

/ SC 4000 UP / SC 4200 UP / SC 4400 UP / SC 4600 UP



Sunny Central UP

The new Sunny Central: more power per cubic meter

Efficient

- Up to 4 inverters can be transported in one standard shipping container
- Overdimensioning up to 200% is possible
- Full power at ambient temperatures of up to 35°C

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
- PV application with DC-coupled battery-storage system and charging from the AC utility as an option

Easy to Use

- Improved DC connection area
- Connection area for customer equipment
- Integrated voltage support for internal and external loads

With an output of up to 4600 kVA and system voltages of 1500 V DC, the SMA central inverter allows for more efficient system design and a reduction in specific costs for PV and battery power plants.

A separate voltage supply and additional space are available for the installation of customer equipment. True 1500 V technology and the intelligent cooling system OptiCool ensure smooth operation even in extreme ambient temperature as well as a long service life of 25 years.

SUNNY CENTRAL UP

Technical Data	Sunny Central 4000 UP	Sunny Central 4200 UP
DC side		
MPP voltage range V_{DC} (at 25 °C / at 50 °C)	880 to 1325 V / 1050 V	921 to 1325 V / 1050 V
Min. DC voltage $V_{DC, \min}$ / Start voltage $V_{DC, \text{Start}}$	849 V / 1030 V	891 V / 1071 V
Max. DC voltage $V_{DC, \max}$	1500 V	1500 V
Max. DC current $I_{DC, \max}$	4750 A	4750 A
Max. short-circuit current $I_{DC, SC}$	8400 A	8400 A
Number of DC inputs	24 double pole fused / 32 single pole fused	
Number of DC inputs with optional DC coupled storage	18 double pole fused (36 single pole fused) for PV and 6 double pole fused for batteries	
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm²	
Integrated zone monitoring	○	
Available PV fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A, 630 A	
Available battery fuse size (per input)	750 A	
AC side		
Nominal AC power at $\cos \varphi = 1$ (at 35 °C / at 50 °C) ^{12/13)}	4000 kVA / 3600 kVA	4200 kVA / 3780 kVA
Nominal AC active power at $\cos \varphi = 0.8$ (at 35 °C / at 50 °C) ^{12/13)}	3200 kW / 2880 kW	3360 kW / 3024 kW
Nominal AC current $I_{AC, \text{nom}}$ (at 35 °C / at 50 °C)	3850 A / 3465 A	3850 A / 3465 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⁾ / European efficiency ²⁾ / CEC efficiency ³⁾	98.8% / 98.6% / 98.5%	98.8% / 98.7% / 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 & II	
AC overvoltage protection (optional)	Surge arrester, class I & II	
Lightning protection (according to IEC 62305-1)	Lightning Protection Level III	
Remote ground-fault monitoring	○	
Insulation monitoring / Float Controller preparation	● / ○	
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 / < 8158 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 (optional) ⁸⁾	(-40 °C) -25 °C to 60 °C / (-40 °F) -13 °F to 140 °F	
Sound power LWA with rated power inverter / Inverter + Silencer Kit Noise emission ⁷⁾	93 dB(A) / 87 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⁾ / 3000 m ¹¹⁾	● / ○ / ○	● / ○ / –
Fresh air consumption	6500 m³/h	
Features		
DC connection	Terminal lug on each input (without fuse)	
AC connection	With busbar system (three busbars, one per line conductor)	
Communication	Ethernet, Modbus Client, Modbus Server	
Enclosure / roof color	RAL 9016 / RAL 7004	
Supply for external loads	○ (2.5 kVA)	
Standards and directives complied with	AR-N 4110/20/30, CE, IEC / EN 62109-1 / -2, IEEE1547, UL 840 Cat. IV, CEI 0-16, EN 50549-2, NTS 2.1	
EMC standards	IEC / EN 55011, IEC 61000-6-2/-4, FCC Part 15 Subpart B, IEC 62920	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	
Type designation	SC 4000 UP	SC 4200 UP

● Standard features ○ Optional features – Not available

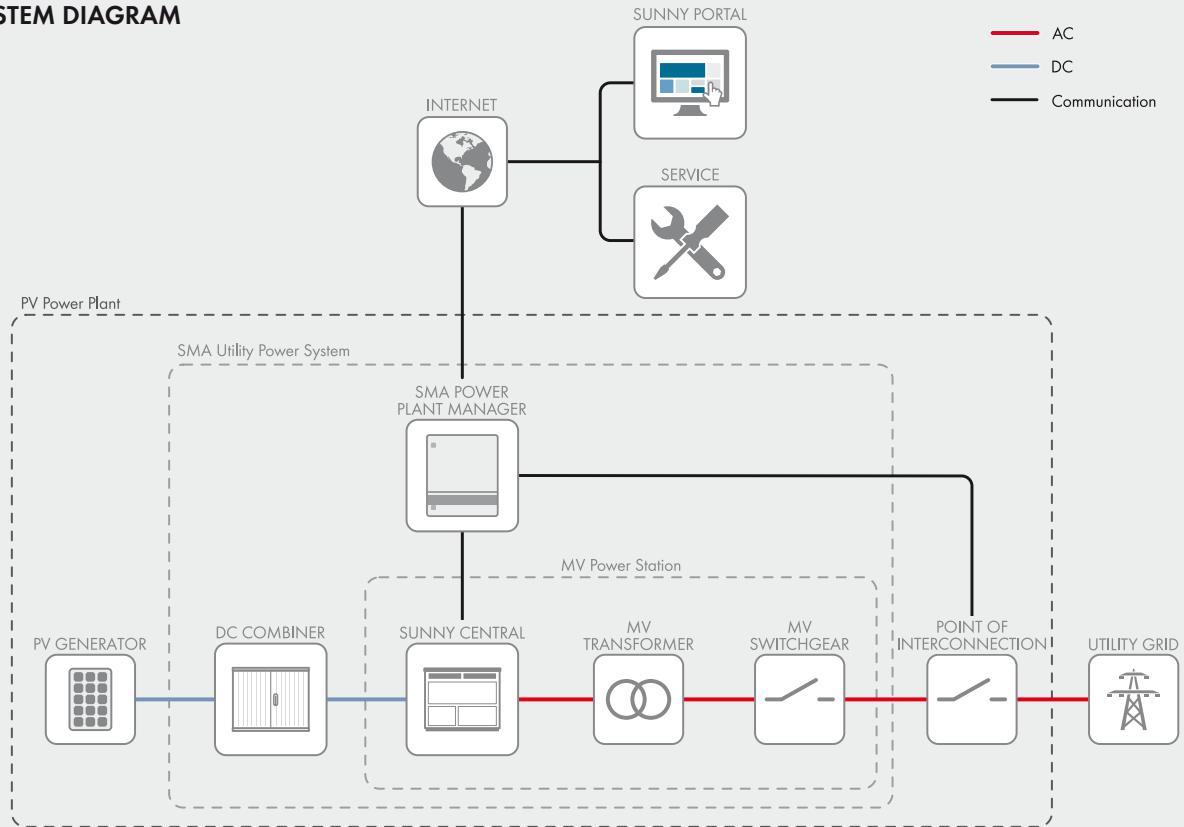
Technical Data	Sunny Central 4400 UP	Sunny Central 4600 UP
DC side		
MPP voltage range V _{DC} (at 25 °C / at 50 °C)	962 to 1325 V / 1050 V	1003 to 1325 V / 1050 V
Min. DC voltage V _{DC, min} / Start voltage V _{DC, Start}	934 V / 1112 V	976 V / 1153 V
Max. DC voltage V _{DC, max}	1500 V	1500 V
Max. DC current I _{DC, max}	4750 A	4750 A
Max. short-circuit current I _{DC, SC}	8400 A	8400 A
Number of DC inputs	24 double pole fused / 32 single pole fused	
Number of DC inputs with optional DC coupled storage	18 double pole fused (36 single pole fused) for PV and 6 double pole fused for batteries	
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm²	
Integrated zone monitoring	○	
Available PV fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A, 630 A	
Available battery fuse size (per input)	750 A	
AC side		
Nominal AC power at cos φ =1 (at 35 °C / at 50 °C) ^{12/13)}	4400 kVA / 3960 kVA	4600 kVA / 4140 kVA
Nominal AC active power at cos φ =0.8 (at 35 °C / at 50 °C) ^{12/13)}	3520 kW / 3168 kW	3680 kW / 3312 kW
Nominal AC current I _{AC, nom} (at 35 °C / at 50 °C)	3850 A / 3465 A	3850 A / 3465 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 792 V	690 V / 552 V to 828 V
AC power frequency / range	50 Hz / 47 Hz to 53 Hz 60 Hz / 57 Hz to 63 Hz > 2	
Min. short-circuit ratio at the AC terminals ⁹⁾		
Power factor at rated power / displacement power factor adjustable ^{8) 10)}	1 / 0.8 overexcited to 0.8 underexcited	
Efficiency		
Max. efficiency ²⁾ / European efficiency ²⁾ / CEC efficiency ³⁾	98.8% / 98.7% / 98.5%	98.9% / 98.7% / 98.5%
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Maximum operating altitude above MSL ⁸⁾ 1000 m / 2000 m ¹¹⁾ / 3000 m ¹¹⁾	● / ○ / -	
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Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	
Type designation	SC 4400 UP	SC 4600 UP

● Standard features ○ Optional features – Not available

- 1) At grid voltage lower than nominal AC voltage, the 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% P_n at 25 °C
- 6) Self-consumption averaged out from 5% to 100% P_n at 25 °C
- 7) Derating of 3% with Silencer Kit use by reducing the airflow; detailed information on the sound power is available under NDA

- 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
- 11) Earlier temperature-dependent de-rating and reduction of DC open-circuit voltage
- 12) Nominal AC power at 35 °C achievable up to a maximum of 1050 V_{DC}
- 13) „AC charging power“ in DC-coupled operation is depending on operating conditions

SYSTEM DIAGRAM



TEMPERATURE BEHAVIOR (at 1000 m)

