/ 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

SMA Smart Connected | SMA ArcFix | SMA ShadeFix

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

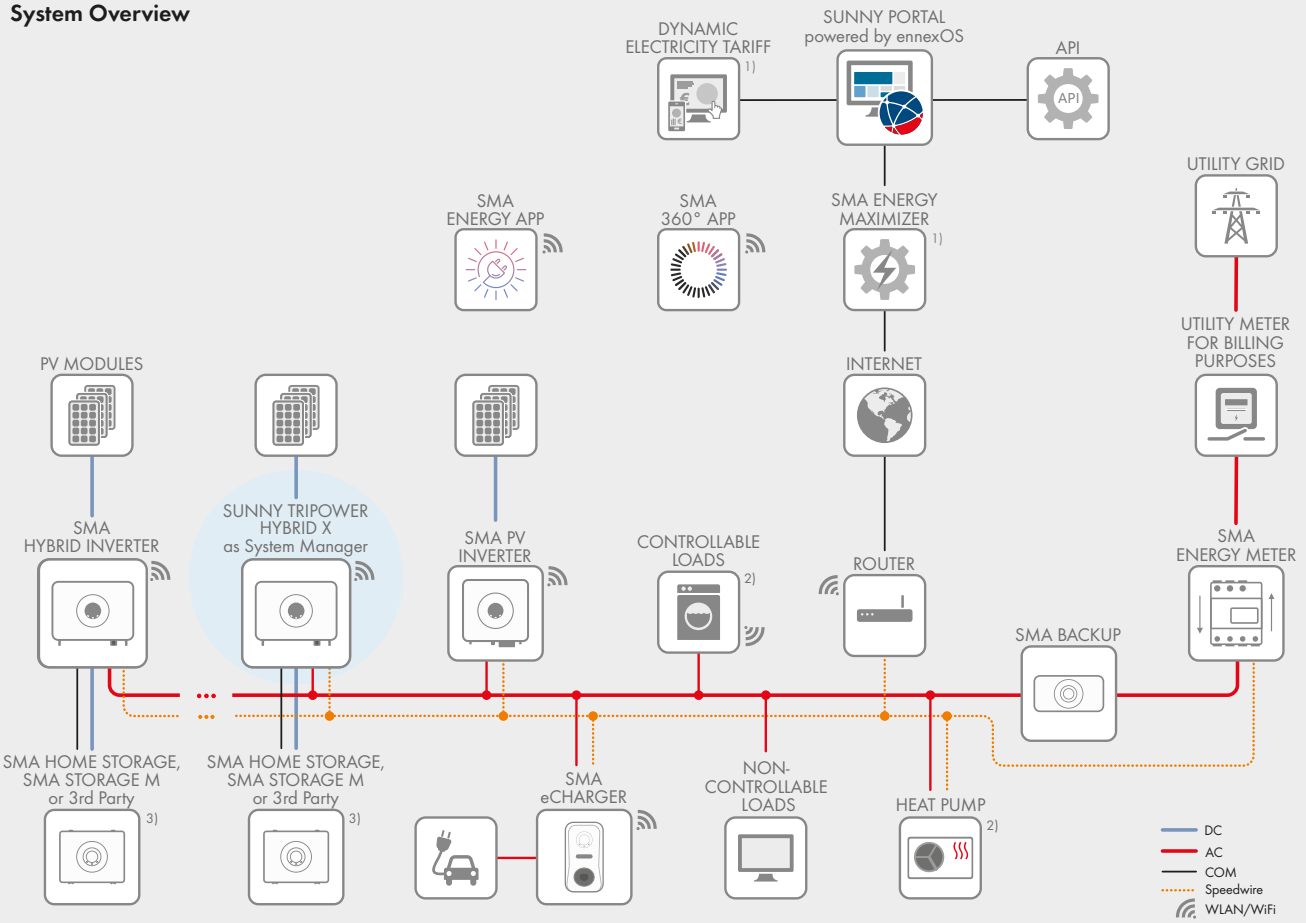
Integrated Cloud-based Energy Management

- 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 (ISO 27001-certified SMA Cloud)

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.

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 20	Sunny Tripower Hybrid X 25	Sunny Tripower Hybrid X 30
DC Input, PV			
Max. connectable power for PV modules	30000 Wp, STC	37500 Wp, STC	45000 Wp, STC
Max. PV input voltage		1000 V	
Min. PV input voltage		180 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		180 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, ηmax / European efficiency, ηEU	98.2% / 97.7% (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
Max. output current for backup loads	16 A		
Max. output current < 2 s	tbd A		
Max. output current < 5 s	tbd A		
Nominal AC grid voltage	230 V		
AC grid frequency	50 Hz		
Switching mode	Automatic		
Switching time to backup operation	tbd		
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	tbd dB(A)		
Self-consumption (at night)	tbd		
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[1)]		
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, 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: 2026-05

1) Second MFR with later FW release

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

Accessories

SMA Backup for STP Hybrid X:

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

BU-STPH-3P63K

BU-STPH-4P63K

ENERGY
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CHANGES

SMA