

SUNNY CENTRAL

4000 UP-US / 4200 UP-US / 4400 UP-US / 4600 UP-US



Efficient

- Up to 4 inverters can be transported in one standard shipping container
- Over-sizing up to 180% 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

- Conforms to all known grid requirements worldwide
- Q on demand
- DC-coupled storage with optional charging from grid

Easy to Use

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

SUNNY CENTRAL

4000 UP-US / 4200 UP-US / 4400 UP-US / 4600 UP-US

The new Sunny Central: more power per cubic meter

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 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 4000 UP-US / 4200 UP-US

Technical data	SC 4000 UP-US	SC 4200 UP-US
Input (DC)		
MPP voltage range V_{DC} (at 25 °C / at 50 °C)	880 to 1325 V / 1050 V	921 to 1325 V / 1050 V
Min. input voltage $V_{DC, min}$ / Start voltage $V_{DC, Start}$	849 V / 1030 V	891 V / 1071 V
Max. input voltage $V_{DC, max}$	1500 V	1500 V
Max. input 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 coupling of battery	18 double pole fused (36 single pole fused) for PV, 6 double pole fused for batteries	
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm ²	
Integrated zone monitoring	○	
Available PV fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A	
Available battery fuse size (per input)	750 A	
Output (AC)		
Nominal AC power at $\cos \phi = 1$ (at 35 °C / at 50 °C)	4000 kVA ¹¹⁾ / 3600 kVA	4200 kVA ¹¹⁾ / 3780 kVA
Nominal AC power at $\cos \phi = 0.8$ (at 35 °C / at 50 °C)	3200 kW ¹¹⁾ / 2880 kW	3360 kW ¹¹⁾ / 3024 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	
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⁾ / 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	
AC overvoltage protection (optional)	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	NEMA 3R	
General Data		
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 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⁾	(-37 °C) -25 °C to 60 °C / (-37 °C) -13 °F to 140 °F	
Noise emission ⁷⁾	65.0 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	● / ○ (earlier temperature-dependent derating)	
Fresh air consumption	6500 m ³ /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 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	UL 62109-1, UL 1741 (Chapter 31, CDR 61), NERC, UL 1741-SB, UL 1998, IEEE 1547-2018 ¹²⁾ , MIL-STD-810G	
EMC standards	FCC Part 15 Class A	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	
● Standard features ○ Optional		

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

10) Depending on the DC voltage

11) Nominal power at 35 °C max DC voltage of 1050 V

12) Harmonics are within IEEE 1547-2018 limits with at least 2 inverters in operation

SUNNY CENTRAL 4400 UP-US / 4600 UP-US

Technical data	SC 4400 UP-US	SC 4600 UP-US
Input (DC)		
MPP voltage range V_{DC} (at 25 °C / at 50 °C)	962 to 1325 V / 1050 V	1003 to 1325 V / 1050 V
Min. input voltage $V_{DC, min}$ / Start voltage $V_{DC, Start}$	934 V / 1112 V	976 V / 1153 V
Max. input voltage $V_{DC, max}$	1500 V	1500 V
Max. input 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 coupling of battery	18 double pole fused (36 single pole fused) for PV, 6 double pole fused for batteries	
Max. number of DC cables per DC input (for each polarity)	2 x 800 kcmil, 2 x 400 mm ²	
Integrated zone monitoring	○	
Available PV fuse sizes (per input)	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A	
Available battery fuse size (per input)	750 A	
Output (AC)		
Nominal AC power at $\cos \phi = 1$ (at 35 °C / at 50 °C)	4400 kVA ¹¹⁾ / 3960 kVA	4600 kVA ¹¹⁾ / 4140 kVA
Nominal AC power at $\cos \phi = 0.8$ (at 35 °C / at 50 °C)	3520 kW ¹¹⁾ / 3168 kW	3680 kW ¹¹⁾ / 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	
Nominal AC voltage / nominal 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⁾ / European efficiency ²⁾ / CEC efficiency ³⁾	98.8% / 98.7% / 98.5%	98.9% / 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	
AC overvoltage protection (optional)	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	NEMA 3R	
General Data		
Dimensions (W / H / D)	2780 / 2318 / 1588 mm (109.4 / 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⁾	(-37 °C) -25 °C to 60 °C / (-37 °C) -13 °F to 140 °F	
Noise emission ⁷⁾	65.0 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	● / ○ (earlier temperature-dependent derating)	
Fresh air consumption	6500 m ³ /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 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	UL 62109-1, UL 1741 (Chapter 31, CDR 61), NERC, UL 1741-SB, UL 1998, IEEE 1547-2018 ¹²⁾ , MIL-STD-810G	
EMC standards	FCC Part 15 Class A	
Quality standards and directives complied with	VDI/VDE 2862 page 2, DIN EN ISO 9001	
● Standard features ○ Optional		

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.

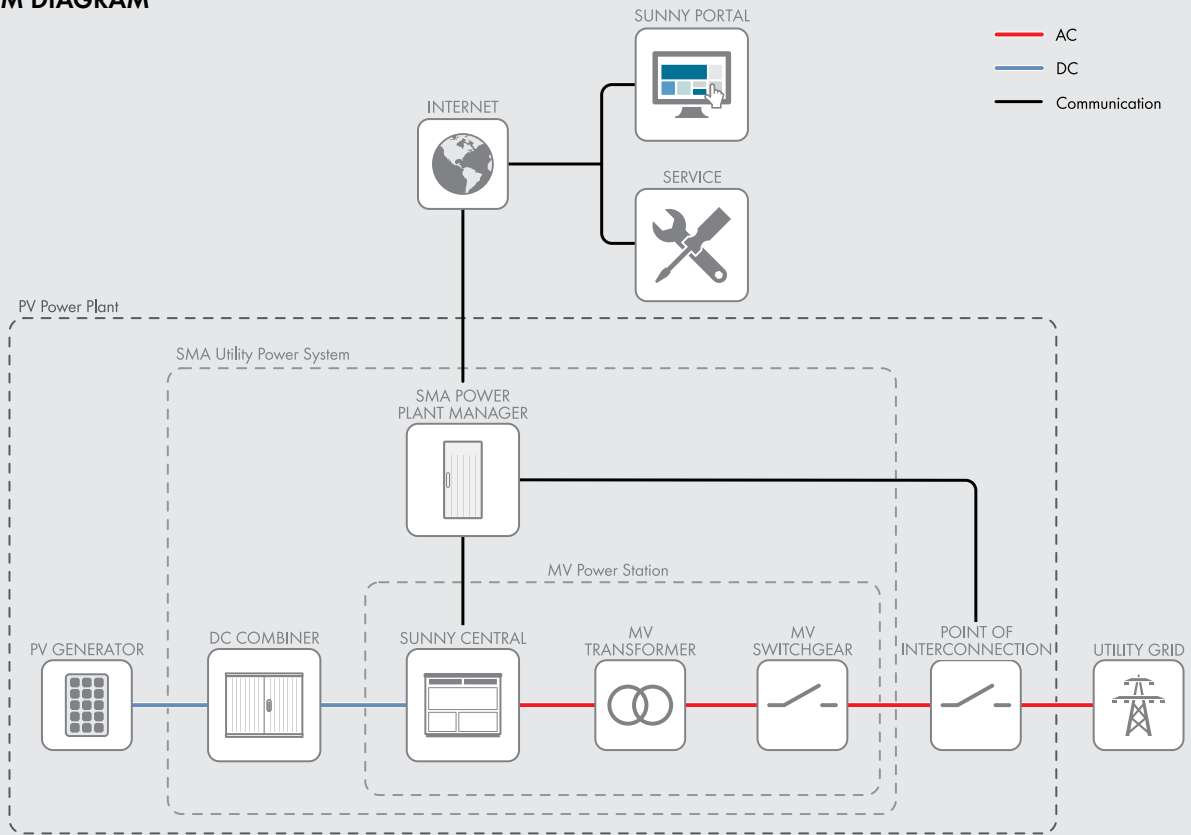
9) A short-circuit ratio of < 2 requires a special approval from SMA

10) Depending on the DC voltage

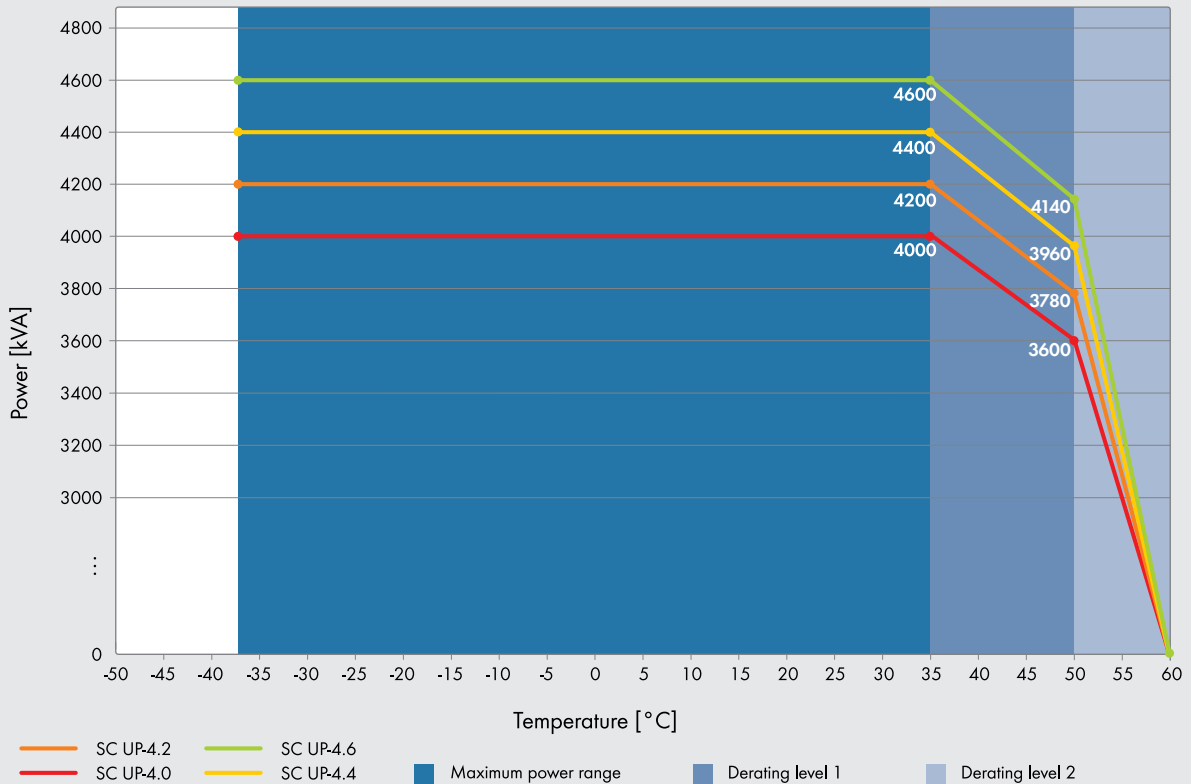
11) Nominal power at 35 °C max DC voltage of 1050 V

12) Harmonics are within IEEE 1547-2018 limits with at least 2 inverters in operation

SYSTEM DIAGRAM



TEMPERATURE BEHAVIOR (at 1000 m)



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White Paper BU-LS-001: Sunny Central UP

Sound Power Measurements on Sunny Central UP (-US) central inverters

Performed by:

SMA Solar Technology AG - Sonnenallee 1 - 34266 Niestetal, Germany - EMC Environment Laboratory (EMV- und Umweltlabor)

Summing up of the Situation

Measurements were taken for one central inverter of the model SC 4600 UP. The sound power measurements were performed in accordance with the DIN EN ISO 9614-2:12/1996 standard, "Determination of sound power levels of noise sources using sound intensity".

The measurements were taken under nominal operating conditions for the inverters, with all inverter fans operating at maximum speed.

Inspection Reference According to EN ISO 3744:2011-02

EN ISO 3744 is used as the basis for determining the noise emissions of the unit under test according to EN ISO 12001:05-2007.

As part of the acoustics, it includes the determination of the sound level of noise sources using the enveloping surface method of accuracy class 2 for essentially free field conditions over a reflective plane. Measurements must be carried out in compliance with IEC 551 and DIN EN 45645-1 according to DIN EN ISO 3744. To position the measurement instruments, the enclosure of the unit under test is considered a main radiation area.

Inspection Reference According to EN ISO 9614-2:2010-11

The sound level is determined according to DIN EN ISO 9614-2 "Determination of sound power levels of noise sources using sound intensity", Part 2: "Measurement by scanning".

This measurement procedure keeps interference on the measurement result caused by noises from the environment to a minimum.

Type of Test / Thresholds and Requirements:

Type of Test / Thresholds and Requirements:	Sound level measurement according to DIN EN ISO 3744:2011-02 and DIN EN ISO 9614-2:2010-11 of sinusoidal, irregularly shaped, transient signals. Classification of ambient conditions in compliance with the German Noise Control Guidelines (TA Lärm). (according to Section 2)
Result:	The requirements were fulfilled.



Result of Measurements

The following rating levels can be determined from the sound power measurements performed:

Inverter type	Sound power level mean value L_{WA}
3 stack devices	
SC 4000 UP(-US), SC 4200 UP(-US) SC 4400 UP(-US), SC 4600 UP(-US) SCS 3450 UP(-US), SCS 3600 UP(-US) SCS 3800 UP(-US), SCS 3950 UP(-US) SCS 3450 UP-XT(-US), SCS 3600 UP-XT(-US) SCS 3800 UP-XT(-US), SCS 3950 UP-XT(-US)	92.97
2 stack devices	
SC 2660 UP(-US), SC 2800 UP(-US) SC 2930 UP(-US), SC 3060 UP(-US) SCS 2300 UP-XT(-US), SCS 2400 UP-XT(-US) SCS 2530 UP-XT(-US), SCS 2630 UP-XT(-US)	90.78

The following tables show the selected distances from the inverter and their corresponding sound pressure levels L_{pA} in dB(A) at nominal AC power.

Distance	3 stack devices	2 stack devices
1 m	81	78
10 m	65	63
20 m	59	57
30 m	55	53
40 m	53	51
50 m	51	49
60 m	49	47
70 m	48	46
80 m	47	45
90 m	46	44
100 m	45	43

Information:

The detailed test report may be requested from SMA Solar Technology AG if necessary.

All values are based on the following reports

910:LE4520

911:LE5020

912:LE3721

MEDIUM VOLTAGE POWER STATION

4000-S2-US / 4200-S2-US / 4400-S2-US / 4600-S2-US



Robust

- Complete station is UL listed for higher safety and lower risk
- Station and all individual components type-tested for maximum reliability
- Optimally suited to extreme ambient conditions

Simple Integration

- Plug and play concept
- Completely pre-assembled for easy set-up and commissioning

Cost-Effective

- Fully integrated transformer and switchgear simplifies logistics
- Minimum O&M requirements create lowest cost of ownership

Flexible

- One product for all markets and applications
- Ideally suited for PV applications, PV plus storage (DC coupled) and storage applications (AC coupled)

MEDIUM VOLTAGE POWER STATION

4000-S2-US / 4200-S2-US / 4400-S2-US / 4600-S2-US

Turnkey solution for PV, storage, and PV plus storage power plants

With the power of the SMA's robust central inverters, the Sunny Central UP or Sunny Central Storage UP, and with perfectly integrated medium-voltage components, the Medium Voltage Power Station (MVPS) offers even more power density in a turnkey solution available worldwide. The solution is the ideal choice for next-generation PV power plants operating at 1500 V DC. Delivered pre-configured on a 20-foot container-integrated skid, the solution is easy to transport and quick to commission. The UL1741-listed MVPS combines rigorous plant safety with maximum energy yield and minimized deployment and operating risk. The MVPS is DC-coupling ready for large-scale storage integration.

MEDIUM VOLTAGE POWER STATION

4000-S2-US / 4200-S2-US

Technical Data	MVPS 4000-S2-US	MVPS 4200-S2-US
Input (DC)		
Available inverters	1 x SC 4000 UP-US or 1 x SCS 3450 UP-US or 1 x SCS 3450 UP-XT-US	1 x SC 4200 UP-US or 1 x SCS 3600 UP-US or 1 x SCS 3600 UP-XT-US
Max. input voltage	1500 V	1500 V
Number of DC inputs	dependent on the selected inverter	
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) on the medium-voltage side		
Rated power with SC-UP-US (at -25°C to +35°C / 40°C optional 50°C) ¹⁾	4000 kVA / 3600 kVA	4200 kVA / 3780 kVA
Rated power with SCS-UP-US (at -25°C to +25°C / 40°C optional 50°C) ¹⁾	3450 kVA / 2930 kVA	3620 kVA / 3075 kVA
Charging power with SCS-UP-XT-US (at -25°C to +25°C / 40°C optional 50°C) ¹⁾	3590 kVA/3000 kVA	3770 kVA / 3150 kVA
Discharging power with SCS-UP-XT-US (at -25°C to +25°C / 40°C optional 50°C) ¹⁾	4000 kVA / 3400 kVA	4200 kVA / 3570 kVA
Typical nominal AC voltages	12 kV to 34.5 kV	12 kV to 34.5 kV
AC power frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Transformer vector group Dy11 / YNd11 / YNy0	● / ○ / ○	● / ○ / ○
Transformer cooling methods	KNAN ²⁾	KNAN ²⁾
Transformer efficiency: Standard / Eco Design 1 / Eco Design 2	● / ○ / ○	● / ○ / ○
Max. total harmonic distortion	< 3%	
Reactive power feed-in (up to 60% of nominal power)	○	
Power factor at rated power / displacement power factor adjustable	1 / 0.8 overexcited to 0.8 underexcited	
Inverter efficiency		
Max. efficiency ³⁾ / European efficiency ³⁾ / CEC weighted efficiency ⁴⁾	98.7% / 98.6% / 98.5%	98.7% / 98.6% / 98.5%
Protective devices		
Input-side disconnection point	DC load-break switch	
Output-side disconnection point	Medium-voltage vacuum circuit breaker	
DC overvoltage protection	Surge arrester type I	
Galvanic isolation	●	
Internal arc classification medium-voltage control room (according to IEC 62271-202)	IAC A 20 kA 1 s	
General Data		
Dimensions equal to 20-foot HC shipping container (W / H / D)	6058 mm / 2896 mm / 2438 mm	
Weight	< 18 t	
Self-consumption (max. / partial load / average) ¹⁾	< 8.1 kW / < 1.8 kW / < 2.0 kW	
Self-consumption (stand-by) ¹⁾	< 370 W	
Degree of protection according to IEC 60529	Control rooms IP23D, inverter electronics IP54	
Environment: standard / harsh	● / ○	
Degree of protection according to IEC 60721-3-4 (4C1, 4S2 / 4C2, 4S4)	● / ○	
Maximum permissible value for relative humidity	95% (for 2 months/year)	
Max. operating altitude above mean sea level 1000 m / 2000 m	● / ○	
Fresh air consumption of inverter	6500 m ³ /h	
Features		
DC terminal	Terminal lug	
AC connection	Outer-cone angle plug	
Tap changer for MV-transformer: without / with	● / ○	
Shield winding for MV-Transformer: without / with	● / ○	
Station enclosure color	RAL 7004	
Transformer for external loads: without / 10 / 20 / 30 / 40 / 50 / 60 kVA	● / ○ / ○ / ○ / ○ / ○ / ○ / ○	
Medium-voltage switchgear: without / 3 feeders	● / ○	
2 cable feeders with load-break switch, 1 transformer feeder with circuit breaker, internal arc classification IAC A FL 20 kA 1 s according to IEC 62271-200	○	
Short circuit rating medium voltage switchgear (25 kA 1 s)	● / ○	
Integrated oil containment: without / with	○	
Industry standards (for other standards see the inverter datasheet)	IEC 60076, IEC 62271-200, IEC 62271-202, EN50588-1 IEEE 1547-2018 ⁵⁾ , IEEE C37.100.1, IEEE C57.12, C37.20.9, UL 1741 listed, CSC Certificate, UL 347	
● Standard features ○ Optional features – Not available		
Type designation	MVPS-4000-S2-US	MVPS-4200-S2-US

1) Data based on inverter. Further details can be found in the data sheet of the inverter. Cold weather -37° is an option.

2) KNAN = Natural ester fluid with natural air cooling

3) Efficiency measured at inverter without internal power supply

4) Efficiency measured at inverter with internal power supply

5) Harmonics are within IEEE 1547-2018 limits with at least two inverters in operation.

MEDIUM VOLTAGE POWER STATION

4400-S2-US / 4600-S2-US

Technical Data	MVPS 4400-S2-US	MVPS 4600-S2-US
Input (DC)		
Available inverters	1 x SC 4400 UP-US or 1 x SCS 3800 UP-US or 1 x SCS 3800 UP-XT-US	1 x SC 4600 UP-US or 1 x SCS 3950 UP-US or 1 x SCS 3950 UP-XT-US
Max. input voltage	1500 V	1500 V
Number of DC inputs	dependent on the selected inverter	
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) on the medium-voltage side		
Rated power with SC-UP-US (at -25°C to +35°C / 40°C optional 50°C) ¹⁾	4400 kVA / 3960 kVA	4600 kVA / 4140 kVA
Rated power with SCS-UP-US (at -25°C to +25°C / 40°C optional 50°C) ¹⁾	3800 kVA / 3230 kVA	3960 kVA / 3365 kVA
Charging power with SCS-UP-XT-US (at -25°C to +25°C / 40°C optional 50°C) ¹⁾	3950 kVA / 3300 kVA	4130 kVA / 3455 kVA
Discharging power with SCS-UP-XT-US (at -25°C to +25°C / 40°C optional 50°C) ¹⁾	4400 kVA / 3740 kVA	4600 kVA / 3910 kVA
Typical nominal AC voltages	12 kV to 34.5 kV	12 kV to 34.5 kV
AC power frequency	50 Hz / 60 Hz	50 Hz / 60 Hz
Transformer vector group Dy11 / YNd11 / YNy0	● / ○ / ○	● / ○ / ○
Transformer cooling methods	KNAN ²⁾	KNAN ²⁾
Transformer efficiency: Standard / Eco Design 1 / Eco Design 2	● / ○ / ○	● / ○ / ○
Max. total harmonic distortion	< 3%	
Reactive power feed-in (up to 60% of nominal power)	○	
Power factor at rated power / displacement power factor adjustable	1 / 0.8 overexcited to 0.8 underexcited	
Inverter efficiency		
Max. efficiency ³⁾ / European efficiency ³⁾ / CEC weighted efficiency ⁴⁾	98.7% / 98.6% / 98.5%	98.7% / 98.6% / 98.5%
Protective devices		
Input-side disconnection point	DC load-break switch	
Output-side disconnection point	Medium-voltage vacuum circuit breaker	
DC overvoltage protection	Surge arrester type I	
Galvanic isolation	●	
Internal arc classification medium-voltage control room (according to IEC 62271-202)	IAC A 20 kA 1 s	
General Data		
Dimensions equal to 20-foot HC shipping container (W / H / D)	6058 mm / 2896 mm / 2438 mm	
Weight	< 18 t	
Self-consumption (max. / partial load / average) ¹⁾	< 8.1 kW / < 1.8 kW / < 2.0 kW	
Self-consumption (stand-by) ¹⁾	< 370 W	
Degree of protection according to IEC 60529	Control rooms IP23D, inverter electronics IP54	
Environment: standard / harsh	● / ○	
Degree of protection according to IEC 60721-3-4 (4C1, 4S2 / 4C2, 4S4)	● / ○	
Maximum permissible value for relative humidity	95% (for 2 months/year)	
Max. operating altitude above mean sea level 1000 m / 2000 m	● / ○	
Fresh air consumption of inverter	6500 m ³ /h	
Features		
DC terminal	Terminal lug	
AC connection	Outer-cone angle plug	
Tap changer for MV-transformer: without / with	● / ○	
Shield winding for MV-Transformer: without / with	● / ○	
Station enclosure color	RAL 7004	
Transformer for external loads: without / 10 / 20 / 30 / 40 / 50 / 60 kVA	● / ○ / ○ / ○ / ○ / ○ / ○	
Medium-voltage switchgear: without / 3 feeders	● / ○	
2 cable feeders with load-break switch, 1 transformer feeder with circuit breaker, internal arc classification IAC A FL 20 kA 1 s according to IEC 62271-200	○	
Short circuit rating medium voltage switchgear (25 kA 1 s)	● / ○	
Integrated oil containment: without / with	○	
Industry standards (for other standards see the inverter datasheet)	IEC 60076, IEC 62271-200, IEC 62271-202, EN50588-1 IEEE 1547-2018 ⁵⁾ , IEEE C37.100.1, IEEE C57.12, C37.20.9, UL 1741 listed, CSC Certificate, UL 347	
● Standard features ○ Optional features – Not available		
Type designation	MVPS-4400-S2-US	MVPS-4600-S2-US

1) Data based on inverter. Further details can be found in the data sheet of the inverter. Cold weather -37° is an option.

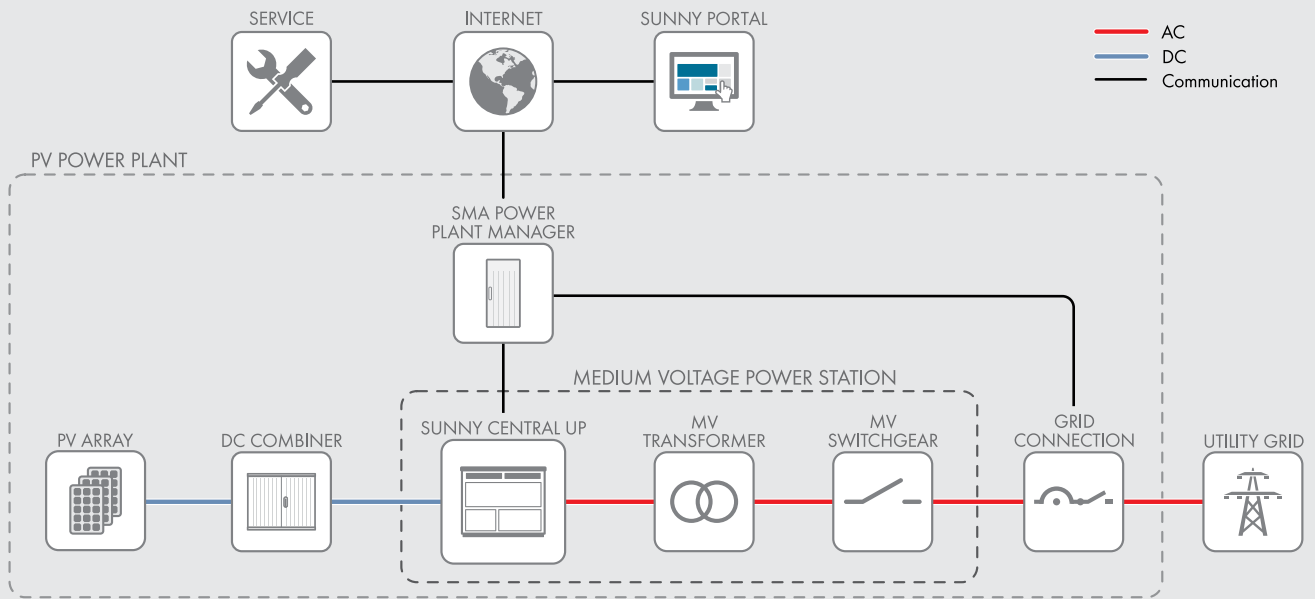
2) KNAN = Natural ester fluid with natural air cooling

3) Efficiency measured at inverter without internal power supply

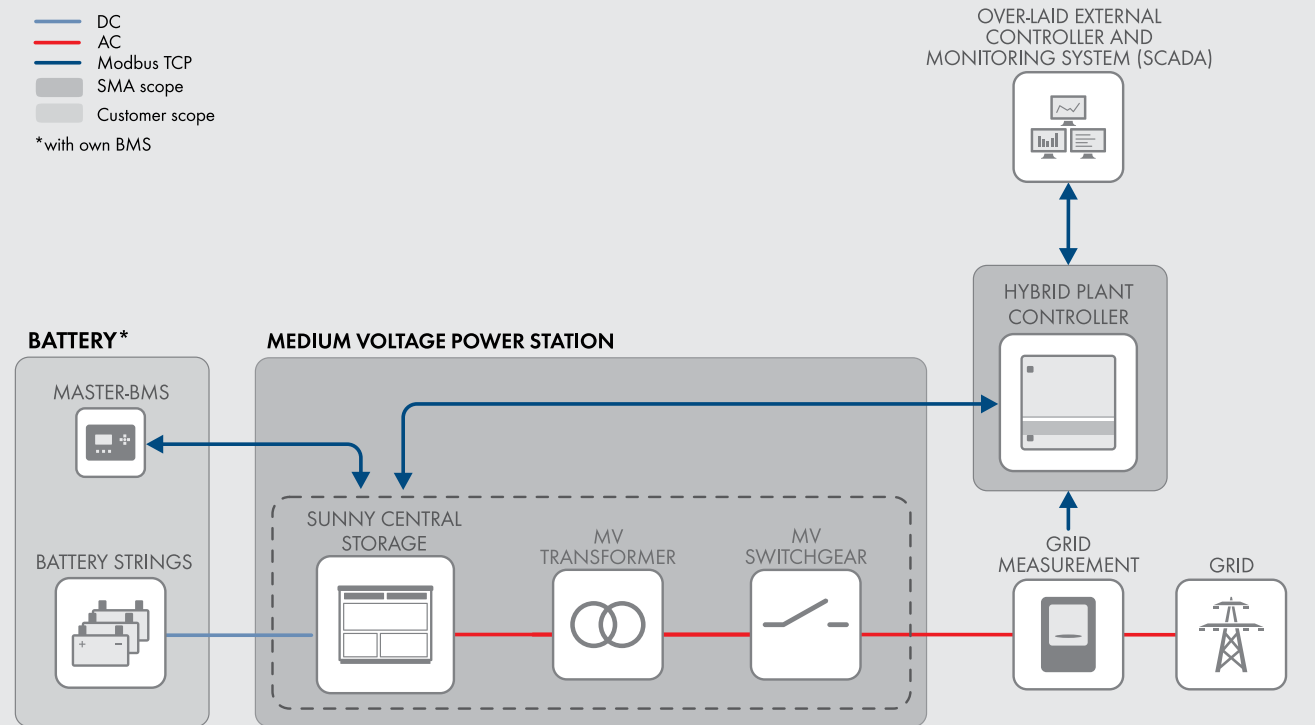
4) Efficiency measured at inverter with internal power supply

5) Harmonics are within IEEE 1547-2018 limits with at least two inverters in operation.

PV system diagram



Storage system diagram



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