

SUNNY CENTRAL STORAGE UP-XT EXTENDED GRID-FEED POWER



SCS 2300 UP-XT / SCS 2400 UP-XT / SCS 2530 UP-XT / SCS 2630 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 3065 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 2300 UP-XT | SCS 2400 UP-XT |
|---|---|-----------------------------------|
| Battery side (DC) | | |
| Operating DC voltage range V_{DC} | 880 V to 1500 V | 921 V to 1500 V |
| Max. DC current $I_{DC, max}$ | 3200 A | 3200 A |
| Max. interruption current capability ¹²⁾ | 6400 A | 6400 A |
| Single DC busbar 26 connections per pole / split DC busbar 6/5 connections per pole | ● / ○ | |
| Grid side (AC) | | |
| Nominal AC discharge power at 1200 Vdc and $\cos \varphi = 1.0$ (at 25 °C) | 2665 kW* | 2800 kW* |
| Grid-Feed mode: AC apparent power at 1200 Vdc, (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾ | 2665 kVA* / 2430 kVA* / 2270 kVA* | 2800 kVA* / 2550 kVA* / 2380 kVA* |
| Charging mode: AC apparent power at 1200 Vdc, (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾ | 2390 kVA* / 2180 kVA* / 2000 kVA* | 2515 kVA* / 2290 kVA* / 2100 kVA* |
| Max. AC current $I_{AC, max}$ | 2566 A* | 2566 A* |
| Max. total harmonic distortion | < 3% at nominal power | < 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 | |
| Power factor at rated power / displacement power factor adjustable ^{8) 10)} | 1 / 0.8 overexcited to 0.8 underexcited | |
| Efficiency | | |
| Max. efficiency ²⁾ | 98.5%* | 98.5%* |
| 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 | < 3400 kg* / < 7500 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 | |
| ● Standard features ○ Optional – not available * preliminary | | |
| Type designation | SCS 2300 UP-XT | SCS 2400 UP-XT |

- 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 2530 UP-XT | SCS 2630 UP-XT |
|---|---|-----------------------------------|
| Battery side (DC) | | |
| Operating DC voltage range V_{DC} | 962 V to 1500 V | 1003 V to 1500 V |
| Max. DC current $I_{DC, max}$ | 3200 A | 3200 A |
| Max. interruption current capability ¹⁾²⁾ | 6400 A | 6400 A |
| Single DC busbar 26 connections per pole / split DC busbar 6/5 connections per pole | ● / ○ | |
| Grid side (AC) | | |
| Nominal AC discharge power at 1200 Vdc and $\cos \varphi = 1.0$ (at 25 °C) | 2930 kW* | 3065 kW* |
| Grid-Feed mode: AC apparent power at 1200 Vdc, (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾ | 2930 kVA* / 2670 kVA* / 2495 kVA* | 3065 kVA* / 2790 kVA* / 2605 kVA* |
| Charging mode: AC apparent power at 1200 Vdc, (at 25 °C / at 40 °C / at 50 °C) ³⁾¹³⁾¹⁴⁾ | 2635 kVA* / 2400 kVA* / 2200 kVA* | 2750 kVA* / 2505 kVA* / 2300 kVA* |
| Max. AC current $I_{AC, max}$ | 2566 A* | 2566 A* |
| Max. total harmonic distortion | < 3% at nominal power | < 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 | |
| Power factor at rated power / displacement power factor adjustable ^{8) 10)} | 1 / 0.8 overexcited to 0.8 underexcited | |
| Efficiency | | |
| Max. efficiency ²⁾ | 98.5%* | 98.5%* |
| 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 | < 3400 kg* / < 7500 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)* | |
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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 | |
| 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) | |
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| EMC standards | IEC 55011 | |
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| ● Standard features ○ Optional – not available * preliminary | | |
| Type designation | SCS 2530 UP-XT | SCS 2630 UP-XT |

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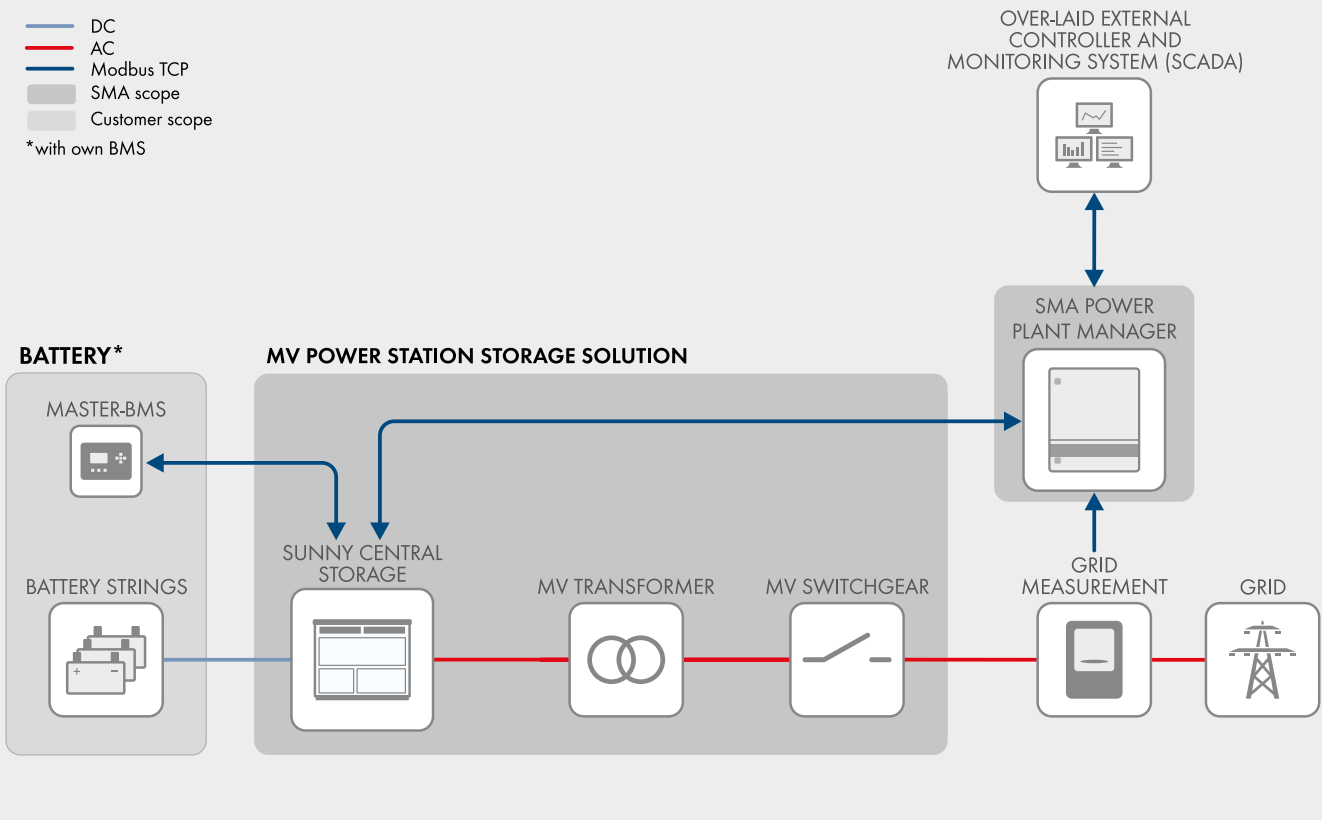
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SYSTEM DIAGRAM

- 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