

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	4750 A
Max. interruption current capability ¹²⁾	6400 A	6400 A
Single DC busbar 26 connections per pole / split DC busbar 6/5/6 connections per pole	● / ○	
Grid side (AC)		
Nominal AC power at 1200 Vdc and $\cos \varphi = 1.0$ (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 / 3820 kVA / 3570 kVA
Charging mode: AC apparent power at 1200 Vdc (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾	3590 kVA / 3270 kVA / 3000 kVA	3770 kVA / 3430 kVA / 3150 kVA
Max. AC current $I_{AC, max}$	3850 A	3850 A
Max. total harmonic distortion	< 3% at nominal power	< 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	
Power factor at rated power / displacement power factor adjustable ⁸⁾¹⁰⁾	1 / 0.8 overexcited to 0.8 underexcited	
Efficiency		
Max. efficiency ²⁾	98.8%	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	● / ○	
Operating temperature range ⁸⁾	-25 °C to 60 °C / -13 °F to 140 °F	
Noise emission ⁷⁾	67.0 dB(A)*	
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	○ / ○	
DC connection	Terminal lug on each input (without fuse)	
AC connection	With busbar system (three busbars, one per line conductor)	
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, IEC / EN 62109-2, AR-N 4110, Arrêté du 23/04/08	
EMC standards	IEC 55011	
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% P_n at 25 °C
 6) Self-consumption averaged out from 5% to 100% P_n 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) Depending on the DC voltage & reactive power, a further apparent power derating is possible.
 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
 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.

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	4750 A
Max. interruption current capability ¹²⁾	6400 A	6400 A
Single DC busbar 26 connections per pole / split DC busbar 6/5/6 connections per pole	● / ○	
Grid side (AC)		
Nominal AC power at 1200 Vdc and $\cos \varphi = 1.0$ (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 / 4000 kVA / 3740 kVA	4600 kVA / 4185 kVA / 3910 kVA
Charging mode: AC apparent power at 1200 Vdc (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾	3950 kVA / 3595 kVA / 3300 kVA	4130 kVA / 3760 kVA / 3455 kVA
Max. AC current $I_{AC, max}$	3850 A	3850 A
Max. total harmonic distortion	< 3% at nominal power	< 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	
Power factor at rated power / displacement power factor adjustable ⁸⁾¹⁰⁾	1 / 0.8 overexcited to 0.8 underexcited	
Efficiency		
Max. efficiency ²⁾	98.8%	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	●	
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	
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Self-consumption (standby)	< 370 W	
Internal (8.4 kVA transformer) / external auxiliary power supply	● / ○	
Operating temperature range ⁸⁾	-25 °C to 60 °C / -13 °F to 140 °F	
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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	○ / ○	
DC connection	Terminal lug on each input (without fuse)	
AC connection	With busbar system (three busbars, one per line conductor)	
Communication	Ethernet, Modbus Master, Modbus Slave	
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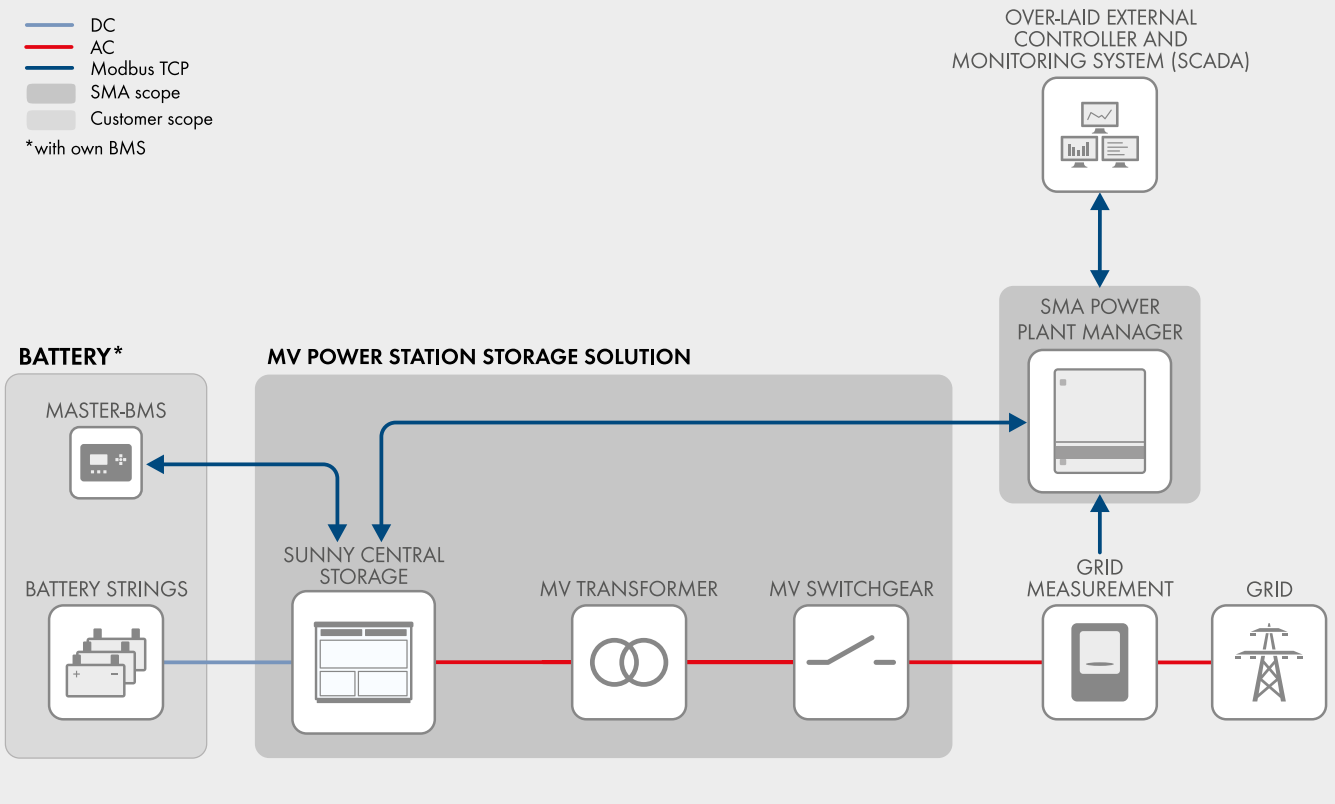
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SYSTEM DIAGRAM

- 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