

## HS200

### HIGH EFFICIENCY 200 KW CENTRAL INVERTER

The central inverter is a special development for photovoltaic power plants. The inverter was designed using the newest efficiency-optimized technology in order to get higher returns from the solar installation. Right from the start, all devices to be installed were chosen with respect to loss reduction: The power part was realized using Trench-IGBTs of the newest generation.

- It was intentionally oversized to increase efficiency.
- The combination of filter inductor and transformer was optimized to reduce power losses under partial as well as full load condition.
- Large heat sinks allow the use of small fans with low power consumption.



The sum of these measures leads to a maximum efficiency of 97.0 %. This high efficiency is unique for inverters of this technology and offers multiple advantages to the user:

- More energy from the photovoltaic array is fed to the grid, therefore a higher rate of return is obtained.
- Less waste heat has to be dissipated out of the already warm operating room.
- The reduction of losses increases the lifetime of the internal components.

The system is designed for low maintenance and long lifetime. Within the development process a major design criterion was the simplicity and safety of the operating system for the inverter. This was achieved by a touch screen with a menu-based graphic user interface. Up to one year, the inverter stores all relevant measured values. These values as well as current operating data can be monitored online or downloaded via the Ethernet interface. In the unlikely case of an inverter fault, the control software automatically sends a message with a failure report.

The inverter operates completely stand-alone and the first start-up requires no adjustments of the system. In large photovoltaic power plants the inverter can also operate in parallel with several inverters without problems.



## TECHNICAL DATA HS200

Electrical Data Output		
Rated active power, grid-side	200 kW	Within $\pm 10$ % rated grid voltage
Maximum active power	220 kW	
Maximum apparent power, grid-side	234 kVA	
Rated grid voltage	400 V / 3~ / TN	
Rated grid frequency	50 Hz	
Maximum short circuit level	36 kA	
Maximum current, grid-side	338 A	
Line power factor ( $\cos \varphi$ )	> 0.99	Possible from 20 % rated capacity
AC current distortion (THD)	< 3 %	
Electrical Data Input		
Rated input power	208 kW	
Maximum input power	230 kW	
Maximum input current	500 A	
Maximum input voltage	900 V=	
Control strategy	MPP-Tracking	
MPP-area	450 V= ... 820 V=	
General Electrical Data		
Efficiency at (10/30/50/75/100) % of power	(94.5/96.9/97.0/96.5/96.2) %	
EU efficiency incl. transf./inductor losses, excl. aux. losses	96.4 %	
EU efficiency incl. transf./inductor losses and aux. losses	96.1 %	
Feed-in starting at	900 W	
Auxiliary power supply	230 V / 1~ / TN	
Standby losses	< 30 W	
Maximum auxiliary power	< 600 W	
General Data		
Ambient temperature	0 °C ... 50 °C	Others on request
Relative humidity	< 95 %	Non-condensing
Maximum installation altitude above MSL	1500 m	Without power derating
Air cooling	3000 m <sup>3</sup> /h	
Minimum air quality	Class 3S2	Acc. to EN 60721-3-3
Maximum power loss transfer to ambient air	< 8.5 kW	
Protection class	IP20	
Dimensions (H x W x D)	1900 mm x 1400 mm x 850 mm	
Weight	1350 kg	
Colour of cabinet	RAL7035	Others on request
Approvals and certificates	BDEW-MSRL / FGW / TR8; EN 61000-6-2; EN 61000-6-4; EN 61000-3-12; EN 61000-3-11; EN 50178; Guida Enel; VDE-AR-N 4105	
Communication protocols	Ethernet ModbusTCP	
Grid management function	Dynamic grid support (HVRT / LVRT) Reactive power specifications or output factor specifications Active power limitation	
Features	Options	Accessories
<ul style="list-style-type: none"> <li>• Input DC-switch disconnecter</li> <li>• Output circuit breaker with front actuation</li> <li>• Grid contactor</li> <li>• Emergency stop switch</li> <li>• Touchscreen with numeric and graphic display</li> <li>• Earth leakage monitor</li> <li>• Surge arresters, input-side (DC)</li> <li>• Surge arresters, output-side (AC)</li> <li>• Surge arresters for auxiliary supply</li> <li>• 4 fused DC-inputs</li> </ul>	<ul style="list-style-type: none"> <li>• Fused DC-inputs (up to 5)</li> <li>• Measuring of DC-input currents (up to 5)</li> <li>• Input for radiation sensor</li> <li>• Earthing of solar field (+/- pole)</li> <li>• Panel heater for extended temperature range</li> </ul>	<ul style="list-style-type: none"> <li>• Comcab</li> <li>• Stringbox</li> <li>• Solarlog</li> </ul>

