



/ STPH5-60 / STPH6-60 / STPH8-60 / STPH10-60 / STPH12-60 / STPH15-60



# 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**



## 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

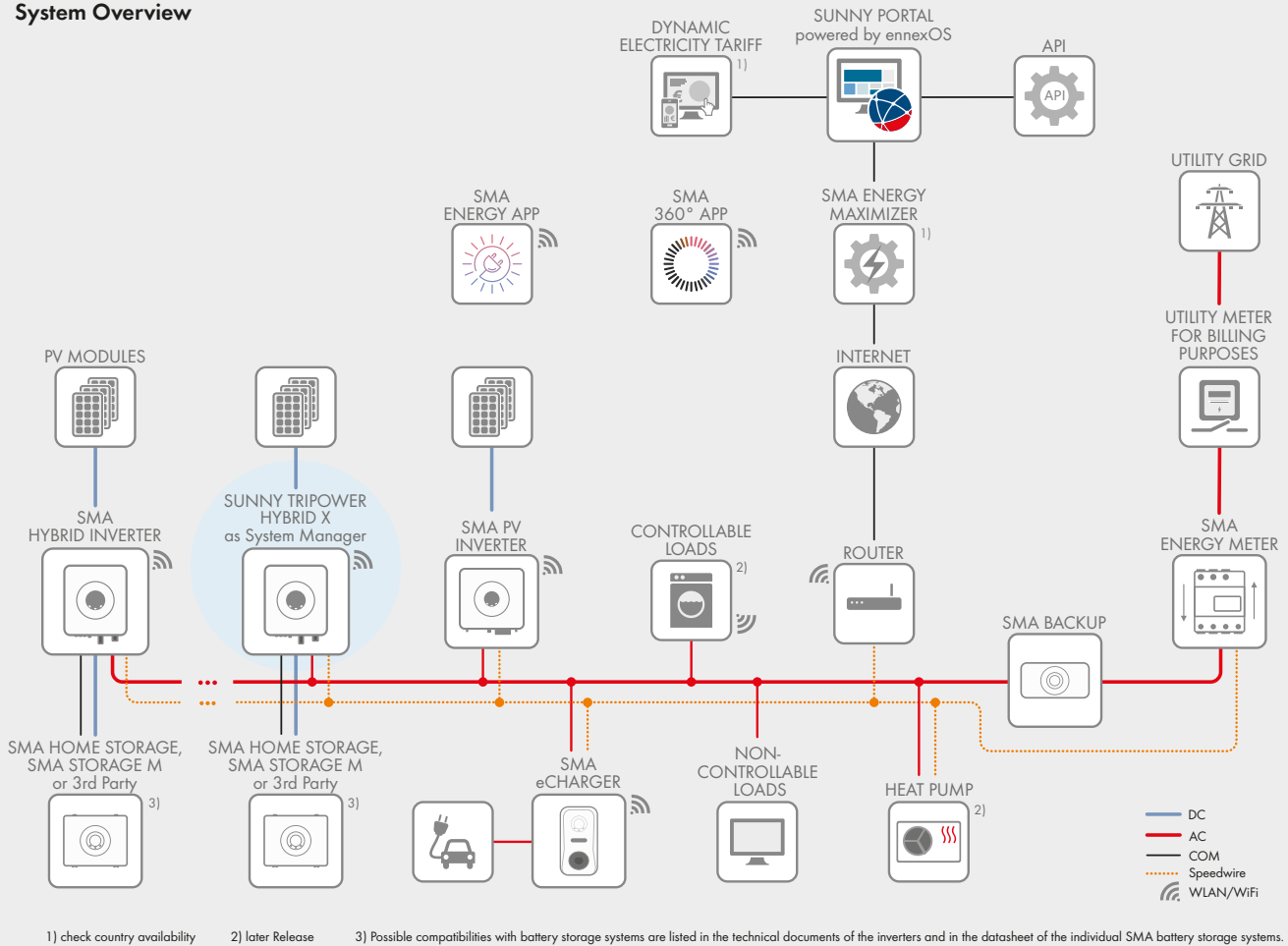
- SMA Energy Maximizer: automatic and convenient optimization for the lowest possible energy costs\*
- SMA Energy Planner: Basic features always available with manual planning
- Cybersecurity architecture developed and operated by SMA (cloud operations within an ISO 27001 certified organizational unit)

**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



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
<b>DC Input, PV</b>						
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					
<b>DC Input, Battery</b>						
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
<b>AC Output</b>						
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; <b>230 V / 400 V</b> ; 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
<b>Efficiency</b>						
Max. efficiency, $\eta_{max}$	98.1%	98.2%	98.3%	98.3%	98.3%	98.3%
European efficiency, $\eta_{EU}$	96.0%	96.5%	97.1%	97.4%	97.6%	97.8%
<b>SPS Output in Off-Grid Mode</b>						
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		
<b>AC output in off-grid mode<sup>1)</sup></b>						
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		
<b>Protective Devices</b>						
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		
<b>General Data</b>						
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					
<b>Features / Functions / Accessories</b>						
AC connection	AC connector (2.5 mm <sup>2</sup> to 10 mm <sup>2</sup> )					
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	● / ● <sup>2)</sup> / ○					
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 <sup>3)</sup> , NA/EEA-NE7, TOR Erzeuger Typ A 2024 <sup>3)</sup> , C10/C11:2024 <sup>3)</sup> , EIFS:2018 <sup>3)</sup> , CEIO-21 <sup>3)</sup> , NTS Typ A <sup>3)</sup>					
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](http://my.sma-service.com)). The conditions of the SMA limited factory warranty apply. You can find additional information at [SMA-solar.com](http://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

