

/ STPH20-70 / STPH25-70 / STPH30-70



preliminary



Sunny Tripower Hybrid X

20 / 25 / 30

Three-phase hybrid inverter for scalable, reliable, and future-proof energy supply in homes and small businesses

powered by
ennexOS



Scalable Power for any System Configuration

- 4 MPP trackers
- Scalable to up to 5 hybrid inverters in parallel
- 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 subordinate devices

Integrated Cloud-based Energy Management

- SMA Energy Maximizer: Automatic and convenient optimization for the lowest possible energy costs*
- Activated during commissioning and managed via the SMA Energy App
- 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)

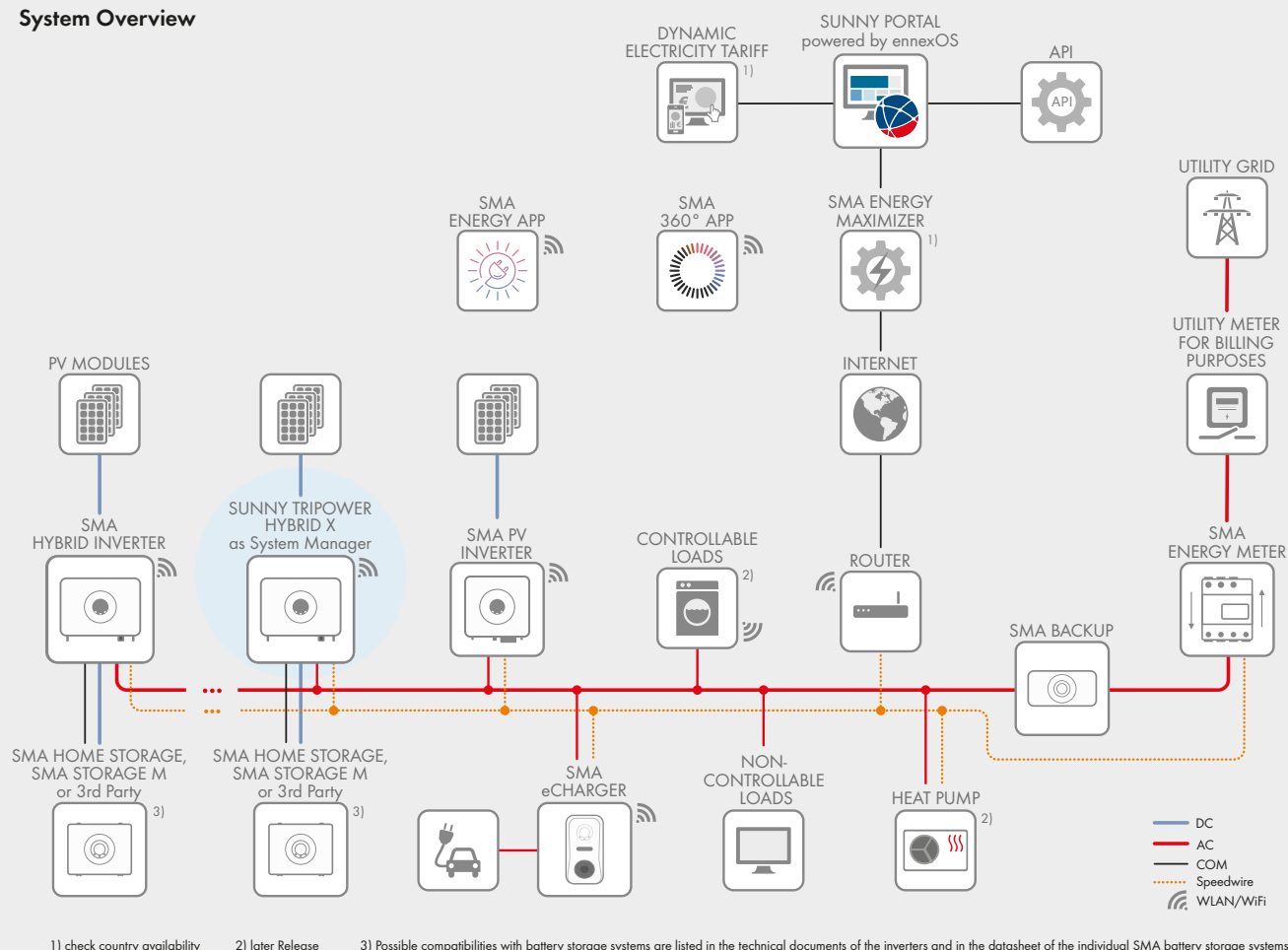
Sunny Tripower Hybrid X, featuring integrated cloud-based energy management, is the central control system for an efficient, flexible, and reliable energy supply in residential homes and small commercial facilities.

With a power range of 20 kVA to 30 kVA, the three-phase hybrid inverter can be adapted to a variety of system concepts. Four independent MPP trackers make planning easier, even for complex roof structures.

When used in combination with the SMA Storage M battery, a storage capacity of up to 49 kWh can be integrated. The integrated energy management system with 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 20	Sunny Tripower Hybrid X 25	Sunny Tripower Hybrid X 30
DC Input, PV			
Max. connectable power for PV modules	30000 W _p , STC	37500 W _p , STC	45000 W _p , STC
Max. PV input voltage		1000 V	
Min. PV input voltage		150 V	
MPP voltage range		180 V to 850 V	
MPP voltage range at nominal power	300 V to 850 V	335 V to 850 V	370 V to 850 V
Rated PV input voltage		620 V	
Initial input voltage		200 V	
Maximum usable input current per MPP tracking input		32 A	
Max. short-circuit current per MPP tracking input		45 A	
Number of independent MPP inputs		4	
Strings per MPP input		2	
DC Input, Battery			
Battery voltage range		120 V to 800 V	
Max. usable charging current		50 A	
Max. usable discharging current		50 A	
Max. usable charging power		29990 W	
Max. usable discharging power	20000 W	25000 W	29990 W
AC Output			
Rated power (at 230 V, 50 Hz)	20000 W	25000 W	29990 W
Max apparent power	20000 VA	25000 VA	29990 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	29.0 A	36.3 A	43.5 A
Max. output current	30.4 A	37.9 A	45.5 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	

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Efficiency			
Max. efficiency, η_{max} / European efficiency, η_{EU}	98.2% / 97.8% (preliminary)	98.2% / 97.9% (preliminary)	98.2% / 97.9% (preliminary)
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			
Rated power (at 230 V, 50 Hz)	20000 W	25000 W	30000 W
Max apparent power	20000 VA	25000 VA	30000 VA
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)	780 mm / 618 mm / 270 mm (30.7 in / 24.3 in / 10.6 in)		
Weight	45 kg (99.2 lb)		
Operating temperature range	−25°C to +60°C (−13°F to +140°F) with derating		
Noise emission, typical	<50 dB(A)		
Self-consumption (at night)	<18 W		
Topology / cooling concept	No galvanic isolation / active cooling		
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	Screw terminal (10 mm² to 25 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	● / ● ¹⁾ / ○		
Cybersecurity	Compliant with the EU RED Cybersecurity Directive (EN 18031-1), ETSI EN 303 645, Speedwire Encrypted		
Certificates and approvals (more available on request)	Communication (SEC), EU-based data hosting (ISO 27001), automatic updates CE, IEC 62109-1/-2, EN 50549-1, VDE-AR-N 4105:2018, VDE-AR-E 2510-2, NA/EEA-NE7, TOR Generator Type A 2024, C10/C11:2024, EIFS:2018		
Type designation	STPH20-70	STPH25-70	STPH30-70

● Standard features ○ Optional — Not available Data at nominal conditions "STC": Standard-test conditions Status: 2026-08

1) 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](https://www.sma-solar.com)

Accessories

SMA Backup
for STP Hybrid X:



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



BU-STPH-3P63K



BU-STPH-4P63K

