

SUNNY CENTRAL STORAGE UP-XT EXTENDED GRID-FEED POWER



SCS 3450 UP-XT / SCS 3600 UP-XT / SCS 3800 UP-XT / SCS 3950 UP-XT



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

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

SUNNY CENTRAL STORAGE UP-XT

Battery inverter for large-scale storage systems

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-XT 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.

SUNNY CENTRAL STORAGE UP-XT

Technical Data	SCS 3450 UP-XT	SCS 3600 UP-XT
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) 15)}	10.75 MA ² s / 8.0 MA ² s	
Single DC busbar 36 connections per pole / split DC busbar 12/12/12 connections per pole / fused single DC busbar 22 connections per pole ¹⁶⁾	● / ○ / ○	
DC connection	with terminal lug	
Grid side (AC)		
Nominal AC power at 1200 Vdc and $\cos \phi = 1.0$ (at 25 °C)	4000 kW	4200 kW
Grid-Feed mode: AC apparent power at 1200 Vdc (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾	4000 kVA / 3640 kVA / 3400 kVA	4200 kVA / 3822 kVA / 3570 kVA
Charging mode: AC apparent power at 1200 Vdc (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾	3589 kVA / 3268 kVA / 3001 kVA	3769 kVA / 3432 kVA / 3152 kVA
Max. AC current $I_{AC, max}$ (at 25 °C / at 40 °C / at 50 °C)	3850 A / 3504 A / 3273 A	
Max. total harmonic distortion	< 3% at nominal power	
Nominal AC voltage / nominal 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-XT	SCS 3600 UP-XT

● Standard features ○ Optional – Not available

- 1) At nominal AC voltage, nominal 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

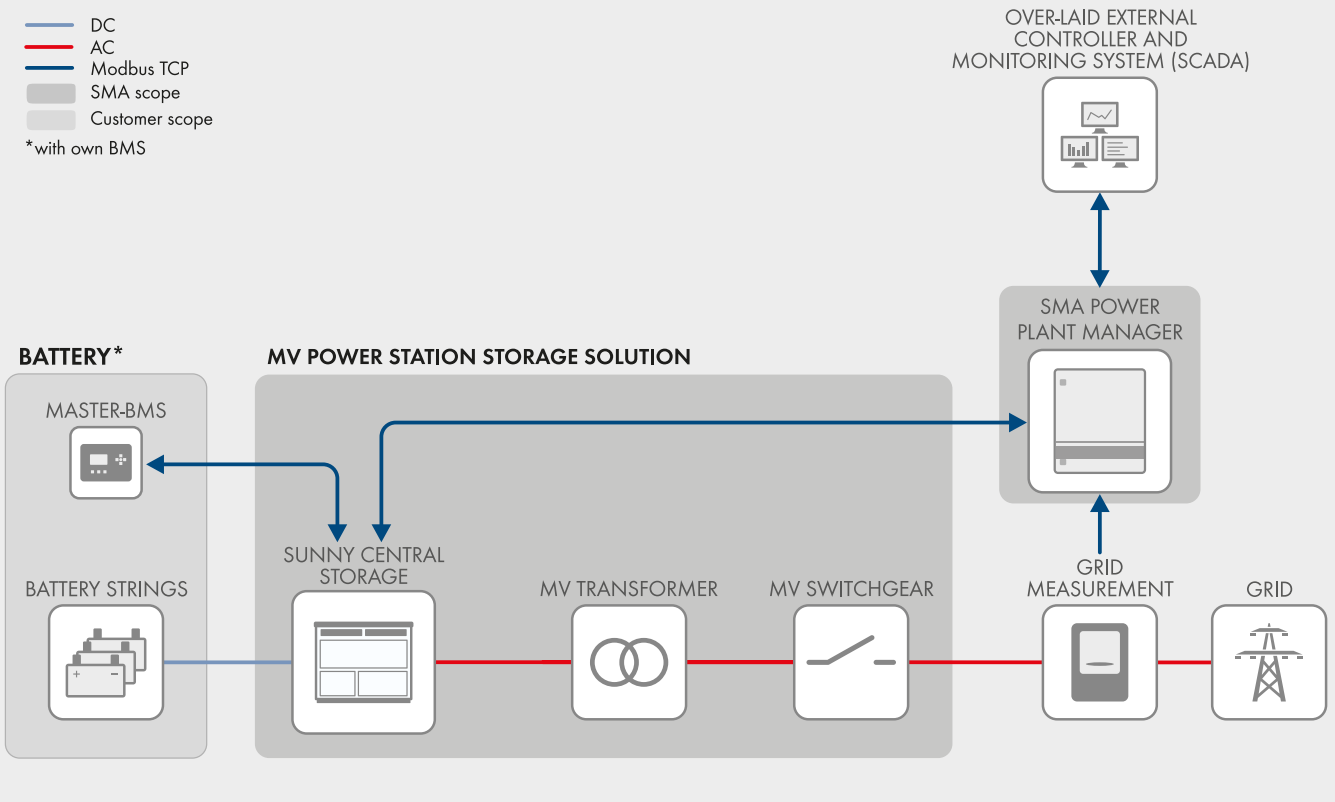
- 10) Max. power values (S/P/Q) can be requested based on project specific design
- 11) Earlier temperature-dependent de-rating and reduction of DC open-circuit voltage
- 12) Battery short circuit disconnection has to be done on the battery side with ultra rapid battery string or group fuses, e.g. fuse type aR/aBat & DC time constant Tau (L/R) <= 1ms
- 13) The specified services can be provided on a long-term basis. Depending on the ambient temperature and the inverter temperature, the maximum temperature-dependent AC power can also occur on short notice
- 14) Depending on the ratio of reactive power (cos φ), an extended power derating may occur.
- 15) Please check the manual for further information
- 16) fused DC input equipped with optional 750 A, 900 A or 1250 A fuses

Technical Data	SCS 3800 UP-XT	SCS 3950 UP-XT
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) 15)}	10.75 MA ² s / 8.0 MA ² s	
Single DC busbar 36 connections per pole / split DC busbar 12/12/12 connections per pole / fused single DC busbar 22 connections per pole ¹⁶⁾	● / ○ / ○	
DC connection	with terminal lug	
Grid side (AC)		
Nominal AC power at 1200 Vdc and cos φ = 1.0 (at 25 °C) ¹⁴⁾	4400 kW	4600 kW
Grid-Feed mode: AC apparent power at 1200 Vdc (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾	4400 kVA / 4004 kVA / 3740 kVA	4600 kVA / 4186 kVA / 3910 kVA
Charging mode: AC apparent power at 1200 Vdc (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾	3949 kVA / 3596 kVA / 3302 kVA	4129 kVA / 3759 kVA / 3453 kVA
Max. AC current $I_{AC, max}$ (at 25 °C / at 40 °C / at 50 °C)	3850 A / 3504 A / 3273 A	
Max. total harmonic distortion	< 3% at nominal power	
Nominal AC voltage / nominal AC voltage range ^{11) 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	
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Lightning protection (according to IEC 62305-1)	Lightning Protection Level III	
Insulation monitoring	●	
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Noise emission ⁷⁾	65.0 dB(A)	
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Maximum operating altitude above MSL ⁹⁾ 1000 m / 2000 m ¹¹⁾	● / ○	
Fresh air consumption	6500 m ³ /h	
Features		
Grid forming / black start ready	○ / ○	
Communication	Ethernet, Modbus Master, Modbus Slave	
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Enclosure / roof color	RAL 9016 / RAL 7004	
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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-XT	SCS 3950 UP-XT

● Standard features ○ Optional – Not available

SYSTEM DIAGRAM

- DC
 - AC
 - Modbus TCP
 - SMA scope
 - Customer scope
- *with own BMS



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