

# SUNNY CENTRAL STORAGE 2200-US / 2475-US / 2900-US



SCS-2200-10-US / SCS-2475-10-US / SCS-2900-10-US



**MORE THAN 1GW  
OF STORAGE  
INSTALLED WORLDWIDE**



## Efficient

- High power density
- Max. efficiency is 98.7%
- Lower transportation costs (up to 4 inverters in a standard shipping container)

## Robust

- Proven OptiCool™ technology for intelligent, effective cooling
- Can be installed worldwide outdoors in any ambient condition

## Flexible

- Conforms to all relevant grid requirements worldwide
- Four quadrant operation for full reactive power support
- Stand-alone device or a medium-voltage block solution

## 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 2200-US / 2475-US / 2900-US

Battery inverters for large scale storage systems

Grid-connected storage systems enable the integration of large amounts of intermittent renewable energy into the utility grid while ensuring maximum grid stability. The Sunny Central Storage is the central component of the SMA system solution for integration of large-scale storage systems. It is designed to compensate for fluctuations in solar energy generation and offers comprehensive grid management services such as automatic frequency control. The battery inverter is optimized for continuous operation at nominal load and temperature of  $-25^{\circ}\text{C}$  to  $+50^{\circ}\text{C}$ . Thanks to its wide DC voltage range, it is compatible with various types of battery technologies. The Sunny Central Storage is designed to work with the SMA Hybrid Controller and is also available as a medium-voltage block turnkey solution.

# SUNNY CENTRAL STORAGE

## 2200-US / 2475-US

Technical Data	SCS 2200-US	SCS 2475-US
<b>Battery side (DC)</b>		
DC Voltage range (at 25°C / at 50°C) <sup>1)</sup>	570 V to 950 V / 950 V	634 V to 1000 V / 1000 V
Minimal / Maximal DC voltage <sup>2)</sup>	545 V / 1000 V	614 V / 1000 V
Max. DC current (at 25°C / at 50°C)	3960 A / 3600 A	3960 A / 3600 A
Max. interruption current capability <sup>3)</sup>	6400 A	6400 A
Number of DC cables per polarity	26	
<b>Grid side (AC)</b>		
Max. AC power (at 25°C / at 50°C) <sup>13)</sup>	2200 kVA / 2000 kVA	2475 kVA / 2250 kVA
Max. AC current	3300 A	3292 A
Nominal AC voltage / nominal AC voltage range <sup>4)</sup>	385 V / 308 V to 462 V	434 V / 347 V to 520 V
AC power frequency / range	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz	
Power factor at rated power / displacement power factor adjustable <sup>11)</sup>	1 / 0.0 overexcited to 0.0 underexcited	
Max. total harmonic distortion	< 3% at nominal power	
Min. short-circuit ratio at the AC terminals	2	
<b>Efficiency</b>		
Max. efficiency <sup>5)</sup> / European efficiency <sup>5)</sup>	98.6% / 98.4%	98.6% / 98.4%
<b>Protective Devices</b>		
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	○ Surge arrester, class I	
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III	
Ground-fault monitoring / remote ground-fault monitoring	○ / ○	
Insulation monitoring	●	
Degree of protection: electronics / air duct / connection area (as per UL50E)	UL Type 3R / Type 1 / Type 1	
<b>General Data</b>		
Dimensions (W / H / D)	2780 mm / 2318 mm / 1588 mm	
Weight	< 3400 kg	
Self-consumption (max. <sup>6)</sup> / partial load <sup>7)</sup> / average <sup>8)</sup>	< 8100 W / < 1800 W / < 2000 W	
Self-consumption (standby)	< 300 W	
Auxiliary power supply: integrated 8.4 kVA transformer / external	● / ○	
Operating temperature range	-25°C to 60°C	
Noise emission <sup>9)</sup>	< 64.7 dB(A)	
Temperature range (standby)	-40°C to 60°C	
Temperature range (storage)	-40°C to 70°C	
Max. permissible value for relative humidity (condensing / non-condensing)	95% to 100% (2 month/year) / 0% to 95%	
Maximum operating altitude above MSL <sup>10)</sup> 1000 m / 2000 m <sup>12)</sup> / 3000 m <sup>12)</sup>	● / ○ / ○	
Fresh air consumption	6500 m <sup>3</sup> /h	
<b>Features</b>		
DC connection	Terminal lugs on each input (without fuse)	
AC connection	With busbar system (three busbars, one per line conductor)	
Communication	Ethernet, Modbus Master, Modbus Slave	
Enclosure / roof color	RAL 9016 / RAL 7004	
Display	● Identicator lights / ○ HMI touchscreen (10.1")	
Supply transformer for external loads	○ (2.5 kVA)	
Standards and directives complied with	UL 1741 (Chapter 31, CDR 6I), UL 1741-SA, UL 1998, IEEE 1547, MIL-STD-810G	
EMC standards	FCC Part 15 Class A	
● Standard features ○ Optional		
Type designation	SCS-2200-10-US	SCS-2475-10-US

1) Another voltage range can be offered on request

2) With power derating

3) Battery short circuit disconnection has to be done on the battery side

4) AC voltage range can be extended for 50 Hz grids only (option „brown power“ must be selected, option “housekeeping” not combinable).

5) Efficiency measured without internal power supply

6) Self-consumption at rated operation  
Self-consumption at < 75% P<sub>n</sub> at 25°C

Self-consumption averaged out from 5% to 100% P<sub>n</sub> at 25°C

9) Sound pressure level at a distance of 10 m

10) Values apply only to inverters. Permissible values for SMA MV solutions from SMA can be found in the corresponding data sheets.

11) Depending on the DC voltage

12) Earlier temperature-dependent de-rating and reduction of DC open-circuit voltage

13) Measured at cos φ 0.8 underexcited to 0.8 overexcited

14) Additional apparent power derating might apply for a combination of the following conditions: > 45°C, > 1080 V DC, power factor < 0.9 underexcited and > 900 m MSL

# SUNNY CENTRAL STORAGE

## 2900-US

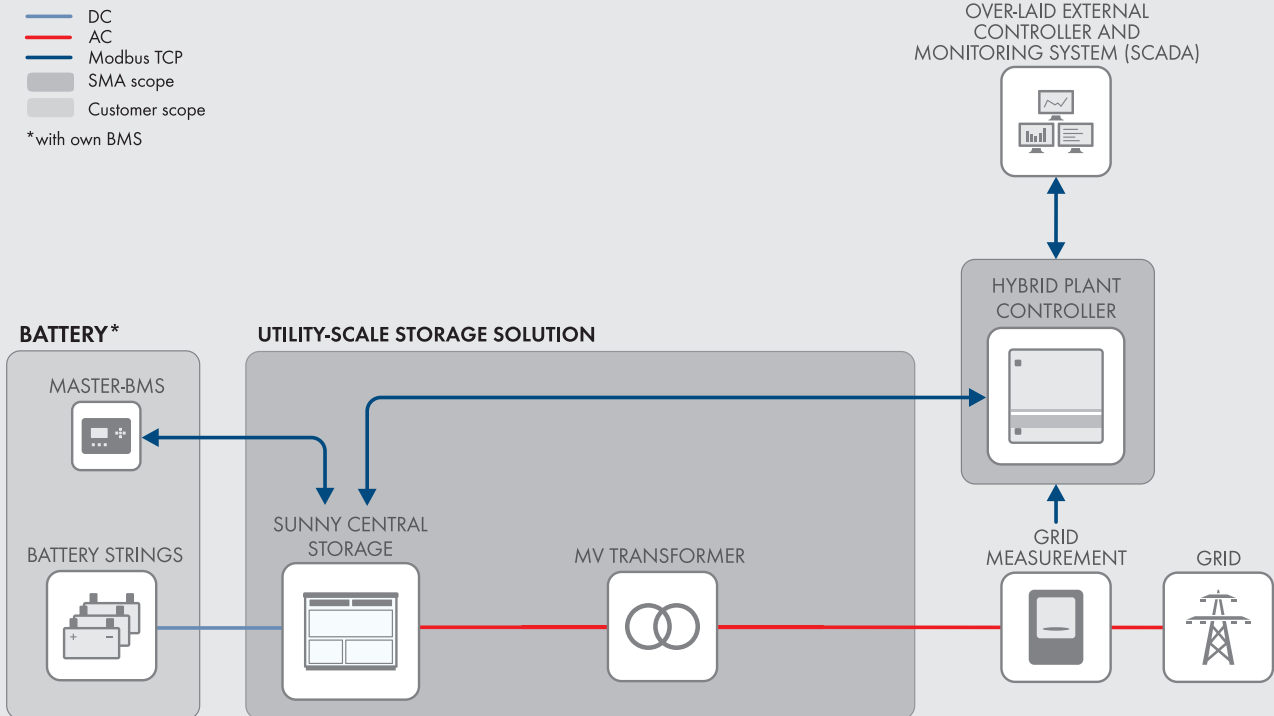
Technical Data	SCS 2900-US <sup>14)</sup>
<b>Battery side (DC)</b>	
DC Voltage range (at 25 °C / at 50 °C) <sup>1)</sup>	740 V to 1100 V / 1100 V
Minimal / Maximal DC voltage <sup>2)</sup>	720 V / 1100 V
Max. DC current (at 25 °C / at 50 °C)	3960 A / 3600 A
Max. interruption current capability <sup>3)</sup>	6400 A
Number of DC cables per polarity	26
<b>Grid side (AC)</b>	
Max. AC power at 1000 VDC (at 25 °C / at 40 °C / at 50 °C) <sup>13)</sup>	2940 kVA / 2780 kVA / 2670 kVA
Max. AC power at 1100 VDC (at 25 °C / at 40 °C / at 50 °C) <sup>13)</sup>	2940 kVA / 2670 kVA / 2250 kVA
Max. AC current	3265 A
Nominal AC voltage / nominal AC voltage range <sup>4)</sup>	520 V / 416 V to 624 V
AC power frequency / range	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz
Power factor at rated power / displacement power factor adjustable <sup>11)</sup>	1 / 0.0 overexcited to 0.0 underexcited
Max. total harmonic distortion	< 3% at nominal power
Min. short-circuit ratio at the AC terminals	2
<b>Efficiency</b>	
Max. efficiency <sup>5)</sup> / European efficiency <sup>5)</sup>	max. eta 98.6%
<b>Protective Devices</b>	
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	○ Surge arrester, class I
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III
Ground-fault monitoring / remote ground-fault monitoring	○ / ○
Insulation monitoring	●
Degree of protection: electronics / air duct / connection area (as per UL50E)	UL Type 3R / Type 1 / Type 1
<b>General Data</b>	
Dimensions (W / H / D)	2780 mm / 2318 mm / 1588 mm
Weight	< 3400 kg
Self-consumption (max. <sup>6)</sup> / partial load <sup>7)</sup> / average <sup>8)</sup>	< 8100 W / < 1800 W / < 2000 W
Self-consumption (standby)	< 300 W
Auxiliary power supply: integrated 8.4 kVA transformer / external	● / ○
Operating temperature range	-25 °C to 60 °C
Noise emission <sup>9)</sup>	< 64.7 dB(A)
Temperature range (standby)	-40 °C to 60 °C
Temperature range (storage)	-40 °C to 70 °C
Max. permissible value for relative humidity (condensing / non-condensing)	95% to 100% (2 month/year) / 0% to 95%
Maximum operating altitude above MSL <sup>10)</sup> 1000 m / 2000 m <sup>12)</sup> / 3000 m <sup>12)</sup>	● / ○ / ○
Fresh air consumption	6500 m <sup>3</sup> /h
<b>Features</b>	
DC connection	Terminal lugs on each input (without fuse)
AC connection	With busbar system (three busbars, one per line conductor)
Communication	Ethernet, Modbus Master, Modbus Slave
Enclosure / roof color	RAL 9016 / RAL 7004
Display	● Indicator lights / ○ HMI touchscreen (10.1")
Supply transformer for external loads	○ (2.5 kVA)
Standards and directives complied with	UL 62109-1 (pending), UL 1741 (Chapter 31, CDR 61), UL 1741-SA, UL 1998, IEEE 1547, MIL-STD-810G
EMC standards	FCC Part 15 Class A
● Standard features ○ Optional	
Type designation	SCS-2900-10-US

1) Another voltage range can be offered on request  
 2) With power derating  
 3) Battery short circuit disconnection has to be done on the battery side  
 4) AC voltage range can be extended for 50 Hz grids only (option „brown power“ must be selected, option “housekeeping” not combinable).  
 5) Efficiency measured without internal power supply  
 6) Self-consumption at rated operation  
 Self-consumption at < 75% P<sub>n</sub> at 25 °C  
 Self-consumption averaged out from 5% to 100% P<sub>n</sub> at 25 °C

9) Sound pressure level at a distance of 10 m  
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 13) Measured at cos φ 0.8 underexcited to 0.8 overexcited  
 14) Additional apparent power derating might apply for a combination of the following conditions: > 45 °C, > 1080 V DC, power factor < 0.9 underexcited and > 900 m MSL

## SUNNY CENTRAL STORAGE APPLICATIONS

- Provides ancillary grid services
- Supports the growth of renewable energy in public grids
- Increases fuel saving potential in PV hybrid diesel systems



By combining several of these schemes, higher power systems can be realized

### Grid-connected functions

- Setpoints for active and reactive power
- Static grid support Q(U), (P(f) on request)
- 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