit)

Sunny Tripower Hybrid X, featuring integrated cloud-based energy management, is the central control system for an efficient, flexible, and reliable energy supply in residential homes.

With a power range of 5 kVA to 15 kVA, the three-phase hybrid inverter can be adapted to a variety of system concepts. Three independent MPP trackers make planning easier, even for complex roof structures while the low input voltage of only 90 V supports the use of short strings. When used in combination with the SMA Home Storage or SMA Storage M, a storage capacity of up to 37 kWh can be integrated. The integrated energy management system with the SMA Energy Maximizer* makes it easy to reduce energy costs automatically. Self-learning algorithms and prediction-based control optimize the consumption of self-generated solar power and grid power based on dynamic electricity tariffs. In the event of a grid failure, the optional SMA Backup reliably keeps the entire home powered.

*) fee-based activation

System Overview



1) check country availability 2) later Release 3) Possible compatibilities with battery storage systems are listed in the technical documents of the inverters and in the datasheet of the individual SMA battery storage systems.

Technical Data	Sunny Tripower Hybrid X 5	Sunny Tripower Hybrid X 6	Sunny Tripower Hybrid X 8	Sunny Tripower Hybrid X 10	Sunny Tripower Hybrid X 12	Sunny Tripower Hybrid X 15
DC Input, PV						
Max. connectable power for PV modules	7500 Wp, STC	9000 Wp, STC	12000 Wp, STC	15000 Wp, STC	18000 Wp, STC	22500 Wp, STC
Max. PV input voltage	1000 V					
Min. PV input voltage	90 V					
MPP voltage range	90 V to 850 V					
MPP voltage range at nominal power	100 V to 850 V	120 V to 850 V	160 V to 850 V	200 V to 850 V	240 V to 850 V	300 V to 850 V
Rated PV input voltage	650 V					
Initial input voltage	100 V					
Maximum usable input current per MPP tracking input	18 A					
Max. short-circuit current per MPP tracking input	24 A					
Number of independent MPP inputs	3					
Strings per MPP input	1					
DC Input, Battery						
Battery voltage range	80 V to 600 V					
Max. usable charging current	50 A					
Max. usable discharging current	50 A					
Max. usable charging power	10000 W				15000 W	
Max. usable discharging power	5000 W	6000 W	8000 W	10000 W	12000 W	15000 W
AC Output						
Rated power (at 230 V, 50 Hz)	5000 W	6000 W	8000 W	10000 W	12000 W	15000 W
Max apparent power	5000 VA	6000 VA	8000 VA	10000 VA	12000 VA	15000 VA
Nominal AC grid voltage	220 V / 380 V; **230 V / 400 V**; 240 V / 415 V					
AC voltage range	184 V to 264 V					
Rated AC grid frequency	50 Hz					
Operating range at grid frequency 50 Hz	45 Hz to 55 Hz					
Rated current at 230 V	7.2 A	8.7 A	11.6 A	14.5 A	17.4 A	21.7 A
Max. output current	7.6 A	9.1 A	12.1 A	15.2 A	18.2 A	22.7 A
Power factor at rated power	1					
Displacement power factor, adjustable	0.8 overexcited to 0.8 underexcited					
Feeding conductors / connection line conductors	3 / 3-N-PE					

Technical Data	Sunny Tripower Hybrid X 5	Sunny Tripower Hybrid X 6	Sunny Tripower Hybrid X 8	Sunny Tripower Hybrid X 10	Sunny Tripower Hybrid X 12	Sunny Tripower Hybrid X 15
Efficiency						
Max. efficiency, ηmax	98.1%	98.2%	98.3%	98.3%	98.3%	98.3%
European efficiency, ηEU	96.0%	96.5%	97.1%	97.4%	97.6%	97.8%
SPS Output in Off-Grid Mode						
Rated power (at 230 V, 50 Hz)	3680 W					
Max. AC apparent power (at 230 V, 50 Hz)	3680 VA					
Max. output current for backup loads	16 A					
Nominal AC grid voltage	230 V					
AC frequency	50 Hz					
Switching mode	Manual					
AC output in off-grid mode[1]						
Rated power (at 230 V, 50 Hz)	10000 W				15000 W	
Max apparent power	10000 VA				15000 VA	
Max. output current for backup loads	15.2 A				22.7 A	
Max. output current < 2 s	32 A				43.5 A	
Max. output current < 5 s	24 A				32.6 A	
Nominal AC grid voltage	230 V					
AC grid frequency	50 Hz					
Switching mode	Automatic					
Switching time to backup operation	typ. 1 s to 2 s					
Protective Devices						
Input-side disconnection point (PV)	●					
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	●					
Leakage current protection	●					
Protection class in accordance with IEC 62109-1	I					
Overvoltage category (in accordance with IEC 62109-1) utility grid / battery / PV	III/II/II					
Surge protection device AC / PV	Type 2 / type 1+2					
General Data						
Dimensions (W / H / D)	467 mm / 555 mm / 239 mm (18.4 in / 21.9 in / 9.4 in)					
Weight	max. 33.5 kg (max. 73.85 lb)					
Operating temperature range	-25°C to +60°C (-13°F to +140°F) with derating					
Noise emission, typical	36 dB(A)					
Self-consumption (at night)	< 18 W					
Topology / cooling concept	No galvanic isolation / convection					
Degree of protection IEC 60529 / environmental category	IP65 / outdoor					
Maximum permissible value for relative humidity (non-condensing)	100%					
Maximum operating altitude above mean sea level (MSL)	3000 m					
Features / Functions / Accessories						
AC connection	AC connector (2.5 mm² to 10 mm²)					
PV connection / BAT connection	Sunclix / MC4 Evo 2					
Interfaces: Ethernet / BAT-CAN / Wi-Fi	● (2 inputs) / ● / ●					
LED display (status / error / communication)	●					
Number of digital inputs	6					
Number of integrated multifunction relays	2					
Type of fastening	Wall mounting					
SMA ShadeFix / SMA ArcFix / I-V array diagnostics	● / ● / ●					
Data protocols: SMA Speedwire / SMA Modbus / Sunspec Modbus	● / ● / ●					
Integrated System Manager	Up to 10 devices, including up to 5 inverters					
Compatible batteries	SMA Home Storage, SMA Storage M, BYD Battery Box HVB/HVS+/HVM+					
Warranty 5 / 10 / 15 years	● / ●[2] / ○					
Cybersecurity	Compliant with the EU RED Cybersecurity Directive (EN 18031-1), ETSI EN 303 645, Speedwire Encrypted Communication (SEC), EU-based data hosting (ISO 27001), automatic updates					
Certificates and approvals (more available on request)	CE, IEC62109-1/-2, EN50549-1, VDE-AR-N 4105:2018, VDE-AR-E 2510-2[3], NA/EEA-NE7, TOR Erzeuger Typ A 2024[3], C10/C11:2024[3], EIFS:2018[3], CEI0-21[3], NTS Typ A[3]					
Type designation	STPH5-60	STPH6-60	STPH8-60	STPH10-60	STPH12-60	STPH15-60

● Standard features ○ Optional – Not available Data at nominal conditions "STC" - Standard test conditions Status: 06/2026

1) only for the System Manager

2) Device registration via the SMA product registration homepage (my.sma-service.com). The conditions of the SMA limited factory warranty apply. You can find additional information at SMA-solar.com

3) in progress

Accessories

SMA Backup for STP Hybrid X:



BU-STPH-3P63B
BU-STPH-4P63B



BU-STPH-3P63K



BU-STPH-4P63K

ENERGY THAT CHANGES

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