Customer-specific
- Connection of modules with low system voltages
- Low-voltage version with input voltage range of 300 V to 600 V

Flexible
- Integrated DC main distribution for direct connection of the String Monitors
- Diverse system configurations due to connection of up to two external DC main distributors

Safe
- Already complies with the requirements of the new medium-voltage directive, incl. static grid support
- Perfect monitoring of all PV strings in the field

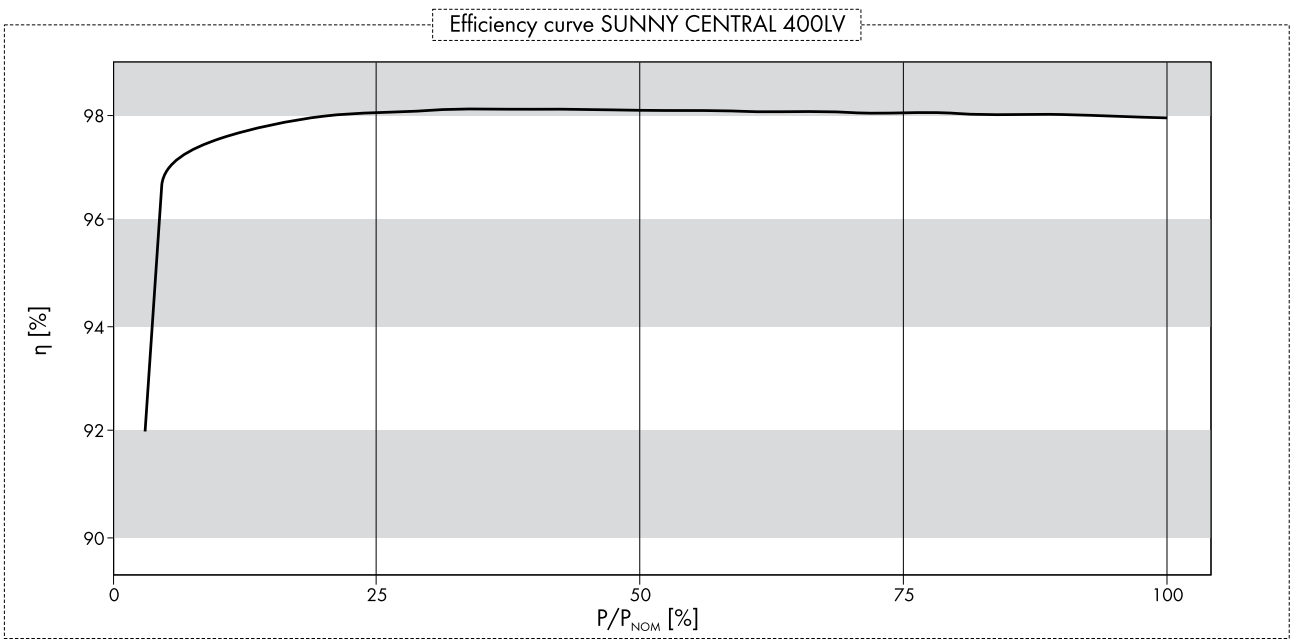
SUNNY CENTRAL 400LV

High Technology for Solar Power Stations

With an input voltage range of 300 V to 600 V, the Sunny Central 400LV can handle PV outputs of up to 450 kWp. It is particularly suitable for PV modules with low permissible system voltages – the PV generator can be connected to the inverter via eight inputs. The integrated DC main distribution simplifies system technology in the field while reducing installation costs. And of course, the Sunny Central 400LV fulfills the requirements of the BDEW directive "Power generation systems in medium-voltage grids", valid from July 2010.

Technical Data
SUNNY CENTRAL 400LV

	Sunny Central 400LV
Input data	
Nominal power DC	409 kW
Max. PV power (recommended), (P_{PV})	450 kW_p [1]
DC voltage range, MPPT (U_{DC})	300 V – 600 V [5]
Max. permissible DC voltage ($U_{DC, max}$)	600 V
Max. permissible DC current ($I_{DC, max}$)	1400 A
Voltage ripple, PV voltage (U_{PP})	< 3 %
Number of fused DC inputs	2 ports for external DC main distributions (SMB) / 8 per potential
Output data	
Nominal AC output power (P_{AC})	400 kW [6]
Operating grid voltage ± 10 % (U_{AC})	200 V
Nominal AC current ($I_{AC, nom}$)	1155 A
Operating range, grid frequency (f_{AC})	50 Hz / 60 Hz
Distortions of the grid current	< 3 % at nominal power
Phase shift (cos φ)	0.95 leading ... 0.95 lagging
Efficiency [2]	
Maximum efficiency $P_{AC, max}$ (η)	98.2 % [*]
Euro ETA (η)	98.0 % [*]
Dimensions and Weight	
Width / Height / Depth in mm (W / H / D)	1600 + 1200/2120/850
Weight approx. (kg)	1900
Power consumption	
Own consumption in operation (P_{day})	< 2800 W [4]
Standby operating consumption (P_{night})	< 100 W
External auxiliary voltage / grid structure	3 x 400 V, 50/60 Hz / TN-S, TN-C or TT grid
External back-up fuse for auxiliary supply	B 20 A, 3-pole
SCC (Sunny Central Control) interfaces	
Communication (NET Piggy Back, optional)	Analog, ISDN, Ethernet
Analog inputs	1 x PT 100, 3 x Ain [3]
Surge voltage protection for analog inputs	Optional
Sunny String-Monitor interface (COM1)	RS485
PC interface (COM3)	RS232
Electrically separated relay (ext. signal)	1

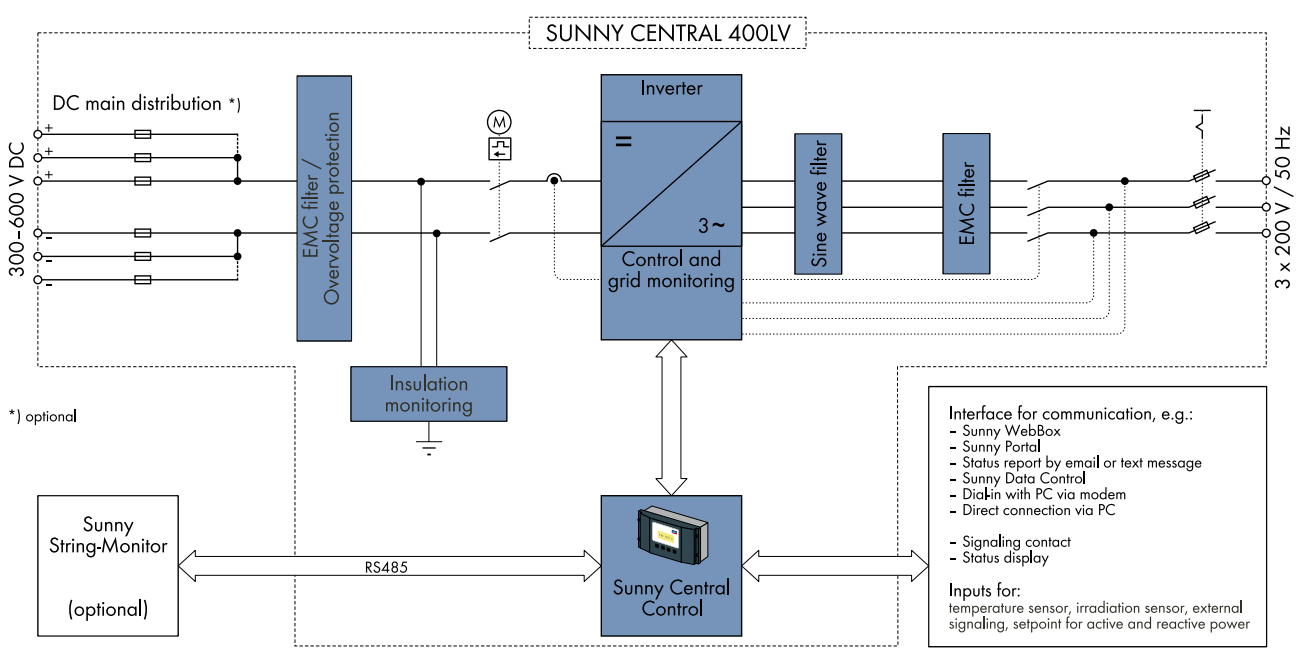


	Sunny Central 400LV
Features	
Display (SCC)	Yes
Ground fault monitoring	Yes
Heating	Yes
Emergency stop	Yes
Power switch AC side	SI load disconnection switch
Power switch DC side	Load disconnection switch with motor
Monitored surge voltage protectors AC / DC	Yes / Yes
Monitored surge voltage protectors for auxiliary supply	Yes
Standards	
EMC	EN 61000-6-2, EN 61000-6-4
Grid monitoring	according to BDEW directive
CE conformity	Yes
Protection Rating and Ambient Conditions	
Protection rating as per EN 60529	IP20
Protection rating per EN 60721-3-3 Environmental conditions: fixed location, with protection against wind and weather.	Classification of • chemically active substances: 3C1L • mechanically active substances: 3S2
Permissible ambient temperature (T)	–20 °C ... +50 °C
Relative humidity, not condensing (U_{AIR})	15 % ... 95 %
Max. altitude (above sea level)	1000 m
Fresh air consumption (V_{AIR})	6200 m³/h
Type designation	SC 400LV-11

HE: High Efficiency, inverter without electric separation for connection to a medium-voltage transformer (taking into account the SMA specifications for the transformer)

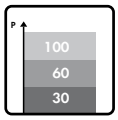
1) Specifications apply to irradiation values below STC
2) Efficiency measured without an internal power supply at U_{DC} = 500 V
3) Terminal for an analog sensor provided by the customer in two-wire and four-wire version
4) Own consumption measured in clock-rate operation with activated AC fans, activated DC fans and stack fans with 100%
5) $U_{DC\ min}$ at $U_{AC,nom}$ ±5 % and cos φ = 1
6) P_{nom} at $U_{AC,nom}$ ±5 % and cos φ = 1
*) Preliminary information: last updated March 2009

Please also read: Transport instructions for Sunny Central and the Sunny Central installation guide

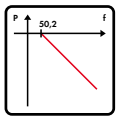


Grid management included

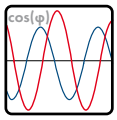
The new SMA central inverter Sunny Central 400LV fulfills the following specifications of the BDEW medium-voltage directive:



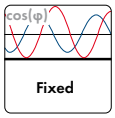
Power limitation in accordance with EEG paragraph 6 / Grid safety management
In order to avoid short-term grid overload, the grid operator presets a nominal active power value which the inverter will implement within 60 seconds. The nominal value is transmitted to the inverters via a ripple control receiver in combination with the SMA Power Reducer Box. Typical limit values are 100, 60, 30, or 0 percent of the nominal power.



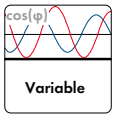
Frequency-dependent control of active power
Starting at a grid frequency of 50.2 Hz, the inverter will automatically reduce the fed-in active power along a preset characteristic curve and thereby contribute to the stabilization of the grid frequency.



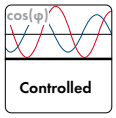
Static grid support through reactive power
In order to keep the grid voltage constant, Sunny Central HE inverters supply leading or lagging reactive power to the grid. For this, there are three options:



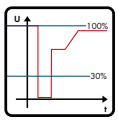
a) Fixed presetting of the reactive power by the grid operator
The grid operator presets a fixed reactive power value or a fixed phase shift between $\cos(\varphi)_{leading} = 0.95$ and $\cos(\varphi)_{lagging} = 0.95$.



b) Dynamic presetting of the reactive power by the grid operator
The grid operator presets a dynamic phase shift - any value between $\cos(\varphi)_{leading} = 0.95$ und $\cos(\varphi)c_{lagging} = 0.95$. It is transmitted either through a communication unit or via a standardized current signal (I=4...20 mA) in accordance with DIN IEC.



c) Control of the reactive power through a characteristic curve
Either the reactive power or the phase shift is controlled by a pre-defined characteristic curve - depending on the fed-in active power or grid voltage.



Monitored dynamic grid support LVRT (Low Voltage Ride Through)
Until now, PV systems have had to disconnect from the grid immediately even during short grid voltage losses. The result is that, if there are grid disturbances, basically all feed-in systems shut down in cascades and further increase the imbalance of the grid. Using the monitored dynamic grid support, the new Sunny Central HE devices can feed in immediately after short-term voltage losses - as long as the nominal voltage exceeds fixed values. (Optional)

www.SMA.de
Freecall +800 SUNNYBOY
Freecall +800 78669269

SMA Solar Technology AG