SUNNY TRIPOWER 125

The SMA Sunny Tripower 125 is a 125 kW three-phase photovoltaic inverter designed for large commercial and industrial PV systems. With 12 independent MPPTs, outstanding efficiency and advanced communication capabilities, it delivers maximum energy production while seamlessly integrating into modern energy management systems.

The **Sunny Tripower 125** is part of the **SMA Commercial Energy Solution**, developed to maximize the performance and profitability of commercial and industrial photovoltaic installations.

Delivering **125 kW of rated output power**, it is ideally suited for decentralized PV systems ranging from large industrial rooftops to utility-scale ground-mounted power plants.

Its **12 independent MPPT trackers with 24 string inputs** provide exceptional design flexibility, allowing different module orientations, inclinations and string configurations while maximizing energy production from every PV array.

Integrated **SMA ShadeFix** technology continuously optimizes the operating point of the PV strings, reducing production losses caused by partial shading without requiring additional hardware.

To maximize system availability, **SMA Smart Connected** continuously monitors inverter operation, detecting potential faults at an early stage and helping reduce maintenance costs and downtime.

Safety is enhanced through the integrated **SMA ArcFix (AFCI)** arc-fault protection, DC Type I+II and AC Type II surge protection, residual current monitoring and I-V curve diagnostics, ensuring reliable operation under demanding conditions.

Built-in **Ethernet, Wi-Fi, SMA Speedwire, SMA Modbus and SunSpec Modbus** enable seamless integration with SCADA systems, monitoring platforms, battery storage solutions and EV charging infrastructure.

With a maximum efficiency of **98.4%, IP65** protection and **OptiCool** active cooling technology, the Sunny Tripower 125 offers outstanding reliability and long-term performance for demanding photovoltaic projects.

Key Features

- 125 kW rated output power
- Supports up to 187.5 kWp PV array power
- 12 independent MPPTs with 24 string inputs
- Maximum efficiency of 98.4%
- SMA ShadeFix optimization technology
- SMA Smart Connected monitoring service
- SMA ArcFix integrated AFCI protection
- Ethernet, Wi-Fi, Speedwire, SMA Modbus and SunSpec Modbus
- IP65 protection rating
- OptiCool active cooling system

Applications

- Commercial PV installations
- Industrial rooftops
- Utility-scale solar plants
- Industrial self-consumption systems
- Energy communities
- Grid-connected PV plants
- Battery energy storage integration
- EV charging infrastructure

Advantages

- Maximum energy yield
- Flexible system design
- Optimized performance under partial shading
- Continuous intelligent monitoring
- Advanced electrical protection
- Easy integration with energy management systems
- Wide communication compatibility
- Reliable operation with minimal maintenance

SPECIFICATIONS

Technical data – SMA Sunny Tripower 125	
DC input	
Maximum PV array power	187,500 Wp STC
Maximum input voltage	1,100 V
MPP voltage range at rated power	450 V – 800 V
Rated input voltage	600 V
MPP voltage range	180 V – 800 V
Minimum input voltage	180 V
Initial input voltage	200 V

Technical data – SMA Sunny Tripower 125	
Maximum usable input current per MPP tracker	30 A
Maximum short-circuit current per MPP tracker	40 A
Number of independent MPP trackers	12
Strings per MPP tracker	2
AC output	
Rated power	125,000 W
Rated apparent power	125,000 VA
Maximum apparent power	125,000 VA
Nominal AC voltage	230 V / 400 V
AC voltage range	320 V – 480 V
Rated grid frequency	50 Hz
Grid frequency range	45 Hz – 65 Hz
Rated output current	181.1 A
Maximum output current	181.1 A
Power factor at rated power	1
Adjustable displacement power factor	0.8 overexcited – 0.8 underexcited
Total harmonic distortion	< 3% at rated power
Feed-in phases	3
AC connection	3-N-PE
Efficiency	
Maximum efficiency	98.4%
European efficiency	98.1%
Protective devices	
Input-side disconnection point	Included
Ground fault monitoring	Included
Grid monitoring	Included
DC reverse polarity protection	Included
AC short-circuit protection	Included
All-pole sensitive residual-current monitoring	Included
Protection class	Class I
Overvoltage category	AC: III / DC: II
Arc-fault circuit interrupter	SMA ArcFix (AFCI), compliant with IEC 63027
I-V array diagnostics	Included
Surge protection	DC type I+II / AC type II
General data	
Dimensions (W × H × D)	1,020 × 795 × 360 mm
Weight	Approx. 96 kg
Operating temperature range	–30°C to +60°C
Maximum noise emission at 1 m	< 71.1 dB(A)
Topology	No galvanic isolation
Cooling concept	OptiCool
Degree of protection	IP65
Features, communication and mounting	
DC connection	Sunclix
AC connection	Terminal lug, up to 240 mm²
LED indicators	Status, fault and communication
Ethernet	2 ports
Wi-Fi	Included
Communication protocols	SMA Modbus, SunSpec Modbus and Speedwire
Multifunction relay	Floating change-over contact
Digital inputs for power limitation	4
Digital inputs for quick stop	2
Mounting type	Wall mounting or rack mounting
Warranty and model	
Standard warranty	5 years
Warranty extensions	10, 15 or 20 years
Model	STP 125-70

Note: input voltages of up to 1,000 V are possible; however, this may result in reduced power output.

DOWNLOADS

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SMA STP 125 DATA SHEET

STP125-70-DS-en-13.pdf Size: 1.9 MiB