/ SCS 4400 UP-S / SCS 4600 UP-S



Sunny Central Storage UP-S

Extended grid-feed power

Battery inverter for large-scale storage systems

Efficient
- Up to 4 inverters can be transported in one standard shipping container
- Higher power density
- Higher power in grid feed direction
- Higher short circuit contribution

Robust
- Intelligent air cooling system OptiCool for efficient cooling
- Suitable for outdoor use in all climatic ambient conditions worldwide

Flexible
- One device for all applications
- Stand-alone device or turnkey solution with SMA medium-voltage system
- Optional Silencer Kit reduces the noise emission by > 6 dB(A)

Versatile
- Integrated battery communication
- Customized monitoring and control of inverters
- Grid management functions for dynamic grid support
- Integrated voltage supply for internal consumption and external loads

With a max. output of up to 4600 kVA and system voltages up to 1500 V DC, the SMA Sunny Central Storage allows for more efficient and flexible system design for battery power plants.

The SCS UP-S versions allow a system design with higher output power and higher short-circuit current contribution. The intelligent cooling system OptiCool ensure smooth operation even in extreme ambient temperature.

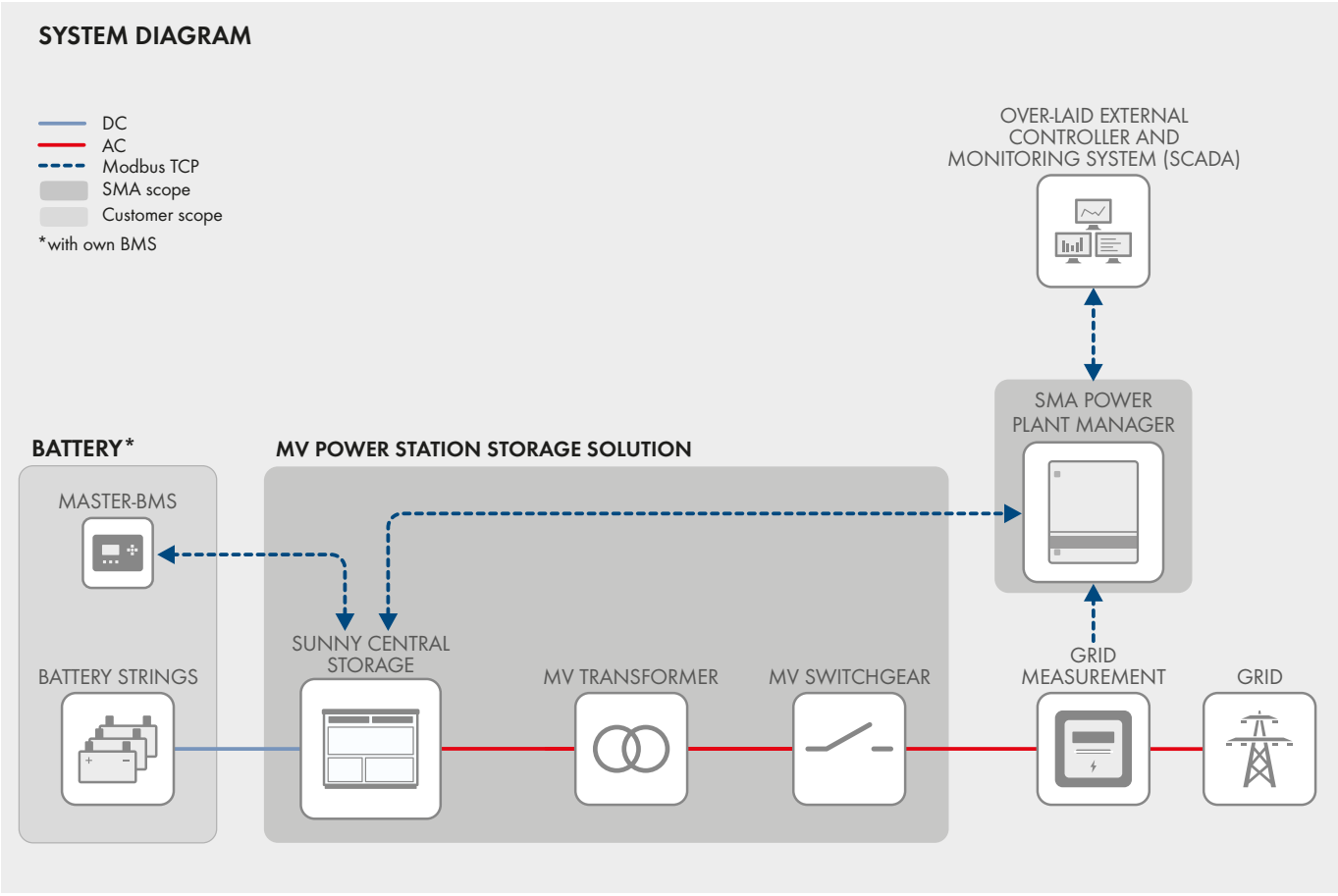
Use the SMA Silencer Kit to significantly reduce the noise emission of the device.

Technical Data	SCS 4400 UP-S	SCS 4600 UP-S
Battery side (DC)		
Operating DC voltage range V_{DC}	962 V to 1500 V	1003 V to 1500 V
Max. DC current $I_{DC, max}$	4750 A	
Max. DC Short-curcuit current[13]	over 500 kA	
Fused split DC busbar 6/6/6 connections per pole / fused single DC busbar 22 connections per pole [12]	○ / ●	
DC connection	with terminal lug	
Grid side (AC)		
Nominal AC power at 1200 Vdc and cos φ =1.0 (at 35°C)	4400 kW	4600 kW
Grid-Feed mode: AC apparent power at 1200 Vdc (at 35°C / at 40°C / at 50°C) [3][12]	4400 kVA / 4253 kVA / 3960 kVA	4600 kVA / 4447 kVA / 4140 kVA
Charging mode: AC apparent power at 1200 Vdc (at 35°C / at 40°C / at 50°C) [3][12]	4400 kVA / 4253 kVA / 3960kVA	4600 kVA / 4447 kVA / 4140 kVA
Max. AC current $I_{AC, max}$ (at 35°C / at 40°C / at 50°C)	3850 A / 3721 A / 3464 A	
Max. total harmonic distortion	< 3% at nominal power	
Nominal AC voltage / AC voltage range [1][8]	660 V / 528 V to 792 V	690 V / 552 V to 828 V
AC power frequency / range	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz	
Min. short-circuit ratio at the AC terminals [9]	> 2	
Cos Phi at rated power / displacement Cos Phi adjustable [8][10]	1 / 0.0 overexcited to 0.0 underexcited	
AC connection	with busbar system (three busbars, one per line conductor)	
Efficiency		
Max. efficiency[2]	99.2%	
Protective Devices		
Input-side disconnection point	DC load break switch	
Output-side disconnection point	AC circuit breaker	
DC overvoltage protection	Surge arrester, type I	
AC overvoltage protection (optional)	Surge arrester, class I	
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III	
Insulation monitoring	●	
Degree of protection: electronics / air duct / connection area (as per IEC 60529)	IP54 / IP34 / IP34	
General Data		
Dimensions (W / H / D)	2815 / 2318 / 1588 mm (110.8 / 91.3 / 62.5 inch)	
Weight	< 3700 kg / < 8200 lb	
Self-consumption (max.[4] / partial load[5] / average[6])	< 8100 W / < 1800 W / < 2000 W	
Self-consumption (standby)	< 370 W	
Internal (8.4 kVA transformer) / external auxiliary power supply	● / ○	
Sound power LWA with rated power inverter / inverter + Silencer Kit[7]	91 dB(A) / 85 dB(A)	
Operating temperature range (optional)[8]	(−40°C) −25°C to 60°C / (−40°F) −13°F to 140°F	
Temperature range (standby)	−40°C to 60°C / −40°F to 140°F	
Temperature range (storage)	−40°C to 70°C / −40°F to 158°F	
Max. permissible value for relative humidity (condensing / non-condensing)	95% to 100% (2 month/year) / 0% to 95%	
Maximum operating altitude above MSL[8] 1000 m / 2000 m[11]	● / ○	
Fresh air consumption	6500 m³/h	
Features		
Grid forming / black start ready	○ / ○	
Communication	Ethernet, Modbus Master, Modbus Slave	
Communication with SMA string monitor (transmission medium)	Modbus TCP / Ethernet (FO MM, Cat-5)	
Enclosure / roof color	RAL 9016 / RAL 7004	
Supply transformer for external loads	○ (2.5 kVA)	
Standards and directives complied with	CE, IEC / EN 62109-1/-2, AR-N 4110 / 4120 / 4130, Arrêté du 23/04/08	
EMC standards	IEC 61000-6-2, EN 55011, CISPR11, FCC Part 15 Class A	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	
Type designation	SCS 4400 UP-S	SCS 4600 UP-S

● Standard features ○ Optional – Not available

1) Below nominal AC voltage, AC power decreases in the same proportion
2) Efficiency measured without internal power supply
3) AC apparent power at higher dc voltages on request
4) Self-consumption at rated operation
5) Self-consumption at < 75% Pn at 25°C
6) Self-consumption averaged out from 5% to 100% Pn at 25°C
7) Detailed information on the sound power is available under NDA.
8) Values apply only to inverters. Permissible values for SMA MV solutions from SMA can be found in the corresponding data sheets
9) A short-circuit ratio of < 2 requires a special approval from SMA
10) Max. power values (S/P/Q) can be requested based on project specific design
11) Earlier temperature-dependent de-rating and reduction of DC open-circuit voltage
12) Fused DC input equipped with optional 900 A, 1000 A, 1100 A or 1250 A fuses
13) The time constant τ = L/R (tau) of t he DC circuit must be <=1ms. Project configurations for DC short-circuit currents exceeding 500kA require special approval from SMA.

SYSTEM DIAGRAM



Grid-connected functions

- Setpoints for active and reactive power
- Static grid support Q(U), P(f)
- Dynamic grid support (FRT)
- Active islanding detection (AID)
- High compatibility with different battery types

Grid-forming features

- Island grids / microgrids
- Synchronous grid forming - grid-parallel operation

Compatible with energy management system functionalities

- External static grid supporting functions
- Ramp-rate control of PV power
- Peak shaving
- Energy shifting
- Genset optimization control
- Reducing necessary spinning reserve of gensets
- Battery start-up and stop sequence
- Operates the battery within optimal operation window
- Black Start

ENERGY
THAT
CHANGES

SMA

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