

MV POWER STATION 4400SC / 5000SC-EV / 5500SC-EV



MVPS 4400SC-10 / MVPS 5000SC-EV-10 / MVPS 5500SC-EV-10



Robust

- Station and all individual components type-tested
- Optimally suited to extreme ambient conditions
- 5-year factory warranty

Easy to Use

- Plug and play concept
- Walk-in control rooms
- Completely pre-assembled for easy set-up and commissioning

Cost-Effective

- Easy planning and installation
- Low transport costs due to 40-foot container

Flexible

- Global solution for international markets
- For all medium-voltage grids from 20 kV to 35 kV
- Compatible with MVPS 2200SC, MVPS 2500SC-EV, MVPS 2750SC-EV

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Maximum power density

With the double power of the new robust central inverters, the Sunny Central 2200, Sunny Central 2500 EV and Sunny Central 2750 EV, and with perfectly adapted medium-voltage components, the new MV Power Station offers even more power density and is a turnkey solution available worldwide. The solution is the ideal choice for new generation PV power plants operating at 1500V_{DC}. Delivered pre-configured in a 40-foot container, the solution is easy to transport and quick to assemble and commission. The MVPS and all components are type-tested, and all come with a 5 year factory warranty. The MV Power Station combines rigorous plant safety with maximum energy yield and minimized deployment and operating risk.

MV POWER STATION

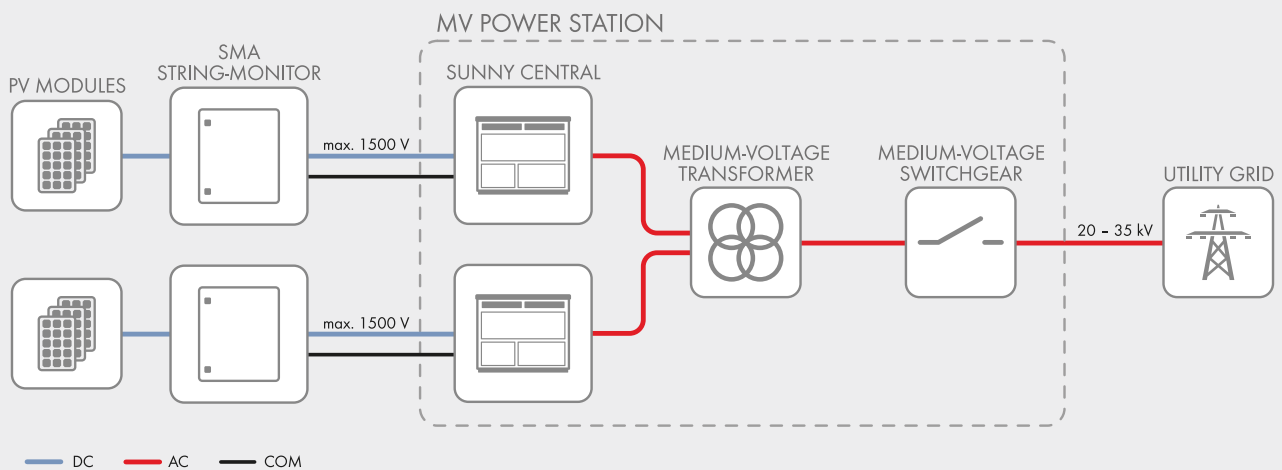
4400SC / 5000SC-EV / 5500SC-EV

Technical Data	MV Power Station 4400SC
Input (DC)	
Max. input voltage	1100 V
MPP voltage range (at 25 °C / at 50 °C)	570 V to 950 V / 850 V
Number of independent MPP inputs	2
Max. input current (at 25 °C / at 50 °C)	2 x 3960 A / 2 x 3600 A
Number of DC inputs	2 x 24
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	
AC power when $\cos \varphi = 1$ (at 25 °C / at 40 °C / at 50 °C / at 55 °C) ¹⁾	4400 kVA / 4160 kVA / 4000 kVA / 0 kVA
Typical nominal AC voltages	20 kV to 35 kV
AC power frequency	50 Hz / 60 Hz
Transformer vector group Dy11y11 / YNd11d11	● / ○
Transformer cooling methods ONAF ²⁾ / KNAF ²⁾	● / ○
Max. output current at 33 kV	78 A
Transformer no-load losses ³⁾	3.1 kW
Transformer short-circuit losses ³⁾	37.5 kW
Max. total harmonic distortion	< 3%
Reactive power feed-in	up to 60% of AC power
Power factor at rated power / displacement power factor adjustable	1 / 0.8 overexcited to 0.8 underexcited
Inverter efficiency	
Max. efficiency	98.6%
European efficiency	98.4%
CEC weighted efficiency ⁴⁾	98.0%
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
DC ground-fault monitoring / remote ground-fault monitoring	○ / ○
DC insulation monitoring	○
Galvanic isolation	●
Arc fault resistance medium-voltage control room (according to IEC 62271-202)	IAC A 20 kA 1 s
General Data	
Dimensions of the 40-foot High Cube ISO container (W / H / D) ⁵⁾	12.192 m / 2.896 m / 2.438 m
Weight	< 26 t
Operating temperature range -25 °C to +55 °C	●
Self-consumption (max. / partial load / average) ¹⁾	< 16.2 kW / < 3.6 kW / < 4.0 kW
Self-consumption (stand-by) ¹⁾	< 600 W
Degree of protection according to IEC 60529	Control rooms IP23D, inverter electronics IP65
Degree of protection according to IEC 60721-3-4 (4C1, 4S2 / 4C2, 4S2)	● / ○
Application / use in chemically active environment	In unprotected outdoor environments / ○
Maximum permissible value for relative humidity	15% to 95%
Max. operating altitude above mean sea level 1000 m / 2000 m	● / ○ (earlier temperature-dependent de-rating)
Fresh air consumption of inverter and transformer	20000 m ³ /h
Features	
DC terminal	Terminal lug
AC connection, MV side	Outer-cone angle plug
Display	○ HMI touch display (10.1")
Communication	Ethernet, Modbus
Station enclosure color	RAL 7004
Transformer for external loads 10 kVA / 20 kVA / 30 kVA / 40 kVA / 50 kVA / 60 kVA	● / ○ / ○ / ○ / ○ / ○
Medium-voltage switchgear, three feeders, transformer feeder with circuit breaker	●
Integrated oil containment	●
Industry standards (for other standards see the inverter datasheet)	IEC 62271-202, IEC 62271-200, IEC 60076, EN 50588-1, CSC certificate
● Standard features ○ Optional features – Not available	
Type designation	MVPS 4400SC-10

- 1) Data based on inverter
- 2) ONAF = Mineral oil with forced air cooling; KNAF = Organic oil with forced air cooling
- 3) Losses in accordance with the Ecodesign regulations, based on grid voltage 33 kV, 50 Hz
- 4) Efficiency measured at inverter with internal power supply
- 5) Transport dimensions

MV Power Station 5000SC-EV	MV Power Station 5500SC-EV
1500 V	1500 V
850 V to 1425 V / 1275 V	875 V to 1425 V / 1275 V
2	2
2 x 3000 A / 2 x 2700 A	2 x 3300 A / 2 x 2970 A
2 x 24	2 x 24
○	○
200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A	200 A, 250 A, 315 A, 350 A, 400 A, 450 A, 500 A
5000 kVA / 4700 kVA / 4500 kVA / 0 kVA	5500 kVA / 5200 kVA / 5000 kVA / 0 kVA
20 kV to 35 kV	20 kV to 35 kV
50 Hz / 60 Hz	50 Hz / 60 Hz
● / ○	● / ○
● / ○	● / ○
88 A	97 A
3.5 kW	3.8 kW
39.2 kW	41.5 kW
< 3%	< 3%
up to 60% of AC power	up to 60% of AC power
1 / 0.8 overexcited to 0.8 underexcited	1 / 0.8 overexcited to 0.8 underexcited
98.6%	98.7%
98.3%	98.6%
98.0%	98.5%
DC load-break switch	DC load-break switch
Medium-voltage vacuum circuit breaker	Medium-voltage vacuum circuit breaker
Surge arrester type I	Surge arrester type I
○ / ○	○ / ○
○	○
●	●
IAC A 20 kA 1 s	IAC A 20 kA 1 s
12.192 m / 2.896 m / 2.438 m	12.192 m / 2.896 m / 2.438 m
< 26 t	< 26 t
●	●
< 16.2 kW / < 3.6 kW / < 4.0 kW	< 16.2 kW / < 3.6 kW / < 4.0 kW
< 740 W	< 740 W
Control rooms IP23D, inverter electronics IP65	Control rooms IP23D, inverter electronics IP65
● / ○	● / ○
In unprotected outdoor environments / ○	In unprotected outdoor environments / ○
15% to 95%	15% to 95%
● / ○ (earlier temperature-dependent de-rating)	● / ○ (earlier temperature-dependent de-rating)
20000 m³/h	20000 m³/h
Terminal lug	Terminal lug
Outer-cone angle plug	Outer-cone angle plug
○ HMI touch display (10.1")	○ HMI touch display (10.1")
Ethernet, Modbus	Ethernet, Modbus
RAL 7004	RAL 7004
● / ○ / ○ / ○ / ○ / ○ / ○	● / ○ / ○ / ○ / ○ / ○ / ○
●	●
●	●
IEC 62271-202, IEC 62271-200, IEC 60076, EN 50588-1, CSC certificate	IEC 62271-202, IEC 62271-200, IEC 60076, EN 50588-1, CSC certificate
MVPS 5000SC-EV-10	MVPS 5500SC-EV-10

SYSTEM DIAGRAM



DESIGN NOTES

Inverter rooms

DC connections are made from below in the inverter's DC connection compartment. An integrated auxiliary transformer and additional space is available for the installation of customer equipment. The air cooling system OptiCool™ ensures smooth operation, even at extreme ambient temperatures.

Transformer compartment

PV-optimized outdoor transformer to connect two inverters. The side panels are equipped with protective grids. The transformer is connected directly to the inverters by means of a highly efficient three-phase current busbar. This cuts costs, reduces losses and allows a highly compact design with ultimate system safety.

Medium-voltage control room

Medium-voltage switchgear with three feeders, including two cable feeders with load-break switch and one transformer feeder with circuit breaker. For optimal user protection, the medium-voltage switchgear includes the standard internal arc classification IAC A FL 20 kA 1s according to IEC 62271-200. Numerous options such as additional auxiliary contacts, motor drive or cascade control.

Low-voltage control room

The station subdistribution board and circuit breakers for control, lighting and outlet is supplied with power via a 10 kVA transformer in the standard version. Transformers with EMC filtering devices in 20 kVA, 30 kVA, 40 kVA, 50 kVA and 60 kVA power classes can be installed to support additional communications and control functions and to operate tracker motors.

In the low-voltage control room, there is sufficient space for additional SCADA equipment as well as the customer's own communication technology or the tried-and-tested SMA Power Plant Controller.