

# Hybrid Battery Storage



Lithium compatible



SmartGrid ready



**HBS**  
Hybrid Battery Storage

## HIGHLIGHTS

- **Compatible with ON-GRID and OFF-GRID solutions**
- **Hybrid energy storage system: grid + renewable**
- **Quality power with integrated renewable sources**
- **Peak shaving and load management**
- **Grid services**
- **UPS Protection**
- **Eco-sustainable**

Global energy needs, consumption and prices are on the rise and we can no longer take for granted that a continuous supply of electricity will be guaranteed to meet all these needs. After years of research and decades of experience in power quality and battery solutions, **the Riello Solartech Hybrid Battery Storage (HBS) range for hybrid storage solutions is finally available. HBS is a “Made in Italy” multifunctional and highly flexible energy storage system (ESS) + UPS.**

In combination with the use of renewable energy (e.g. PV inverters), every kWh produced by these sources will be fully used (100%) to power the connected load, the batteries or to provide services to the grid (if necessary, the green energy produced may not be fed back into the local grid). With this range of solutions, Riello Solartech helps reduce energy production from fossil fuel or nuclear power plants and, consequently, CO<sub>2</sub> emissions. HBS can be used for decentralised grid applications. HBS can store any type of excess green energy for use when energy is underproduced. There is no need to add extra electrical lines because HBS

uses existing infrastructure, thus avoiding further capital expenditure. Self-generating energy protects the user from fluctuating electricity costs: this smart solution works with different energy prices per kWh and also allows the user to analyse prices and choose the cheapest tariff for the times when electricity needs to be purchased. The UPS technology built into the HBS offers maximum protection against power outages: if a failure occurs, the batteries guarantee a backup period ranging from many minutes to several hours. The rising number of electric vehicles in circulation also increases the demand for energy. The current electrical grid is not entirely suitable for meeting this requirement: HBS offers the unique advantage of being able to meet the enormous demand for energy by drawing on renewable sources (PV, wind) alongside the batteries and the grid. Everything is easy to manage with HBS’s open-source controller through a simple internet connection. The return on investment guaranteed by HBS varies between 2 and 10 years, depending on parameters (PV installation, type of batteries, price per kWh,

UPS power, country of installation, energy profile). The examples set out here are just some of the many solutions the HBS series can offer.

**HYBRID STORAGE OPERATING PRINCIPLE**

Hybrid storage optimises the concept of energy management: it can receive energy from several sources and transfer or return it to the target application, including grid services. Riello Solartech's hybrid storage is the first to support Smart Grids.

**HYBRID STORAGE APPLICATIONS**

HBS devices can be installed both in places connected to the grid and in geographically remote, rural and isolated areas with a high energy demand but unreliable grid power or power supplied via generator sets. They are therefore ideal in cases where energy needs to be stored, preferably from renewable sources such as the sun. Let's look at a few examples in detail:

**Areas connected to the grid and capable of feeding into the grid (ON-GRID)**

The system uses its batteries to optimise the self-consumption of photovoltaic energy and only supplies the grid power that is not used to power the load or charge the battery.

ADVANTAGES:

- meets peak current requirements by using energy from the battery and not from the grid;

- uses the energy produced when the distribution grid tariffs are more expensive;
- feeds energy into the grid when tariffs are more convenient;
- optimises periods of self-consumption, thus reducing the plant's total cost of ownership (TCO).

**Areas connected to the grid but not capable of feeding into the grid (ON-GRID)**

In areas where energy cannot be fed into the grid, it is possible to use all the photovoltaic energy produced to power the load and charge the battery. This system uses its batteries to optimise the self-consumption of photovoltaic energy.

ADVANTAGES:

- meets peak current requirements by using energy from the battery and not from the grid;
- increases the amount of renewable energy self-consumption;
- reduces the plant's TCO.

**Areas not connected to the grid (OFF-GRID)**

Using photovoltaic energy, this system supplies electrical current to places where it is normally produced by generators.

ADVANTAGES:

- meets peak current requirements by using energy from the battery and not from generators;
- minimises the use of generators;
- reduces fuel consumption and, therefore, running costs;
- reduces the expense and inconvenience of transporting fuel to remote areas.

**OPTIONS**

**MONITORING**

Sirio Data Control

**ACCESSORIES**

NETMAN 208

MULTICOM 302

Relay card

ENERGYMANAGER

**PRODUCT ACCESSORIES**

DC filter

MBB 125 A

MBB 400 A

MULTIPANEL

Cold Start (HBS HE only)



MODELS	HBS 10	HBS 15	HBS 20	HBS 30	HBS 40	HBS 60	HBS 80
<b>INPUT</b>							
Nominal voltage [V]	400 three-phase						
Voltage tolerance [V]	+20% -25% at full load <sup>1</sup>						
Frequency [Hz]	45 - 65						
Soft start	0 - 100% in 120 sec (selectable)						
Permissible frequency tolerance [%]	±2 (selectable from ±1 to ±5 from front panel)						
Standard equipment	Back-feed protection; removable bypass line						
<b>OUTPUT</b>							
Nominal power [kVA]	10	15	20	30	40	60	80
Active power [kW]	9	13.5	18	27	36	54	72
Number of phases	3 + N						
Nominal voltage [V]	400 three-phase + N						
Static stability [%]	±1						
Dynamic stability [%]	±5 in 10 msec.						
Voltage distortion [%]	<1 with linear load / <3 with non-linear load						
Crest factor [lpeak/lrms]	3:1						
Battery frequency stability [%]	0.05						
Frequency [Hz]	50 or 60 (selectable)						
Overload [%]	110 for 60 min.; 125 for 10 min.; 150 for 1 min.						
<b>BATTERIES</b>							
Type	VRLA AGM / GEL; NiCd; Supercap; lithium ion						
Residual ripple voltage [%]	<1						
Maximum charging current from AC input without output load [A]	24	36	48	72	96	144	192
Maximum charging current from HBS output (photovoltaic inverter) [A]	24	36	48	72	96	144	192
<b>OVERALL SPECIFICATIONS</b>							
Weight [kg]	228	241	256	315	335	460	520
Dimensions (WxDxH) [mm]	555x740x1400					800x740x1400	
Remote signals	Volt-free contacts						
Remote commands	ESD and bypass						
Communications	Dual RS232 + volt-free contacts + 2 slots for communication interface						
Ambient temperature [°C]	0 to +40						
Relative humidity range [%]	From 5 to 95 non-condensing						
Colour	RAL 7016						
Noise level at 1 m (ECO mode) [dBA]	62						
IP class	IP20 (other available on request)						
Regulations	European Directives: L V 2014/35/EU Low Voltage Directive EMC 2014/30/EU Electromagnetic Compatibility Directive Standard: Safety IEC EN 62040-1; EMC IEC EN 62040-2; compliance with RoHS directive Classification according to IEC 62040-3 (Voltage Frequency Independent) VFI - SS - 111						
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HBS Management	Forklift						

<sup>1</sup> Additional conditions apply to larger tolerances.

MODELS	HBS HE 100	HBS HE 120	HBS HE 160	HBS HE 200	HBS HE 250	HBS HE 300	HBS HE 400	HBS HE 500	HBS HE 600	HBS HE 800
<b>INPUT</b>										
Nominal voltage [V]	400 three-phase									
Voltage tolerance [V]	+20% -25% at full load <sup>1</sup>									
Frequency [Hz]	45 - 65									
Power factor	>0.99									
Current harmonic distortion (THDi)	<3%									
Soft start	0 - 100% in 120 sec (selectable)									
Frequency tolerance [%]	±2 (selectable from ±1 to ±5 from front panel)									
Standard equipment	Back-feed protection; removable bypass line									
<b>OUTPUT</b>										
Nominal power [kVA]	100	120	160	200	250	300	400	500	600	800
Active power [kW]	100	120	160	200	250	300	400	500	600	800
Number of phases	3 + N									
Nominal voltage [V]	380 / 400 / 415 three-phase + N (selectable)									
Static stability [%]	±1									
Dynamic stability [%]	±5 in 10 msec.									
Voltage distortion [%]	<1 with linear load / <3 with non-linear load									
Crest factor [lpeak/lrms]	3:1									
Battery frequency stability [%]	0.05									
Frequency [Hz]	50 or 60 (selectable)									
Overload [%]	110 for 60 min.; 125 for 10 min.; 150 for 1 min.									
<b>BATTERIES</b>										
Type	VRLA AGM / GEL; NiCd; Supercap; lithium ion									
Ripple current	Zero									
Maximum charging current from AC input without output load [A]	175	210	280	350	435	525	700	875	1050	1400
Maximum charging current from HBS output (photovoltaic inverter) [A]	175	210	280	350	435	525	700	875	1050	1400
<b>OVERALL SPECIFICATIONS</b>										
Weight [kg]	850	850	1015	1070	1300	1680	2050	3026	3080	4004
Dimensions (WxDxH) [mm]	800x850x1900		1000x850x1900			1500x1000x1900		2100x1000x1900		3200x1000x1900
Remote signals	Volt-free contacts (configurable)									
Remote commands	ESD and bypass (configurable)									
Communications	Dual RS232 + remote contacts + 2 slots for communication interface									
Ambient temperature [°C]	0 to +40									
Relative humidity range [%]	From 5 to 95 non-condensing									
Colour	RAL 7035									
Noise level (at 1 m) [dBA]	65	68				72				
Protection level	IP20 (others available on request)									
Input/Output										
Regulations	Safety: EN 62040-1 (Directive 2006/95/EC); EMC: EN 62040-2 (Directive 2004/108/EC)									
Classification according to IEC 62040-3	(Voltage Frequency Independent) VFI - SS - 111									

<sup>1</sup> Additional conditions apply to larger tolerances.

The product photos are merely an indication. Due to technical and/or regulatory updates, the product features may change at any time without notice. DAT-HBSXOY24BSEN

