

Full control of battery operation and grid support services.



# RENS

## BESS Inverter Specification

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# BATTERY INVERTER

## Scalable and adaptable

Availability in various sizes and implementation of different operation modes enables creating customer specific solutions. Inverters are equipped with highly automated controls and they provide full control of the battery operation as well as support services to the grid.



BATTERY CONVERTER	100 kVA	250 kVA	500 kVA
<b>Input (DC)</b>			
Voltage range	600 to 900 VDC / 1050 to 1300 VDC		
Maximum charging and discharging current	200 A / 110 A	500 A / 260 A	1000 / 850 A
Continuous charging and discharging power	100 kW	250 kW	500 kW
Battery Type	Li-ion / Ni-Cd / Flow batteries		
<b>Output (AC)</b>			
Grid connection type	3W / 4W		
Nominal Voltage	+ / - 10 % rated		
Grid frequency	+ / - 5 % rated		
Power factor	Adjustable		
Switching frequency	3 to 12 kHz		
THDi	< 3 %		
<b>Efficiency</b>			
Maximum efficiency	>90 %		
<b>Protection</b>			
Surge protection	Yes		
Short-circuit protection	Yes		
Overcurrent protection	Yes		
Grid monitoring	Yes		
Anti-islanding protection	Yes		
Temperature protection	Yes		
<b>General Data</b>			
Dimensions (WxHxD)	600x2000x600	800x2000x600	800x2000x600 (2 pcs.)
Weight	105 kg	230 kg	425 kg
Modularity	Up to 16 modules		
Operating Temperature	- 10 °C to 50 °C		
Cooling	Forced ventilation		
Protection degree	IP54		
Connection	Cables or copper bars		
Number of inputs	6 with fuse holders		
Control unit power supply	24 VDC		
Interfaces	RS485, Ethernet, CanOpen, Modbus, TCP/IP		

# DC/DC CONVERTER

## Maximize the system performance

Inserting a DC/DC converter between battery rack and the DC-link enables control of DC-link voltage, thus increasing the degree of freedom to control the batteries without compromising energy losses.



DC/DC INVERTER	100 kVA	250 kVA	500 kVA
<b>Input (DC)</b>			
Voltage range	30 to 800 VDC		
Maximum charging and discharging current	180 A	420 A	850 A
Continuous charging and discharging power	100 kW	250 kW	500 kW
Nominal Voltage	600 VDC		
<b>Output (AC)</b>			
Connection type	2 W		
Voltage range	30 to 800 VDC		
Maximum output current	333 A	833 A	1667 A
<b>Efficiency</b>			
Maximum efficiency	>90 %		
<b>Protection</b>			
Surge protection	Yes		
Short-circuit protection	Yes		
Overcurrent protection	Yes		
Grid monitoring	Yes		
Anti-islanding protection	Yes		
Temperature protection	Yes		
<b>General Data</b>			
Dimensions (WxHxD)	600x2000x600	800x2000x600	800x2000x600 (2 pcs.)
Weight	95 kg	210 kg	390 kg
Modularity	Up to 16 modules		
Operating Temperature	- 10 °C to 50 °C		
Cooling	Forced ventilation		
Protection degree	IP54		
Connection	Cables or copper bars		
Number of inputs	6 with fuse holders		
Control unit power supply	24 VDC		
Interfaces	RS485, Ethernet, CanOpen, Modbus, TCP/IP		

# HYBRID INVERTER

## Simplify renewable energy sources integration

Hybrid inverters simplify integration of renewable energy sources. They combine features of both battery inverter and solar inverter and enable their interconnection with the grid using only one device.



HYBRID INVERTER	10 kVA	30 kVA
<b>Battery side input (DC)</b>		
Battery voltage range	42 to 62 VDC / 150 to 600 VDC	150 to 600 VDC
Maximum charging and discharging current	10 kW	30 kW
Continuous charging and discharging power	60 A	200 A
Type of battery	Li-ion / Lead-acid	Li-ion
<b>PV side input (DC)</b>		
PV voltage range	160 to 1000 VDC	
Nominal PV power	13 kW	
Maximum PV power	15 kW	
Maximum DC current	90 A	
<b>Output (AC)</b>		
Grid connection type	3W	
Nominal voltage	400 V	
Grid frequency	50 Hz	
Maximum output current	14 A	43 A
Power factor	Adjustable	
THDi	< 3 %	
<b>Protection</b>		
Surge protection	Yes	
Short-circuit protection	Yes	
Overcurrent protection	Yes	
Grid monitoring	Yes	
Anti-islanding protection	Yes	
Temperature protection	Yes	
<b>General Data</b>		
Dimensions (WxHxD)	600x1200x400	600x1200x600
Weight	30 kg	45 kg
Operating Temperature	- 10 °C to 50 °C	
Cooling	Natural convection	
Protection degree	IP65	
Interfaces	RS485, Ethernet, CanOpen, Modbus, TCP/IP	

# SOLAR INVERTER

## Get the maximum from solar panels

Solar inverters effectively convert the direct current generated by solar panels into high-quality alternating current that can be fed into the power network.



SOLAR INVERTER	30 kVA	100 kVA
<b>PV side input (DC)</b>		
PV voltage range	160 to 1000 VDC	
Maximum PV power	30 kW	100 kW
Maximum DC current	188 A	625 A
<b>Output (AC)</b>		
Grid connection type	3W	
Nominal voltage	400 V	
Grid frequency	50 Hz	
Maximum output current	43 A	144 A
Power factor	Adjustable	
THDi	< 3 %	
<b>Protection</b>		
Surge protection	Yes	
Short-circuit protection	Yes	
Overcurrent protection	Yes	
Grid monitoring	Yes	
Anti-islanding protection	Yes	
Temperature protection	Yes	
<b>General Data</b>		
Dimensions (WxHxD)		
Weight	600x1200x400	600x1200x600
Operating Temperature	30 kg	- 10 °C to 50 °C
Cooling	Natural convection	
Protection degree	IP65	
Interfaces	RS485, Ethernet, CanOpen, Modbus, TCP/IP	