

SUNNY CENTRAL 400HE / 500HE / 630HE



SC 400HE-11 / SC 500HE-11 / SC 630HE-11

High yields

- Excellent specific price
- Full nominal power up to 50 °C
- 10 % additional power in continuous operation at ambient temperatures up to 25 °C
- Efficiency of more than 98 percent

Flexible

- Integrated DC main distribution for direct connection of the String-Monitors
- Flexible plant design due to input voltage up to 1000 V

- Connection of up to two external DC main distributors for diverse system configuration

Reliable

- Comprehensive grid management functions
- Perfect monitoring of all PV strings in the field

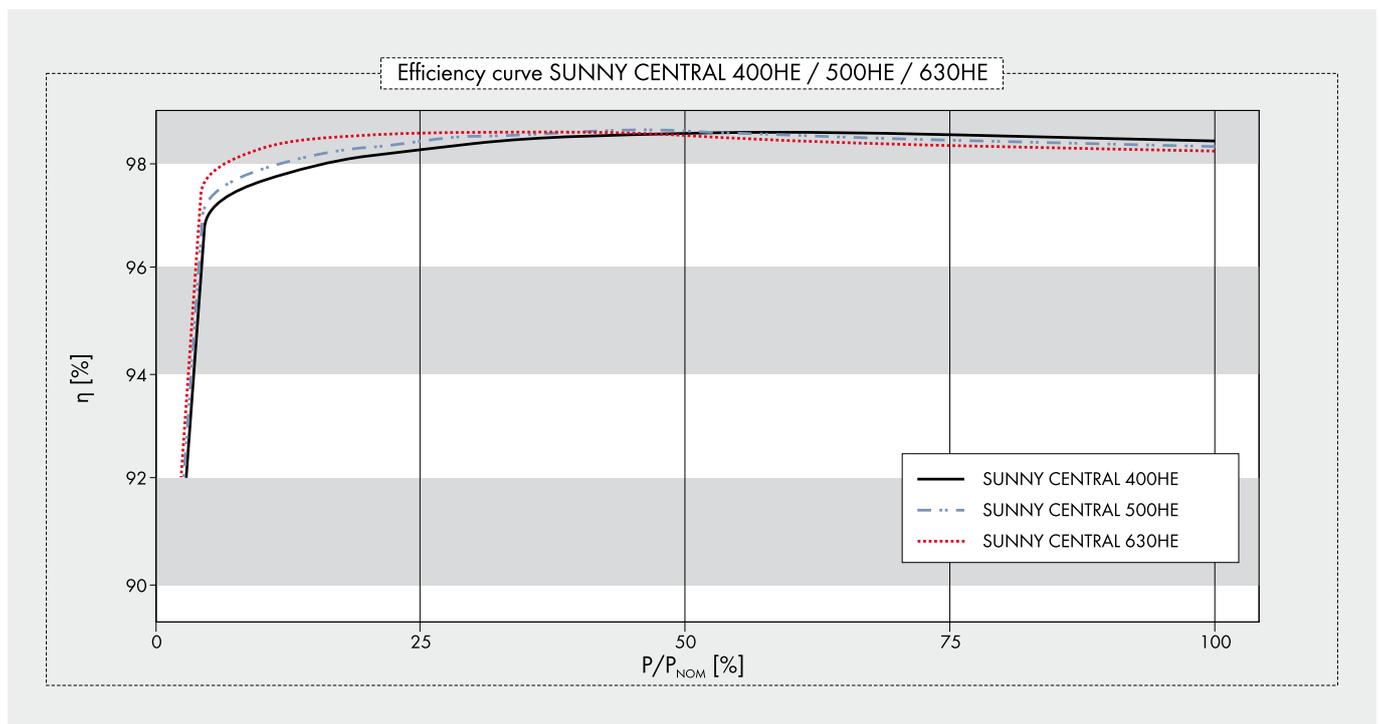
SUNNY CENTRAL 400HE / 500HE / 630HE

Proven high performance

High flexibility in plant design and minimal systems costs with even more power: the proven High Efficiency series for direct connection to the medium-voltage transformer has once again been improved and is already equipped with the intelligent power management of the succeeding generation. This means that maximum power in continuous operation has been increased by ten percent compared to the nominal power for as long as the ambient temperature does not exceed 25 °C. At the same time, the devices offer comprehensive grid management functions – including immediate reconnection after a grid voltage drop.

SUNNY CENTRAL 400HE / 500HE / 630HE

Technical data	Sunny Central 400HE	Sunny Central 500HE	Sunny Central 630HE
Input data			
Nominal DC power	408 kW	509 kW	642 kW
Max. DC power	450 kWp ¹⁾	560 kWp ¹⁾	705 kWp ¹⁾
MPP voltage range	450 V - 820 V ⁵⁾	450 V - 820 V ⁵⁾	500 V - 820 V ^{5),7)}
Max. DC voltage	1000 V	1000 V	1000 V
Max. DC current	993 A	1242 A	1422 A
Number of DC inputs	(8 + 8) + 2 DCHV	(8 + 8) + 2 DCHV	(8 + 8) + 2 DCHV
Output data			
Nominal AC power @ 50 °C	400 kVA	500 kVA	630 kVA
Continuous AC power @ 25 °C	440 kVA	550 kVA	700 kVA
Nominal AC voltage ± 10 %	270 V	270 V	315 V
Nominal AC current	855 A	1070 A	1155 A
AC grid frequency 50 Hz	●	●	●
AC grid frequency 60 Hz	●	●	●
Power factor (cos φ)	0.9 leading ... 0.9 lagging		
Max. THD	< 3 %	< 3 %	< 3 %
Power consumption			
Internal consumption in operation	< 1500 W ⁴⁾	< 1500 W ⁴⁾	< 1500 W ⁴⁾
Standby consumption	< 100 W	< 100 W	< 100 W
External auxiliary supply voltage	3 x 230 V, 50/60 Hz	3 x 230 V, 50/60 Hz	3 x 230 V, 50/60 Hz
External back-up fuse for auxiliary supply	B 20 A, 3-pole	B 20 A, 3-pole	B 20 A, 3-pole
Dimensions and weight			
Height	2120 mm	2120 mm	2120 mm
Width	2800 mm	2800 mm	2800 mm
Depth	850 mm	850 mm	850 mm
Weight	1900 kg	1900 kg	1900 kg
Efficiency ²⁾			
Max. efficiency	98.6 %	98.6 %	98.6 %
Euro-eta	98.4 %	98.4 %	98.4 %
Protection rating and ambient conditions			
Protection rating (as per EN 60529)	IP20	IP20	IP20
Operating temperature range	-20 °C ... +50 °C	-20 °C ... +50 °C	-20 °C ... +50 °C
Rel. humidity	15 % ... 95 %	15 % ... 95 %	15 % ... 95 %
Fresh air consumption	6200 m ³ /h	6200 m ³ /h	6200 m ³ /h
Max. altitude (above sea level)	1000 m	1000 m	1000 m

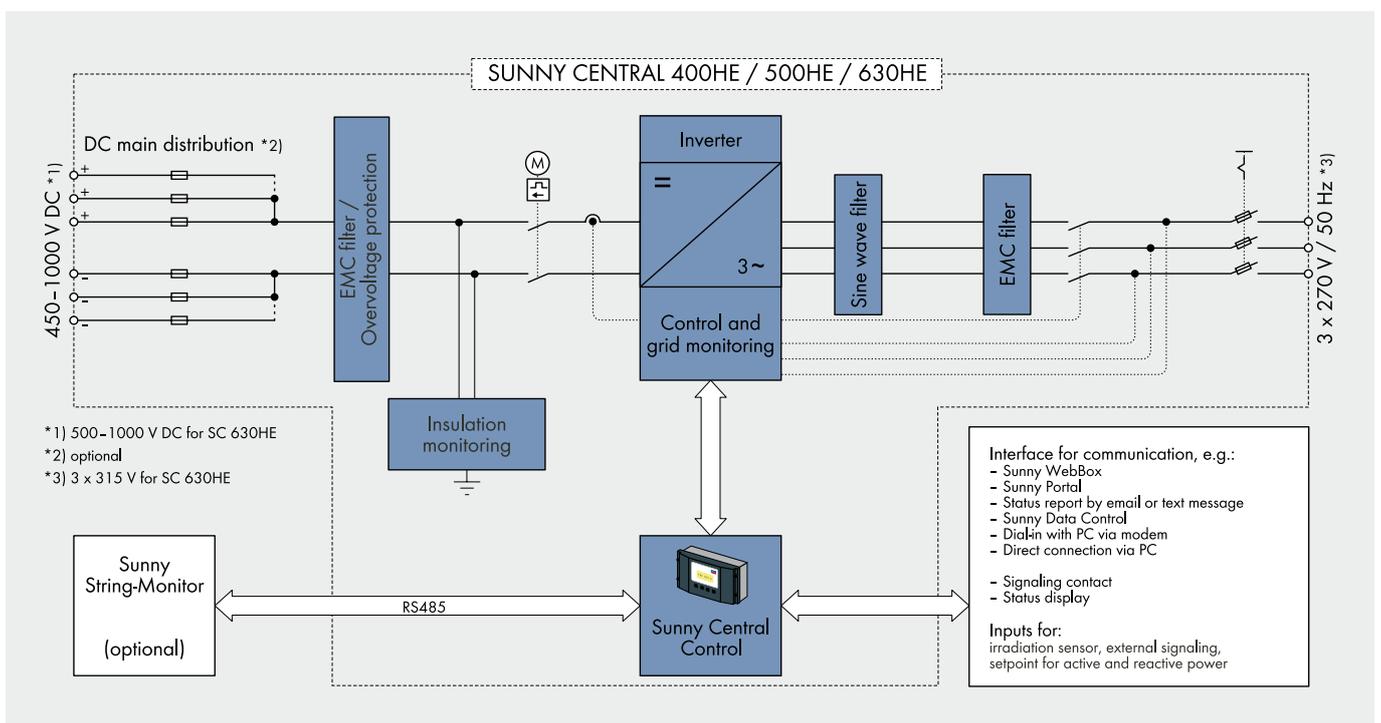


	Sunny Central 400HE	Sunny Central 500HE	Sunny Central 630HE
Features			
Display: text line / graphic	●/–	●/–	●/–
Ground fault monitoring	●	●	●
Heating	●	●	●
Emergency stop	●	●	●
Circuit breaker AC side	SI load disconnection switch	SI load disconnection switch	SI load disconnection switch
Circuit breaker DC side	switch-disconnector with motor	switch-disconnector with motor	switch-disconnector with motor
Monitored overvoltage protectors AC / DC	● / ●	● / ●	● / ●
Monitored overvoltage protectors for auxiliary supply	●	●	●
SCC (Sunny Central Control) interfaces			
Communication (NET Piggy-Back, optional)	analog, ISDN, Ethernet	analog, ISDN, Ethernet	analog, ISDN, Ethernet
Analog inputs	5 x A _m ³⁾	5 x A _m ³⁾	5 x A _m ³⁾
Overvoltage protection for analog inputs	○	○	○
Sunny String-Monitor connection (COM1)	RS485	RS485	RS485
PC connection (COM3)	RS232	RS232	RS232
Electrically separated relay (ext. alert signal)	1	1	1
Certificates / listings			
EMC	EN 61000-6-2 EN 61000-6-4		
CE conformity	●	●	●
BDEW-MSRL / FGW / TR8 ⁶⁾	●	●	●
RD 1633 / 2000	●	●	●
Arrêté du 23/04/08	●	●	●
● standard features ○ optional features – not available			
Type designation	SC 400HE-11	SC 500HE-11	SC 630HE-11

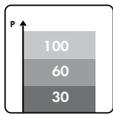
HE: High Efficiency, inverter without galvanic isolation for connection to a medium-voltage transformer (taking into account the SMA specification for the transformer)

- 1) Specifications apply to irradiation values below STC
- 2) Efficiency measured without an internal power supply at $U_{DC} = 500\text{ V}$
- 3) 2x inputs for the external nominal value specification for active power and reactive power, 1x external alarm input, 1x irradiation sensor, 1x pyranometer
- 4) Internal consumption at nominal power
- 5) $U_{DC\ min}$ at $U_{AC\ nom} \pm 5\%$ and $\cos \phi = 1$
- 6) With limited dynamic grid support
- 7) At $f_{grid} = 60\text{ Hz}$: 510 V - 820 V

Please also read: Transport instructions for Sunny Central and the Sunny Central Installation Guide

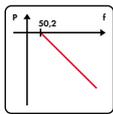


POWERFUL GRID MANAGEMENT FUNCTIONS



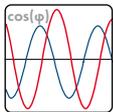
Remote controlled power reduction in case of grid overload

In order to avoid short-term grid overload, the grid operator presets a nominal active power value which the inverter will implement within 60 seconds. The nominal value is transmitted to the inverters via a ripple control receiver in combination with the SMA Power Reducer Box. Typical limit values are 100, 60, 30 or 0 per cent of the nominal power.



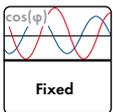
Frequency-dependent control of active power

As of a grid frequency of 50.2 Hz, the inverter automatically reduces the fed-in of active power according to a definable characteristic curve which thereby contributes to the stabilization of the grid frequency.



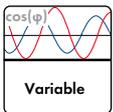
Static voltage support based on reactive power

To stabilize the grid voltage, SMA inverters feed reactive power (leading or lagging) into the grid. Three different modes are available:



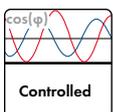
a) Fixed definition of the reactive power by the grid operator

The grid operator defines a fixed reactive power value or a fixed displacement factor between $\cos(\varphi)_{\text{leading}} = 0.90$ and $\cos(\varphi)_{\text{lagging}} = 0.90$.



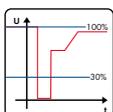
b) Definition of a dynamic setpoint of the reactive power by the utility operator

The grid operator defines a dynamic displacement factor - any value between $\cos(\varphi)_{\text{leading}} = 0.90$ und $\cos(\varphi)_{\text{lagging}} = 0.90$. It is transmitted either through a communication unit the evaluation can e.g. be evaluated and processed by the SMA Power Reducer Box.



c) Control of the reactive power over a characteristic curve

The reactive power or the phase shift is controlled by a pre-defined characteristic curve - depending on the active power fed into the grid or the grid voltage.



Limited Dynamic Grid Support

The inverter continues to feed to the grid after short term voltage drops - as long as the grid voltage is within a defined voltage window.