

HSI 420

HIGH EFFICIENCY 420 KW CENTRAL INVERTER

The photovoltaic central inverter 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 realized 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 and full load conditions.
- Large heat sinks allow the use of small fans with low power consumption.



The sum of these measures leads to a maximum efficiency of 98.2 %. 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 touchscreen 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.



TECHNICAL DATA HSI 420

Electrical Data Output		
Rated active power, grid-side	420 kW	Within ± 10 % rated grid voltage
Maximum active power	462 kW	
Maximum apparent power, grid-side	495 kVA	
Rated grid voltage	270 V / 3~ / isolated	Other voltages on request
Rated grid frequency	50 Hz	Other frequencies on request
Maximum current, grid-side	1058 A	
Line power factor (cos ϕ)	> 0.98	Possible from 20 % rated capacity
AC current distortion (THD)	< 3 %	At rated power
Electrical Data Input		
Rated input power	429 kW	
Maximum input power	480 kW	
Maximum input current	1030 A	
Maximum input voltage	1000 V=	
Control strategy	MPP-Tracking	
MPP-area	450 V= ... 880 V=	
General Electrical Data		
Efficiency at (10/30/50/75/100) % of power	(97.2/98.1/98.2/98.2/98.0) %	
EU efficiency incl. transf./inductor losses, excl. aux. losses	98.0 %	
EU efficiency incl. transf./inductor losses and aux. losses	97.8 %	
Feed-in starting at	500 W	
Auxiliary power supply	230 V / 1~ / TN	
Standby losses	< 30 W	
Maximum auxiliary power	< 1000 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	3600 m ³ /h	
Minimum air quality	Class 3S2	Acc. to EN 60721-3-3
Maximum power loss transfer to ambient air	< 10 kW	
Protection class	IP20	
Dimensions (H x W x D)	2100 mm x 1800 mm x 850 mm	
Weight	1550 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	
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"> • Input DC-switch disconnecter • Grid contactor • Emergency stop switch • Earth leakage monitor • Surge arresters, input-side (DC) • Surge arresters, output-side (AC) 	<ul style="list-style-type: none"> • Input for radiation sensor • Input for transformer temperature measuring • Input for air pressure sensor • Earthing of solar field (+/- pole) • Touchscreen with numeric and graphic display • Panel heater for extended temperature range 	<ul style="list-style-type: none"> • Comcab • Stringbox • Solarlog

