

HSI1000

HIGH EFFICIENCY 1000 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 simpleness 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 1000

Babed active power gnd-side 2 x 500 kW Within £10 % rated gnd voltage Nasimum active power 2 x 550 kW	Electrical Data Output			
Maximum apparent power, grid-side	Rated active power. grid-side	2 x 500 kW	Within ±10 % rated grid voltage	
Rated grid voltage	Maximum active power	2 x 550 kW		
Rated grid frequency	Maximum apparent power. grid-side	2 x 605 kVA		
Moximum current, grid-side	Rated grid voltage	2 x 270 V / 3~ / isolated	Other voltages on request	
Line power factor (cos ©)	Rated grid frequency	2 x 50 Hz	Other frequencies on request	
Ac current distortion (THD) 2 x < 3 % At rated power	Maximum current, grid-side	2 x 1294 A		
Rated input power	Line power factor (cos φ)	2 x > 0.98	Possible from 20 % rated capacity	
Rated input power	AC current distortion (THD)	2 x < 3 %	At rated power	
Maximum input power 2 x 570 kW Maximum input current 2 x 1230 A Maximum input voltage 2 x 1000 V = Control strategy 2 x MPP-Tracking MPP-area 2 x 450 V = 880 V = General Electrical Data Efficiency at (10/30/50/75/100) % of power EU efficiency incl. transf./inductor losses. excl. aux. losses EU efficiency incl. transf./inductor losses and aux. losses EV x 90.00 % Evention starting at 2 x 95.00 W Auxiliary power supply 230 V / 1 ~ / TN Standby losses 4 80 W Maximum auxiliary power Ceneral Data Ambient temperature 0 ° C 50 ° C Others on request Relative humidity 4 × 95 % Non-condensing Mithout power derating Air cooling Maximum installation allitude above MSL 1500 m Without power derating Air cooling Maximum power loss transfer to ambient air 2 x < 13 kW Protection class IP20 Dimensions (h x W x D) 2100 mm x 3200 mm x 850 mm Dimensions (h x W x D) 2100 mm x 3200 mm x 850 mm Dimensions (h x W x D) 2100 mm x 3200 mm x 850 mm Dimensions (h x W x D) Dynamic grid support (HXRT / LVRT) Reactive power specifications or output factor specifications Accessories Peatures Options Input for randation sensor Input for randation sens	Electrical Data Input			
Maximum input current 2 x 1230 A Maximum input voltage 2 x 1000 V= Control strategy 2 x MPP-Tracking 2 x 450 V= 880 V= General Electrical Data Efficiency at (10/30/50/75/100) % of power Eu efficiency incl. transf./inductor iosses excl. aux. losses Eu efficiency incl. transf./inductor iosses and aux. losses Eu efficiency incl. transf./inductor iosses aux. losses Eu efficiency incl. transf./inductor iosses and aux. losses Eu efficiency incl. transf./inductor ioses and aux. losses Eu efficiency incl.	Rated input power	2 x 511 kW		
Maximum input voltage	Maximum input power	2 x 570 kW		
Control strategy 2 x MPP-Tracking 2 x 450 V= 880 V= General Electrical Data Efficiency at (10/30/50/75/100) % of power EU efficiency incl. transf./inductor losses. excl. aux. losses EU efficiency incl. transf./inductor losses and aux. losses 2 x 98.00 % EU efficiency incl. transf./inductor losses and aux. losses 2 x 97.80 % Feed-in starting at 2 x 500 W Auxiliary power supply 230 V / 1~ / TN Standby losses 4 80 W Maximum auxiliary power < 1000 W General Data Ambient temperature 0 °C 50 °C Others on request Relative humidity 4 < 95 % Maximum installation altitude above MSL 1500 m Without power derating Air cooling 2 x 3600 m³/h Minimum air quality Class 352 Acc. to EN 60721-3-3 Minimum power loss transfer to ambient air 2 x < 13 kW Protection class 1P20 Dimensions (H x W x D) 2100 mm x 3200 mm x 850 mm Weight 2950 kg Colour of cabinet Approvals and certificates BDEW-MSRL / FGW / TR8; EN 61000-6-2; EN 61000-3-12; EN 61000-3-12; EN 61000-3-11; EN 610728-3-11; EN 6107	Maximum input current	2 x 1230 A		
MPP-area 2 x 450 V = 880 V =	Maximum input voltage	2 x 1000 V=		
Efficiency at (10/30/50/75/100) % of power EU efficiency incl. transf/inductor losses. excl. aux. losses EU efficiency incl. transf/inductor losses and aux. losses EV x 95.00 % Auxiliary power supply 230 V / ~ / TN Standby losses ABO W Maximum auxiliary power EN elative humidity EN elative	Control strategy	2 x MPP-Tracking		
Efficiency at (10/30/50/75/100) % of power EU efficiency incl. transf./inductor losses. excl. aux. losses EU efficiency incl. transf./inductor losses and aux. losses EU efficiency incl. transf./inductor losses and aux. losses EU efficiency incl. transf./inductor losses and aux. losses 2 x 97.80 % EU efficiency incl. transf./inductor losses and aux. losses 2 x 97.80 % Auxiliary power supply 2 30 V / 1~ / TN Standby losses 4 80 W Maximum auxiliary power Ceneral Data Ambient temperature 0 ° C 50 ° C Others on request Relative humidity 4 95 % Non-condensing Maximum installation altitude above MSL 1 1500 m Without power derating Air cooling 2 x 3600 m³/h Minimum air quality Class 352 Acc. to EN 60721-3-3 Maximum power loss transfer to ambient air 2 x < 13 kW Protection class IP20 Dimensions (H x W x D) Weight 2950 kg Colour of cabinet Approvals and certificates BDEW-MSRL / FGW / TR8; EN 61000-6-2; EN 61000-3-12; EN 61000-6-1; EN 61000-3-12; EN 61	MPP-area	2 x 450 V= 880 V=		
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Feed-in starting at	EU efficiency incl. transf./inductor losses. excl. aux. losses	2 x 98.00 %		
Auxiliary power supply 230 V / 1~ / TN Standby losses < 80 W Maximum auxiliary power < 1000 W General Data Ambient temperature 0 ° C 50 ° C Others on request Relative humidity Air cooling Air cooling 2 x 3600 m³/h Minimum air quality Class 352 Acc. to EN 60721-3-3 Maximum power loss transfer to ambient air 2 x < 13 kW Protection class IP20 Dimensions (H x W x D) Veight 2950 kg Colour of cabinet Approvals and certificates BDEW-MSRL / FGW / TR8; EN 61000-6-2; EN 61000-3-11; EN 50178; Guida Enter EN 61000-6-4; EN 61000-3-12; EN 61000-3-11; EN 50178; Guida Enter Communication protocols Ethernet ModbusTCP Grid management function Preatures Options • Input for transformer temperature measuring • Input for transformer temperature measuring • Input for ir pressure sensor • Grid contactor • Emergency stop switch • Earthing of solar field (+/- pole) • Surge arresters, input-side (DC) • Surge arresters, input-side (DC) Others on request • Comcab • Stringbox • Solarlog	EU efficiency incl. transf./inductor losses and aux. losses	2 x 97.80 %		
Standby losses < 80 W	Feed-in starting at	2 x 500 W		
Maximum auxiliary power	Auxiliary power supply	230 V / 1~ / TN		
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Minimum air quality Class 352 Acc. to EN 60721-3-3 Maximum power loss transfer to ambient air 2 x < 13 kW Protection class IP20 Dimensions (H x W x D) 2100 mm x 3200 mm x 850 mm Weight 2950 kg Colour of cabinet Approvals and certificates BDEW-MSRL / FGW / TR8; EN 61000-6-2; EN 61000-3-12; EN	Maximum installation altitude above MSL	1500 m	Without power derating	
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Weight Colour of cabinet RAL7035 Others on request Approvals and certificates BDEW-MSRL / FGW / TR8; EN 61000-6-2; EN 61000-3-12; EN 61000-3-11; EN 50178; Guida Enel Communication protocols Grid management function Dynamic grid support (HVRT / LVRT) Reactive power specifications or output factor specifications Active power limitation Features Options Accessories Input DC-switch disconnector Grid contactor Emergency stop switch Earth leakage monitor Surge arresters, input-side (DC) Accessories Input for air pressure sensor Earthing of solar field (+/- pole) Touchscreen with numeric and graphic display	Protection class	IP20		
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Reactive power specifications or output factor specifications Active power limitation Features Options Input DC-switch disconnector Grid contactor Input for radiation sensor Input for transformer temperature measuring Input for air pressure sensor Input for air pressure se	Communication protocols	Ethernet ModbusTCP		
• Input DC-switch disconnector • Grid contactor • Emergency stop switch • Earth leakage monitor • Surge arresters, input-side (DC) • Input for radiation sensor • Input for transformer temperature measuring • Stringbox • Stringbox • Solarlog • Solarlog • Touchscreen with numeric and graphic display	Grid management function	Reactive power specifications or output factor specifications		
• Grid contactor • Input for transformer temperature measuring • Emergency stop switch • Earth leakage monitor • Surge arresters, input-side (DC) • Input for air pressure sensor • Earthing of solar field (+/- pole) • Touchscreen with numeric and graphic display	Features	Options	Accessories	
	Grid contactor Emergency stop switch Earth leakage monitor Surge arresters, input-side (DC)	Input for transformer temperature measuring Input for air pressure sensor Earthing of solar field (+/- pole) Touchscreen with numeric and graphic display	Stringbox	



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