

## HSI700W

### WATER-COOLED HIGH EFFICIENCY 700 KW CENTRAL INVERTER

The photovoltaic central inverter HSI700W is a special transformerless development for IT-grids. 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 realised using Trench-IGBTs of the newest generation. It was intentionally oversized to increase efficiency.
- The filter inductor was optimized to reduce power losses under partial as well as full-load condition.
- Water-cooling makes air filters for the building obsolete.
- Motor driven DC-breakers are used in the input of the inverter.

The sum of these measures leads to a maximum efficiency of 98.5 %. Even under partial load of only 10 % an efficiency of 98.2 % is achieved. The EU efficiency reaches outstanding 98.4 %. 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.
- Nearly no waste heat has to be dissipated out of the 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 of the HSI700W, a major design criterion was the simpleness and safety of the operating system for the inverter. This was achieved by a menu-based graphic user interface on a PC and optional as well on a touch screen. 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. Each string box can be connected and disconnected by a Scada system.



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## Technical Data HSI700W

### Electrical Data

Rated AC-power within $\pm 10\%$ of rated grid voltage	700 kW
Maximum AC-power at rated grid voltage	770 kW
AC-voltage and frequency range, other frequencies on request	300 V $\pm 10\%$ , 3~, 50 Hz $\pm 2$ Hz, IT-grid
Maximum AC-current	1484 A
Line power factor ( $\cos \phi$ ) above 20 % of rated power	> 0,98
AC-current distortion (THD) at rated power	< 3 %
Rated PV-power within $\pm 10\%$ of rated grid voltage	713 kW
Maximum PV-power at rated grid voltage	785 kW
Maximum PV-current	1570 A
Maximum PV no-load-voltage	1000 V
PV-rated voltage	500 V to 820 V
Control strategy	MPP-tracking
Efficiency at (10 30 50 75 100) % power	(98,2 98,5 98,5 98,3 98,2) %
EU efficiency incl. auxiliary power without cooling circuit	98,4 %
Feed-in starting at	500 W
Standby losses	< 30 W
Maximum auxiliary power without cooling circuit	< 300 W

### General Data

Ambient temperature (others on request)	0 °C to 50 °C
Relative humidity (not condensing)	< 95 %
Cooling water temperature (from 60°C power reduction 2%/°C)	-20°C to 70 °C
Cooling agent 50 %/50 %	Water-Glycol-Mixture
Max. dissipated losses by water-cooling/ambient air	13 kW/2 kW
Max. space power losses	2 kW
Maximum altitude without derating in power	up to 1500 m above MSL
Minimum air quality according to EN60721-3-3	Class 3S2
Protection class	IP20
Dimensions (H x W x D) Inverter + control cabinet	2050 mm x 1800 mm x 750 mm
Weight Inverter + control cabinet	1800 kg
Colour of cabinet (different colours on request)	RAL 7035
EMI	Complies EN61000-6-2, EN61000-6-4
Medium-voltage directive	BDEW
Grid monitoring	Complies VDEW / BDEW standards
CE-conformity	Complies

### Features

Disconnecter DC	Up to 16 motor driven DC circuit breakers
AC-contactor	
AC circuit breaker	
Emergency stop switch	
Earth leakage detection	Earth leakage monitor
Surge arresters	With monitoring on AC- and DC-side

### Options

Touch screen with numerical and graphical display
Cabinet heating
Radiation sensor