/ SCS 3450 UP / SCS 3600 UP / SCS 3800 UP / SCS 3950 UP

Sunny Central Storage UP

Battery inverter for large-scale storage systems

Efficient
- Up to 4 inverters can be transported in one standard shipping container
- Higher power density

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

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 an output of up to 3960 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.

A separate voltage supply and additional space are available for the installation of customer equipment. The intelligent cooling system OptiCool ensure smooth operation even in extreme ambient temperature.

SUNNY CENTRAL STORAGE UP

Technical Data	SCS 3450 UP	SCS 3600 UP
Battery side (DC)		
Operating DC voltage range V_{DC}	880 V to 1500 V	921 V to 1500 V
Max. DC current $I_{DC, max}$	4750 A	
Fuse characteristic for battery connection - pre-arcing integral limit single DC busbar / split DC busbar [12) 14)]	10.75 MA^2s / 8.0 MA^2s	
Single DC busbar 36 connections per pole / split DC busbar 12/12/12 connections per pole / fused single DC busbar 22 connections per pole [15)]	● / ○ / ○	
DC connection	with terminal lug	
Grid side (AC)		
Nominal AC power at 1200 Vdc and cos φ =1.0 (at 25°C)	3450 kW	3620 kW
AC apparent power at 1200 Vdc (at 25°C / at 40°C / at 50°C)[3) 13)]	3450 kVA / 3140 kVA / 2930 kVA	3620 kVA / 3290 kVA / 3075 kVA
Max. AC current $I_{AC, max}$ (at 25°C / at 40°C / at 50°C)	3320 A / 3020 A / 2820 A	3320 A / 3020 A / 2820 A
Max. total harmonic distortion	< 3% at nominal power	
Nominal AC voltage / AC voltage range[1) 8)]	600 V / 480 V to 720 V	630 V / 504 V to 756 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)]	98.8%	
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	● / ○	
Noise emission[7)]	65.0 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 m^3/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, 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 3450 UP	SCS 3600 UP

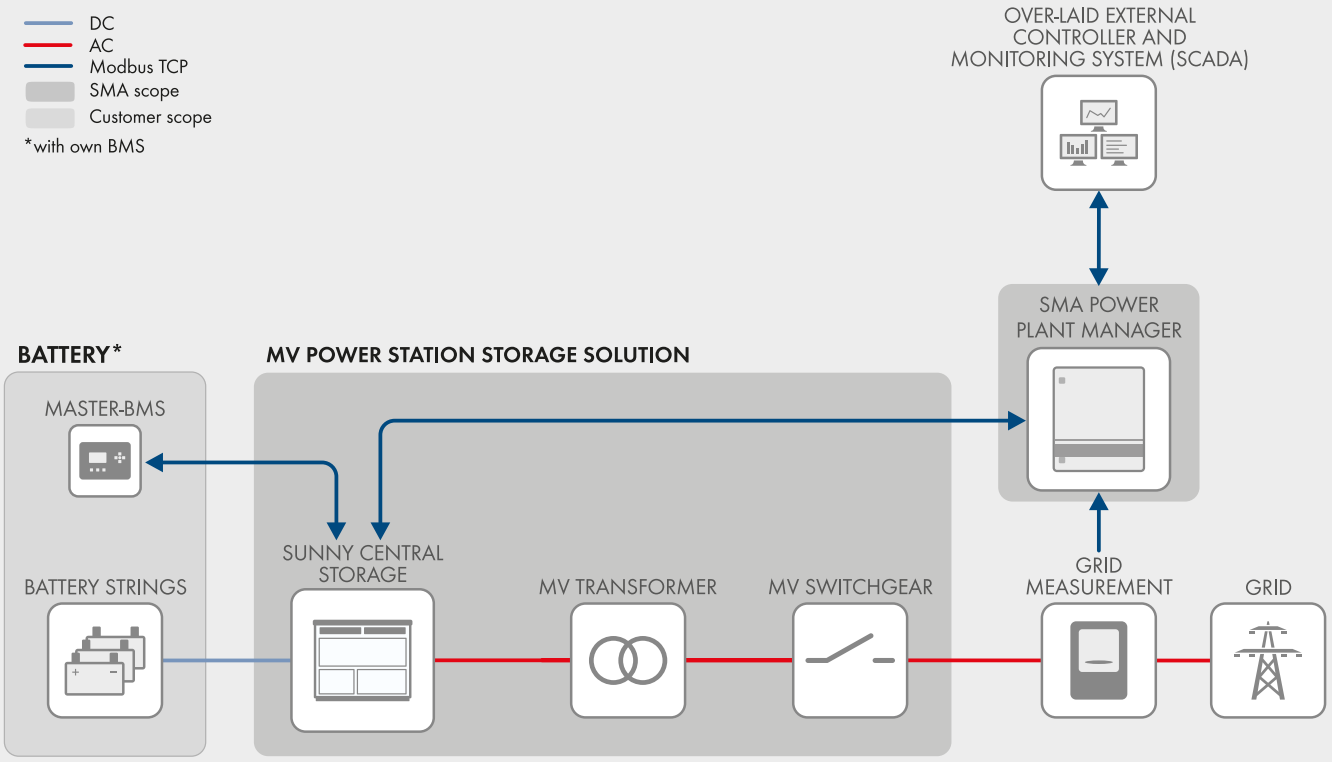
● Standard features ○ Optional – Not available

Technical Data	SCS 3800 UP	SCS 3950 UP
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	
Fuse characteristic for battery connection - pre-arcing integral limit single DC busbar / split DC busbar [12) 14)]	10.75 MA²s / 8.0 MA²s	
Single DC busbar 36 connections per pole / split DC busbar 12/12/12 connections per pole / fused single DC busbar 22 connections per pole [15)]	● / ○ / ○	
DC connection	with terminal lug	
Grid side (AC)		
Nominal AC power at 1200 Vdc and cos φ =1.0 (at 25°C)	3800 kW	3960 kW
AC apparent power at 1200 Vdc (at 25°C / at 40°C / at 50°C)[3) 13)]	3800 kVA / 3455 kVA / 3230 kVA	3960 kVA / 3610 kVA / 3365 kVA
Max. AC current $I_{AC, max}$ (at 25°C / at 40°C / at 50°C)	3320 A / 3020 A / 2820 A	3320 A / 3020 A / 2820 A
Max. total harmonic distortion	< 3% at nominal power	
Nominal AC voltage / AC voltage range[1) 8)]	660 V / 528 V to 759 V	690 V / 552 V to 759 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)]	98.8%	
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	● / ○	
Noise emission[7)]	65.0 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, 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 3800 UP	SCS 3950 UP

● 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) Sound pressure level at a distance of 10 m
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) Battery short circuit disconnection has to be done on the battery side with ultra rapid battery string or group fuses, e.g. fuse type aR/aBat & DC time constant Tau (L/R) <=1ms
13) Depending on the ratio of reactive power (cos φ), an extended power derating may occur
14) Please check the manual for further information
15) Fused DC input equipped with optional 750 A, 900 A or 1250 A fuses

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

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
- Grid Forming
- Black Start