

# **UHB Li-HV System**

# **User Manual**



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# Preface

#### Overview

This manual is aimed at electricians, specialists with professional qualifications and end users. It mainly introduces the assembly, installation, electrical connection, debugging, maintenance and troubleshooting of the products. Before installing and using battery, please read this manual carefully, understand the safety information and be familiar with the functions and characteristics of hybrid battery.

#### Target Groups

This manual is applicable to the electrical installers with professional qualifications and end-users.

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# **1 Safety Instructions**

#### **1.1 Safety Notes**

Before installation, please read this manual and warning labels on battery carefully and follow the instructions in this manual strictly.

#### **1.2 Important Safety Matters**

#### SAVE THESE IMPORTANT SAFETY INSTRUCTIONS.

UHB Stackable Li-HV system installation and maintenance instructions Must have high voltage electrical knowledge. The Company assumes no liability for injury or property damage due to repairs attempted by unqualified individuals or a failure to properly follow these instructions. These warnings and cautions must be followed when using our product.

Warning	Read this entire document before installing or using UHB stackable Li-HV system. Failure to do so or to follow any of the instructions or warnings in this document can result in electrical shock, serious injury, or death, or can damage UHB stackable Li-HV system, potentially rendering it inoperable.
Warning	A battery can present a risk of electrical shock, fire, or explo- sion from vented gases. Observe proper precautions.
Warning	UHB stackable Li-HV storage system installation must be carried out only by Installers, who have been trained in dealing with high voltage electricity.
Warning	The product is heavy and challenging to lift.
Warning	Use UHB Battery only as directed.

Warning	Do not use UHB Battery if it is defective, appears cracked, broken, or otherwise damaged, or fails to operate.
Warning	Do not attempt to open, disassemble, repair, tamper with, or modify UHB Battery. UHB Battery is not user serviceable. LFP Cells in UHB Battery are not replaceable. Contact the UHB Authorized Reseller who sold the UHB Battery for any repairs.
Warning	Do not connect UHB Battery to alternating current carrying conductors. UHB storage system including battery and battery must be wired to either a battery or a DC combiner panel that is then wired to an inverter. No other wiring configuration may be used.
Warning	UHB Battery contains components, such as switches and relays, that can produce arcs or sparks.
Warning	To protect UHB Battery and its components from damage when transporting, handle with care. Do not impact, pull, drag, or step on UHB Battery. Do not subject UHB Battery to any strong force. To prevent damage, leave UHB Battery in its shipping packaging until it is ready to be installed.
Warning	Do not insert foreign objects into any part of UHB Battery.
Warning	Do not expose UHB Battery or its components to direct flame.
Warning	Do not install UHB Battery near heating equipment.
Warning	Do not immerse UHB Battery or its components in water or other fluids.

Do not use cleaning solvents to clean UHB Battery, or expose UHB Battery to flammable or harsh chemicals or vapors.
Do not use fluids, parts, or accessories other than those specified in this manual, including use of non-genuine UHB parts or accessories, or parts or accessories not purchased directly from UHB or a UHB-certified party.
Do not place UHB Battery in a storage condition for more than one (1) month, or permit the electrical feed on the UHB Battery to be severed for more than one (1) month, without placing UHB Battery into a storage condition in accordance with UHB's storage specifications.
Do not paint any part of UHB Battery, including any internal or external components such as the exterior shell or casing.
Do not connect UHB Battery directly to photovoltaic (PV) solar wiring.

## **1.3 Environmental Conditions**

Warning	Install UHB Battery at a height that prevents water from flowing into.
Warning	Operating or storing UHB Battery in temperatures outside its specified range might cause damage to UHB Battery.
Warning	Do not expose the UHB Battery to ambient temperatures above 55°C (131°F ) or below -20°C (-4°F ).
Warning	Ensure that no water sources are above or near UHB Battery, including downspouts, sprinklers, or faucets.

# 1.4 Symbol on the Battery Label

Symbol	Description							
	Do not sit or put heavy things on product.							
	Do not drop, deform, impact, cut or spearing with a sharp object.							
	Do not place close to open flame or flammable material.							
	Do not place at a children's or pet's reach.							
	Electric shock hazard, live parts, risk of electric shock, do not touch.							
	If on fire, switch off the breaker on DC side and stay away from battery.							
	Please read the instructions carefully before installation.bat- tery.							
X	The battery cannot be disposed of with household waste.							

### 1.5 Symbol on the Packing Box

Symbol	Description						
	Handle with care.						
<u>††</u>	This side up.						
Ţ	Keep dry.						
<u>8</u>	Stacked layers.						

# **2 Battery Introduction**

#### **2.1 Appearance Introduction**

#### 2.1.1 Controller Box



Item	Terminal	Note				
1	BAT Switch	Power switch between battery and inverter				
2	Power	Turn the Battery on				
3	Service COM	Specified Debug Interface				
4	Inverter COM	Connect to the inverter				
5	Parallel COM	Inter-battery communication interface for parallel use of multi-battery system				
6	Ground wire	Ground Wire Interface				
7	Battery output-®	Two Negative battery connections, either one of which can be connected to the Negative terminal of the inverter.				
8	Battery output+®	Two positive battery connections, either one of which can be connected to the positive terminal of the inverter.				
9	LED Light	Displays operating status or battery level				

①, ② Note: The Controller Box of the UHB 100 has two pairs of access terminals.

You can choose any pair of accesses when wiring. If you are using a UHC-KT-U2 series Hybrid inverter of the UCANPOWER brand with two battery access ports, you can connect the two battery terminals of the UHB 100 to the two terminals of the inverter respectively. And in this way you will get faster charging.

#### 2.1.2 Battery Module



#### 2.1.3 Battery Base



#### 2.2 Packing List

The package includes 1PCS Controller Box, 1-10PCS slave battery modules, and 1PCS battery base and other installation accessories. Please check if the battery modules and accessories are complete in the package when receiving the goods, See the following figure for your reference.

Controller Box Packing List						
			CIO			
Controller Box × 1 pcs	D4 Connector - × 2 pcs	D4 Connector + × 2 pcs	OT-RNB5.5-4L Terminal × 1 pcs			
Ĩ	0		O Qualifie centrocet Nenretes			
Grounding Screw × 1 pcs	Screw × 2 pcs	User Manual × 1 pcs	Quality Certificate × 1 pcs			





# **3 Installation**

#### **3.1 Location Requirements**

① The area is completely water proof. The floor is flat and level.

② There are no flammable or explosive materials.

③ The ambient temperature is within the range from -20°C to 55°C degree.

④ The temperature and humidity are maintained at a constant level. There is minimal dust and dirt in the area.

⑤ The distance from heat source is more than 2 meters.

(6) Keep the distance of the whole battery system from the air outlet more than 0.5m. Do not cover or wrap the battery cabinet please!

 $\textcircled$  Keep the battery out of kids' and pets' reach please. There should be no direct sunlight at the installation location.

<sup>®</sup> There are no mandatory ventilation requirements for battery module, but please avoid installation in confined space (Installation to the wall should be less than 20mm).

(9) The aeration shall avoid of high salinity.

<sup>(10)</sup> Make sure the load capacity of the floor not less than 500KG.

### 3.2 Mounting

#### 3.2.1 Install the Base

① Remove the base from the carton, fit the foot cups, tighten the screws and place it in the mounting position, making sure the base is placed smoothly.



② Use a gradienter to level the top surface of the base. Leveling can be achieved by adjusting the support feet.



③ After the base is placed, remove the protective film from the terminals.



#### 3.2.2 Battery Module Installation

① Remove the battery module from the carton and peel off the protective film from the terminals.



② Stack all the battery modules in order to install them on the base. Note that when mounting, make sure that the terminals on all battery modules and bases are on the same side.



③ After all battery modules have been installed, stack the Controller Box on top of the battery modules in the same manner.



④ Lock the fixing screws on both sides of the Controller Box.



# **4 Electrical Connection**

Warning	A high voltage in the conductive part of the battery may cause an electric shock. When installing the battery, make sure that the DC sides of the battery is completely deener- gized.
Warning	Do not ground the positive or negative pole of the battery output, otherwise it will cause serious damage to the battery.
Warning	Static may cause damage to the electronic components of the battery. Anti-static measures should be taken during installation and maintenance.
Warning	Do not use other brands or other types of terminals other than the terminals in the accessory package. The Company has the right to refuse to held liable of all damages caused by the mixed-use of terminals.
Warning	Moisture and dust can damage the battery, ensure the cable gland is securely tightened during installation. The warranty claim will be invalidated if the battery is damaged as a result of using poorly connected cable connector.

### 4.1 Connect the grounding wire

After the mechanical installation is completed, please connect the inverter and the Controller Box with the positive and negative cables, communication and ground cables.

Note: Make sure the battery switch is off before wiring.



#### 4.2 Power cables connection

The picture on this page shows the cables connection. Please follow the instruction and make sure all the cables are connected correctly.

Note: The Controller Box of the UHB 100 has two pairs of access terminals. You can choose any pair of accesses when wiring. If you are using a UHC-KT-U2 series Hybrid inverter of the UCANPOWER brand with two battery access ports, you can connect the two battery terminals of the UHB 100 to the two terminals of the inverter respectively.And in this way you will get faster charging.



#### ① Select an appropriate DC cable.

Cable type	Cable (mm <sup>2</sup> )		
AWG 8	10		

② Peel off the battery cable insulation sleeve for 10mm.



③ Remove the terminals from the accessory box and refer to the diagram below for disassembly.



④ Insert the battery cables through the battery connector nut into the metal terminals and press the terminals tightly with professional crimping pliers (Note that the cables can be pulled back with a little force after installation to check whether the terminals are well connected to the cables).



(5) Insert the positive and negative cables into the corresponding positive and negative connectors, use an open-end wrench to screw the nut to the end to ensure that the terminal is well sealed.





① Before making the battery connector, please make sure the polarity of the cable is correct.

② Use a multimeter to measure the voltage of the battery pack and make sure the voltage is within the inverter limitation and the polarity is correct.

(6) Insert the positive and negative connector into the battery power terminals respectively and a "click" sound represents the assembly in place



⑦ According to the inverter manual, install the inverter positive and negative terminal shells to the battery cables. Finally, connect the battery cables to the inverter according to the positive and negative instructions. Attention.

a. The positive and negative of the inverter and battery terminals must be one-to-one correspondence and cannot be mistaken.

b. The positive and negative terminals between the two sets of battery terminals must be one-to-one correspondence, can not be confused.



#### 4.3 Communication Cable Connection

Remove the communication cable from the accessory box. Plug one end of the communication cable into the "Inverter COM" port of the Controller Box and the other end into the corresponding battery communication port according to the inverter manual.

Service COM Inverter COM Item 1 RS485 A \_ 2 RS485 B \_ 3 \_ 4 CAN\_H 5 CAN L -6 RS232 RX 7 RS232 TX \_ 8 RS232\_GND -



Communication interface and definition:

# **5** System Start and Stop

#### 5.1 Start System

When starting the system, follow these steps:

- ① Switch on the inverter to bring the inverter into operation.
- ② Turn on the Battery Switch on the controller box.
- ③ Hold down the POWER BUTTON for 5 seconds until the LCD lights up.



④ Observe the status indicator, green light flashing indicates the normal output.
⑤ The inverter will start to check the DC and AC input parameters and self-check for 30s~1min, and if everything is normal, the inverter will start to work according to the working mode which you set. The inverter display and indicators will show relevant parameters and status.

#### 5.2 Turning Off the System

When turning off the system, please follow the steps below:

① Switch off the breakers on the grid and load side.

② Turn off the Battery Switch on the controller box.

③ Wait 30 seconds and then turn the inverter DC switch to the "OFF". At this time, there is remaining power in the inverter capacitor. Wait for 5 minutes until the inverter is completely de-energized before operating.

If the device is not used for a long time, please unplug the AC and DC cables.

### 5.3 LED indication

Battery	Protection, alarm normal	RUN	ALM	Capacity			Description		
Status		Green	Red	Green	Green	Green	Green	Description	
Off		Off	Off	Off	Off	Off	Off	All off	
	Normal	Flash 1	Off	Paced on canacity				No charging or discharging	
On	Warning	Flash 1	Flash 3		based of	reapacity	PACK low voltage		
	Normal	ON	Off	Based	l on capa	city, the h	nighest		
Charge	Warning	ON	Flash 3	the other SOC lights is on all the times.					
	Over Charge	On	Off	On	On	On	On		
	Over Temp/ Current Failure	Off	On	Off	Off	Off	Off	Stop charging	
	Normal	Flash 3	Off	Based on capacity, the highest					
	Warning	Flash 3	Flash 3	lights is on all the times.					
Discharge	Over Discharge	Off	Off	Off	Off	Off	Off		
	Over Temp/ Current Failure	Off	On	Off	Off	Off	Off	Stop discharging	
Failure		Off	On	Off	Off	Off	Off	Stop charging and discharging	

#### LED status

#### SOC status

Status			Charge			Discharge			
		L1	L2	L3	L4	L1	L2	L3	L4
Capacity	0~25%	Flash 2	Off	Off	Off	On	Off	Off	Off
	25%~50%	On	Flash 2	Off	Off	On	On	Off	Off
	50%~75%	On	On	Flash 2	Off	On	On	On	Off
	75%~100%	On	On	On	Flash 2	On	On	On	On
Run			C	)n		Flash 3			

Flash description: Flash 1: 0.25s on /3.75s off Flash 2: 0.5s on /0.5s off Flash 3: 0.5s on /1.5s off

# 6 Trouble Shooting

### 6.1 Maintenance

Warning	Risk of battery damage or personal injury due to incorrect service!
Warning	Keep unqualified persons away!
Warning	Restart the battery only after removing the fault that impairs safety performance. Never arbitrarily replace any internal components.
Warning	Servicing of the device in accordance with the manual should never be undertaken in the absence of proper tools, test equipment or the latest revision of the manual which has been clearly and thoroughly understood.

ltem	Project	Checkpoint	Methods	Repair Condition	
1	Electrical	Check whether the voltage output is normal.	Multi-meter	The battery voltage exceeds the preset range	Contact the
2	Failure to check	Check whether the light is normal.	Visual inspection	Warning	dealer or manufacturer.
3	Cable	Insulation, terminal	Visual inspection	Insulation crack, aging, the terminal is peeling or corroded.	Replace the cable, replace the terminal board.

### 6.2 Maintenance of Electrical Components

### 6.3 Battery Maintenance

Item	Frequency	Frequency	Solution
1		Working environment	Keep away from heat sources and direct sunlight.
	Every month	Visual inspection	If there is damage, leakage or deformation, isolate the faulty battery pack, take photos and replace the battery.
2		Visual inspection	Clean appearance with cotton cloth. Be careful when cleaning.
	Every quarter	Connection status	Check whether the wiring is tight, check the temperature of the wire.
3	Half a year	Measure and record voltage	Collect discharge data at least once every six months in the first year. In the second year, discharge data were collected every three months. Check the historical records through the RS232 port. If the alarm information shows that the battery is frequently overcharged, the battery has reached the charging and discharging protection point. This may lead to insufficient time for power preparation. It is recommended to replace the battery immediately.

# 7 Technical Parameters

Model	UHB100-3S	UHB100-4S	UHB100-5S	UHB100-6S	
Electrical parameters					
NO. Of Series Battery	3	4	5	6	
Rated Energy (kwh)	15.36	20.48	25.6	30.72	
Usable Energy (kwh)	13.8	18.4	23	27.6	
Rated Voltage (V)	153.6	204.8	256	307.2	
Voltage Range (V)	134.4~172.8	179.2~230.4	224~288	268.8~345.6	
Battery Type		Li-ion	(LFP)		
Battery pack series and parallel connection		1P*	165		
Rated Capacity(Ah)		1(	00		
Charge Current(A)		50A (F	Rated)		
Discharge Current (A)	50A (Rated)				
Cycle Times	80% DOD, cycles>6000, residual capacity>70%				
Communication		RS-485 / RS-2	232 / CAN 2.0		
Protection function	Over voltage / Under voltage / Over temperature / Low temperature / Over current / Short circuit				
Size [W x D x H, mm]	630*365*674	630*365*813	630*365*952	630*365*1091	
Weight [kg]	154.4	199.8	245.2	290.6	
Working conditions					
Installation conditions	Indoor				
Range of working temperature	Charge: 0°C~55°C Discharge: -20°C~55°C				
Optimal working temperature range	20°C~30°C				
Storage temperature	20°C~30°C				
Working humidity	5%-95% (No condensation)				
Altitude	≤2000m				
Enclosure protection rating	IP54				
Cooling method	Natural cooling				
Certificate	CE, UN38.3, MSDS				

Model	UHB100-7S	UHB100-8S	UHB100-9S	UHB100-10S	
Electrical parameters					
NO. Of Series Battery	7 8 9 1			10	
Rated Energy (kwh)	35.84	40.96	46.08	51.2	
Usable Energy (kwh)	32.2	36.8	41.4	46	
Rated Voltage (V)	358.4	409.6	460.8	512	
Voltage Range (V)	313.6~403.2	358.4~460.8	403.2~518.4	448~576	
Battery Type		Li-ion	(LFP)		
Battery pack series and parallel connection		1P*	16S		
Rated Capacity(Ah)		1(	00		
Charge Current(A)		50A (F	Rated)		
Discharge Current (A)	50A (Rated)				
Cycle Times	80% E	OD, cycles>6000	, residual capacity	/>70%	
Communication		RS-485 / RS-2	232 / CAN 2.0		
Protection function	Over voltage / Under voltage / Over temperature / Low temperature / Over current / Short circuit				
Size [W x D x H, mm]	630*365*1230	630*365*1369	630*365*1508	630*365*1647	
Weight [kg]	336	336 381.4 426.8 472.2		472.2	
Working conditions					
Installation conditions Indoor					
Range of working temperature	Charge: 0°C~55°C Discharge: -20°C~55°C				
Optimal working temperature range	20°C~30°C				
Storage temperature	20°C~30°C				
Working humidity	5%-95% (No condensation)				
Altitude	≤2000m				
Enclosure protection rating	IP54				
Cooling method	Natural cooling				
Certificate	CE, UN38.3, MSDS				

#### **Contact Information**

Should you have any question about this product, please contact us. We need the following information to provide you the best assistance:

- Model of the device
- Serial number of the device
- Date of the device
- Fault code/name
- Brief description of the problem



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