

SUNNY CENTRAL

1850-US / 2200-US / 2500-EV-US / 2750-EV-US



SC-1850-US-10 / SC-2200-US-10 / SC-2500-EV-US-10 / SC-2750-EV-US-10



Unmatched Power Density

- Small footprint simplifies site preparation and logistics
- Industry leading over-dimensioning capabilities
- Integrated voltage supply for internal consumption and external loads

Robust Performance

- Precision air-cooling enables greater reliability and simpler service compared to liquid cooled inverters
- Best-in-class performance in any environment
- DC/AC Ratio up to 250%

Grid Management

- Conforms to all known grid requirements worldwide
- Provides Q on demand

Superior Integration

- Improved DC connection area
- Easily accessible bay for connecting site specific equipment
- Available as a stand-alone inverter or solution with medium-voltage block and tracker auxiliary rack

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Maximum power density and simple integration for 1,000 V and 1,500 V PV projects

The Sunny Central family features an output of up to 2,750 kVA with 1,500 V DC systems. Fewer system components are needed due to the integrated DC fuse servicing switches and convenience power. The inverter also includes integrated control power and a network switch. OptiCool™ precision air cooling keeps this central inverter running smoothly, even in extreme ambient temperatures. It also protects against sand and dust intrusion. The Sunny Central inverter is the central component of the SMA Utility Power System and offers industry leading DC:AC ratios. In conjunction with the medium-voltage block 2.0, DC technology, power plant controlling system and SMA Service, it offers maximum ROI for utility-scale PV projects.

SUNNY CENTRAL 1000 V

Technical Data	Sunny Central 1850-US	Sunny Central 2200-US
Input (DC)		
MPP voltage range V_{DC} (at 25 °C / at 50 °C) ⁸⁾	570 to 950 V / 850 V	570 to 950 V / 850 V
Min. input voltage $V_{DC, min}$ / Start voltage $V_{DC, Start}$	545 V / 645 V	545 V / 645 V
Max. input voltage $V_{DC, max}$	1000 V	1000 V
Max. input current $I_{DC, max}$ (at 25 °C / at 50 °C)	3960 A / 3600 A	3960 A / 3600 A
Max. short-circuit current $I_{DC, sc}$	6400 A	6400 A
Number of DC inputs (24/28/32) ⁹⁾	● / ○ / ○	● / ○ / ○
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm ²	2 x 800 kcmil, 2 x 400 mm ²
Integrated zone monitoring	○	○
Available DC fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A	
Output (AC)		
Nominal AC power (at 25 °C / at 40 °C / at 50 °C)	1850 kVA / 1850 kVA / 1850 kVA	2200 kVA / 2080 kVA / 2000 kVA
Nominal AC active power at $\cos \phi = 0.9$ (at 25 °C / at 40 °C / at 50 °C)	1666 kW / 1666 kW / 1666 kW	1980 kW / 1872 kW / 1800 kW
Nominal AC current $I_{AC, nom} = \text{Max. output current } I_{AC, max}$	3300 A	3300 A
Nominal AC current $I_{AC, nom}$	2774 A	3300 A
Max. total harmonic distortion	< 3% at nominal power	< 3% at nominal power
Nominal AC voltage / nominal AC voltage range ^{1) 7)}	385 V / 308 V to 462 V	385 V / 308 V to 462 V
AC power frequency / range	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz
Min. short-circuit ratio at the AC terminals	> 2	> 2
Power factor at rated power / displacement power factor adjustable ⁷⁾	1 / 0.8 overexcited to 0.8 underexcited	
Efficiency		
Max. efficiency / European efficiency / CEC efficiency ²⁾	98.6% / 98.4% / 98.0%	98.6% / 98.4% / 98.0%
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
Overcurrent protection device (according to NEC, ANSI/NFPA 70)		3600 A
Ground-fault monitoring / remote ground-fault monitoring / insulation monitoring		○ / ○ / ○
Degree of protection: electronics / air duct / connection area (as per IEC 60529)		IP65 / IP34 / IP34
Degree of protection (as per UL 50E)		Type 3R
General Data		
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 91.3 / 62.5 inch)	
Weight	< 3400 kg / < 7496 lb	
Self-consumption (max. ³⁾ / partial load ⁴⁾ / average ⁵⁾	< 8100 W / < 1800 W / < 2000 W	
Self-consumption (standby)	< 300 W	
Internal auxiliary power supply	Integrated 8.4 kVA transformer	
Operating temperature range ⁷⁾	-25 °C to 60 °C / -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	
Noise emission ⁶⁾	66.4 dB(A)	66.3 dB(A)
Max. permissible value for relative humidity (condensing / non-condensing)	> 95% to 100% (2 month/year) / 0% to 95%	
Maximum operating altitude above MSL ⁷⁾ 2000 m	●	
Fresh air consumption	6500 m ³ /h	
Features		
DC connection	Terminal lug on each input	
AC connection	With busbar system (three busbars, one per line conductor)	
Communication	Ethernet, Ethernet/IP, Modbus TCP/IP	
Enclosure / roof color	RAL 9016 / RAL 7004	
Display	HMI touchscreen (10.1")	
Supply transformer for external loads	○ (2.5 kVA)	
Standards and directives complied with	UL 1741 chapters 31 CRD 61, UL 1741-SA, UL 1998, UL 840 Category IV, EMC FCC Part 15 Class A, IEEE 1547, BDEW	
EMC standards (pending)	CISPR 22:2008 modified class A, FCC Part 15 Class A	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	
● Standard features ○ Optional		
Type designation	SC-1850-US-10	SC-2200-US-10

1) At nominal AC voltage < 385 V, nominal AC power decreases in the same proportion
 2) Efficiency measured with internal power supply
 3) Self-consumption at rated operation
 4) Self-consumption at < 75% P_n at 25 °C
 5) Self-consumption averaged out from 5% to 100% P_n at 25 °C

6) Sound pressure level at a distance of 10 m
 7) Values apply only to inverters. Permissible values for SMA MV solutions from SMA can be found in the corresponding data sheets.
 8) At unity power factor
 9) Ungrounded systems available with 24 inputs only

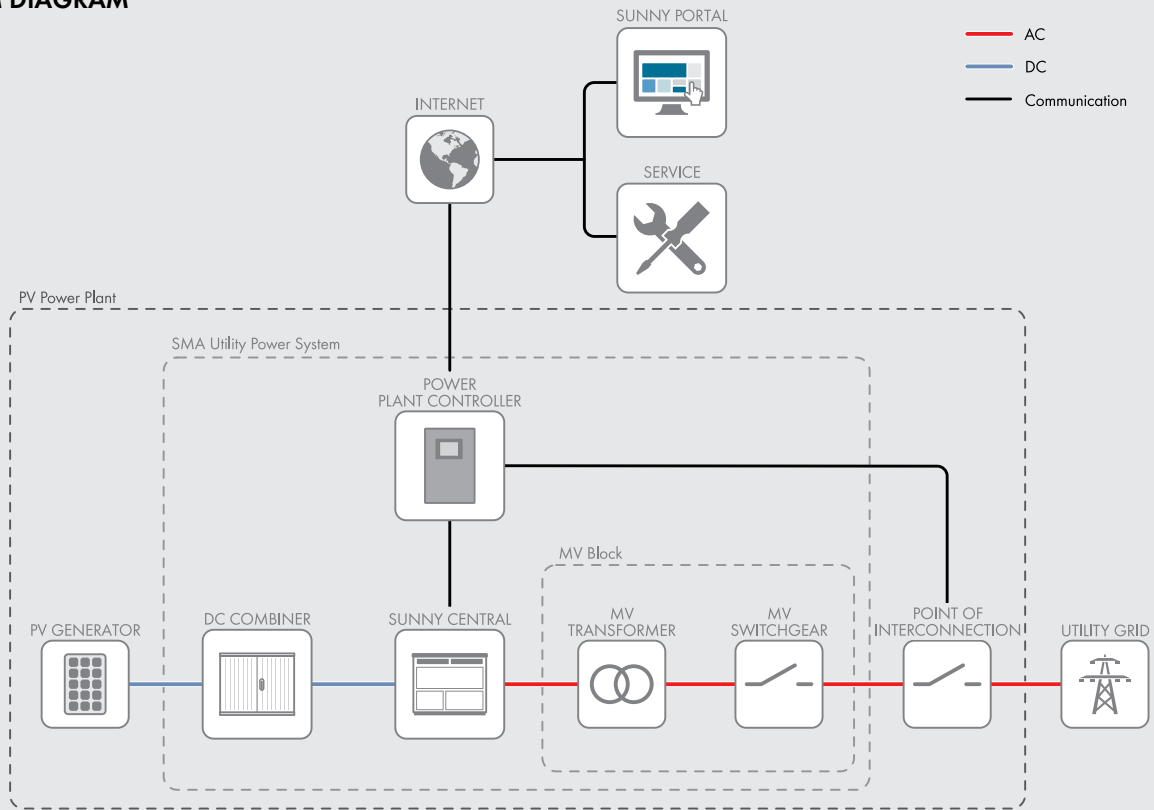
SUNNY CENTRAL 1500 V

Technical Data	Sunny Central 2500-EV-US	Sunny Central 2750-EV-US
Input (DC)		
MPP voltage range V_{DC} (at 25 °C / at 50 °C)	850 V to 1425 V / 1275 V	875 V to 1425 V / 1275 V
Min. input voltage $V_{DC, min}$ / Start voltage $V_{DC, Start}$	778 V / 878 V	849 V / 999 V
Max. input voltage $V_{DC, max}$	1500 V	1500 V
Max. input current $I_{DC, max}$ (at 25 °C / at 50 °C)	3000 A / 2700 A	3300 A / 2970 A
Max. short-circuit current rating	6400 A	6400 A
Number of DC inputs (20/24)	● / ○	● / ○
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm ²	2 x 800 kcmil, 2 x 400 mm ²
Integrated zone monitoring	○	○
Available DC fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A	
Output (AC)		
Nominal AC power at $\cos \phi = 1$ (at 25 °C / at 40 °C / at 50 °C)	2500 kVA / 2350 kVA / 2250 kVA	2750 kVA / 2600 kVA / 2500 kVA
Nominal AC power at $\cos \phi = 0.9$ (at 25 °C / at 40 °C / at 50 °C)	2250 kW / 2115 kW / 2025 kW	2475 kW / 2340 kW / 2250 kW
Nominal AC current $I_{AC, nom} = \text{Max. output current } I_{AC, max}$	2624 A	2646 A
Nominal AC current $I_{AC, nom}$	2624 A	2646 A
Max. total harmonic distortion	< 3% at nominal power	< 3% at nominal power
Nominal AC voltage / nominal AC voltage range ^{1) 8)}	550 V / 440 V to 660 V	600 V / 480 V to 660 V
AC power frequency	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz
Min. short-circuit ratio at the AC terminals	> 2	> 2 ⁹⁾
Power factor at rated power / displacement power factor adjustable ⁸⁾	1 / 0.8 overexcited to 0.8 underexcited	
Efficiency		
Max. efficiency ²⁾ / European efficiency ²⁾ / CEC efficiency ³⁾	98.6% / 98.3% / 98.0%	98.7% / 98.6% / 98.5%*
Protective Devices		
Input-side disconnection point	DC load-break switch	DC load-break switch
Output-side disconnection point	AC circuit breaker	AC circuit breaker
DC overvoltage protection	Surge arrester, type I	Surge arrester, type I
AC overvoltage protection (optional)	Surge arrester, class I	Surge arrester, class I
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III	Lightning Protection Level III
Overcurrent protection device (according to NEC, ANSI/NFPA 70)	3600 A	3600 A
Ground-fault monitoring / remote ground-fault monitoring / insulation monitoring	○ / ○ / ○	
Degree of protection: electronics / air duct / connection area (as per IEC 60529)	IP65 / IP34 / IP34	IP65 / IP34 / IP34
Degree of protection (as per UL 50E)	Type 3R	Type 3R
General Data		
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 91.3 / 62.5 inch)	
Weight	< 3400 kg / < 7496 lb	
Self-consumption (max. ⁴⁾ / partial load ⁵⁾ / average ⁶⁾)	< 8100 W / < 1800 W / < 2000 W	
Self-consumption (standby)	< 370 W	
Internal auxiliary power supply	Integrated 8.4 kVA transformer	
Operating temperature range ⁸⁾	-25 to 60 °C / -13 to 140 °F	
Temperature range (standby)	-40 to 60 °C / -40 to 140 °F	
Temperature range (storage)	-40 to 70 °C / -40 to 158 °F	
Noise emission ⁷⁾	66,3 dB(A)	64,3 dB(A)
Max. permissible value for relative humidity (condensing / non-condensing)	95% to 100% (2 month / year) / 0% to 95%	
Maximum operating altitude above MSL ⁸⁾ 2000 m / 3000 m	● / ○ (earlier temperature-dependent de-rating)	
Fresh air consumption	6500 m ³ /h	
Features		
DC connection	Terminal lug on each input	
AC connection	With busbar system (three busbars, one per line conductor)	
Communication	Ethernet, Ethernet/IP, Modbus TCP/IP	
Enclosure / roof color	RAL 9016 / RAL 7004	
Display	HMI touchscreen (10.1")	
Supply transformer for external loads	○ (2.5 kVA)	
Standards and directives complied with	UL 62109-1, UL 1741 (Chapter 31, CDR 61), UL 1741-SA, NEC 2011/2014, UL 1998, IEEE 1547, IEEE 693, MIL-STD-810G, BDEW, CE	
EMC standards (pending)	CISPR 22:2008 modified class A, FCC Part 15 Class A	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	
● Standard features ○ Optional *Preliminary data, September 2017		
Type designation	SC-2500-EV-US-10	SC-2750-EV-US-10

- 1) At nominal AC voltage, nominal AC power decreases in the same proportion
- 2) Efficiency measured without internal power supply
- 3) Efficiency measured with internal power supply
- 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

SYSTEM DIAGRAM



TEMPERATURE BEHAVIOR

