

# Dyness Product Training

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Power Rack HV4 Series

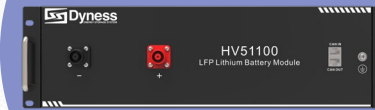
## BDU100

Battery Disconnect Unit.  
Inside: BMS, system main contactor,  
pre-charged contactor, current sensor.



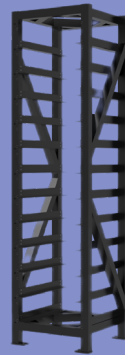
## HV51100 Module

Battery module, consisting of  
a battery cell and an MCU.



## Rack

Standard rack, available in 2  
sizes: 7 modules + 1 BDU  
/ 11 modules + 1 BDU



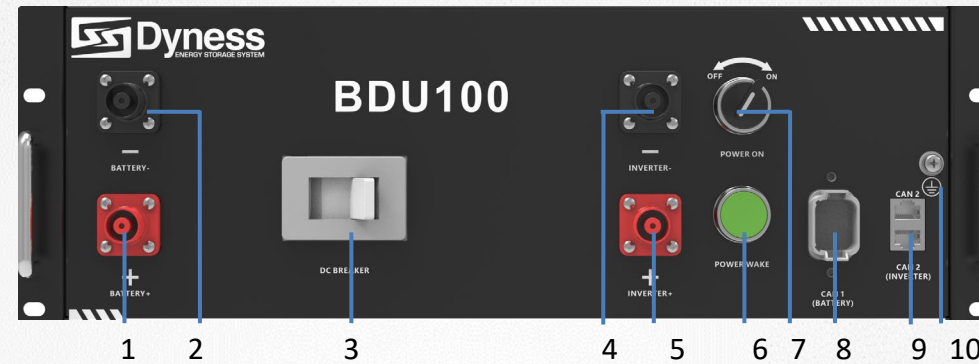
## Power Rack HV4

We call a system composed of 1 BDU  
unit and N modules a cluster, and a  
cluster can have up to 11 modules.

# HV51100 module specifications

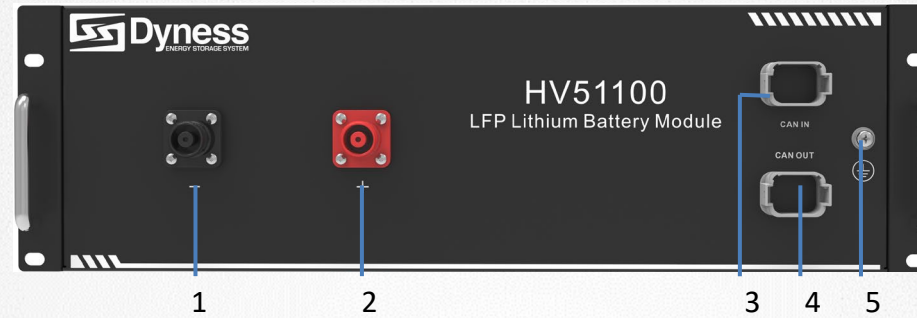
Module Name	HV51100
Cell Technology	Li-ion(LFP)
Battery Module Capacity (kWh)	5.12
Battery Module Voltage (Vdc)	51.2
Battery Module Capacity (Ah)	100
Battery Module Charge Voltage (Vdc)	57.6
Battery Module Charge Current (Normal) [A]	60
Battery Module Discharge Current (Normal) [A]	60
Dimension(W*D*H, mm)	481*535*140
Communication	CAN
Pollution Degree (PD)	I
IP Grade	IP20
Weight(kg)	43.5

Item	PowerRack HV4-20	PowerRack HV4-25	PowerRack HV4-30	PowerRack HV4-35	PowerRack HV4-40	PowerRack HV4-46	PowerRack HV4-51	PowerRackHV 4-56
<b>Module Type</b>	LFP							
<b>Nominal Voltage(V)</b>	204.8V	256V	307.2V	358.4V	409.6V	460.8V	512V	563.2V
<b>Work Voltage Range(V)</b>	179.2~230.4	224~288	268.8~345.6	313.6~403.2	358.4~460.8	403.2~518.4	448~576	492.8~633.6
<b>Nominal Energy(kWh)</b>	20.48	25.6	30.72	35.84	40.96	46.08	51.2	56.32
<b>Nominal Power(kW)</b>	12.288	15.36	18.432	21.504	24.576	27.648	30.72	33.792
<b>Max Power(kW)</b>	20.48	25.6	30.72	35.84	40.96	46.08	51.2	56.32
<b>Charging Current(A)</b>	60							
<b>Discharge Current(A)</b>	60							
<b>Dimension(mm)</b>	601*610*1422	601*610*1422	601*610*1422	601*610*1422	601*610*2062	601*610*2062	601*610*2062	601*610*2062
<b>Weight(kg)</b>	237	290.5	344	397.5	486	539.5	593	646.5
<b>Battery Module Name</b>	HV51100							
<b>Battery Module Quantity(pcs)</b>	4	5	6	7	8	9	10	11

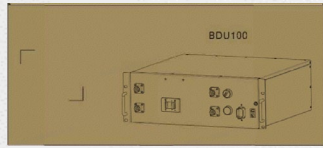


Item	Name	Definition
1	Positive socket	Battery input port, connecting battery power line.
2	Negative socket	Battery input port, connecting battery power line.
3	DC Breaker	The master switch of the battery system , you must switch on it before switching on power on & power wake switch; Short circuit protection.
4	Negative socket	Battery input port, connecting inverter power line.
5	Positive socket	Battery input port, connecting inverter power line.
6	Power Wake Button	Long press this button to start the battery system
7	Power On switch	Turn on the switch to power the BMS system
8	CAN 1	Quick plug communication port between battery module and BDU
9	CAN 2	RJ45 communication port between battery module and inverter
10	Grounding	Shell ground connection

# HV51100 module interface definition

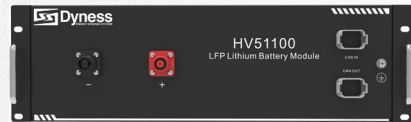
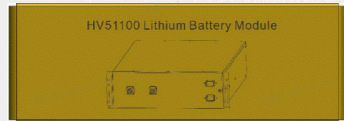


Item		Definition
1	Negative socket	Battery output or Serial anode cable
2	Positive socket	Battery output or Serial anode cable
3	CAN IN	RJ45 port, connect to former module or BDU
4	CAN OUT	RJ45 port, connect to next module or BDU
5	Ground	Shell ground connection



BDU100\*1

screws M6\*4

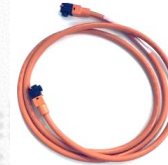


HV51100\*  
1

Orange/35mm²/  
L215mm\*1

Quick plug  
communication port \*1

screws M6\*4



Black/35mm²/  
L3000mm

Red/35mm²/  
L3000mm

Orange/35mm²/  
L2200mm

Red /35mm²/  
L215mm

Black /L3000mm  
/Double RJ45 plug



Quick plug  
communication port \*1

screws M6\*4



2. Secure the HV51100 unit to the rack with a nut through the mounting holes top on the hanging ears of the HV51100 unit.



4. Stack the required number of battery and BDU as described above, and use 4 screws to fix the battery and BDU on the front bracket.

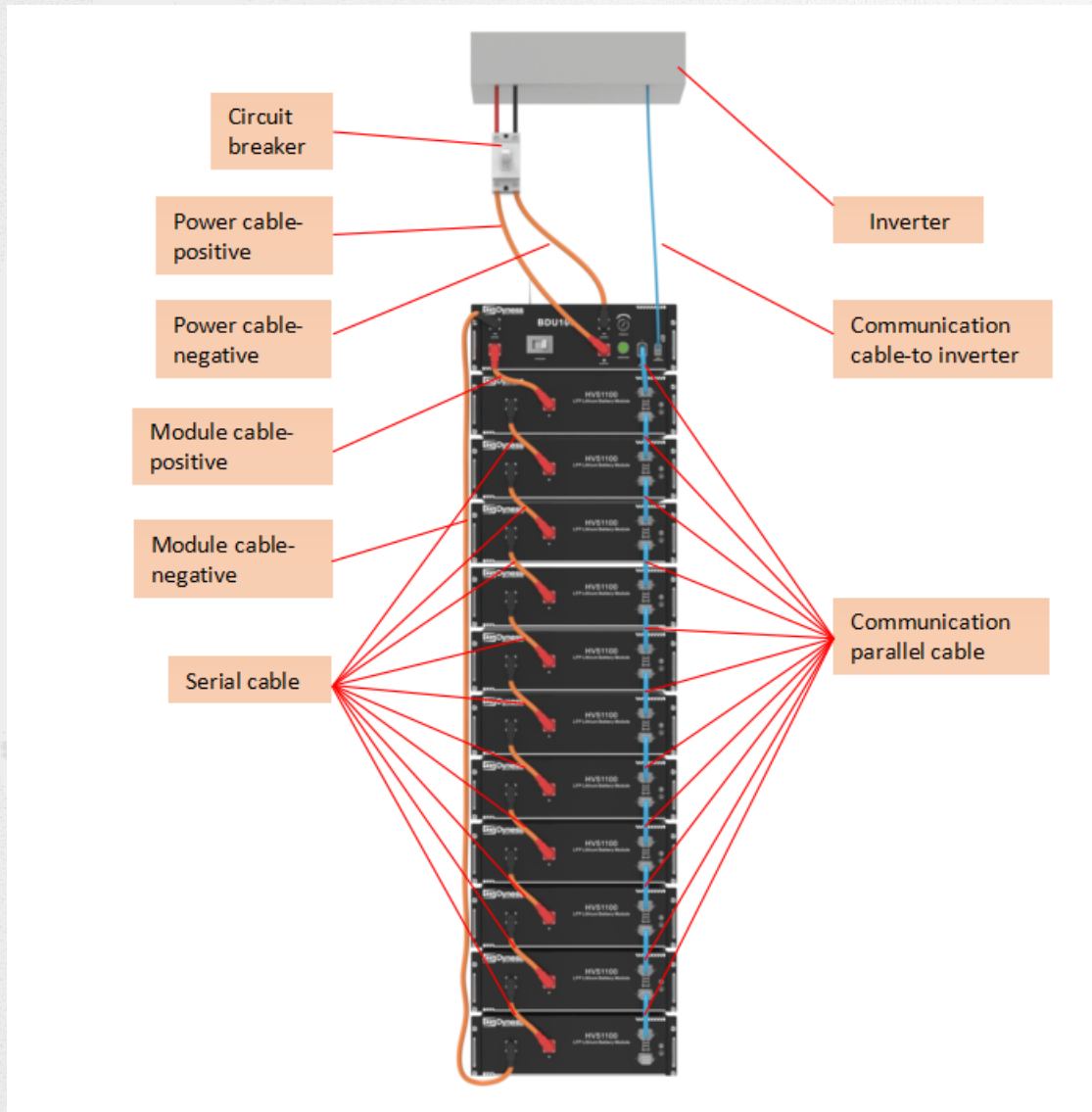
1. Place the HV51100 unit on the rack bracket as shown in the figure and push the device into the rack at the installation position. (The rack structure in the figure is for reference only)



3. Insert the second one HV51100 in to the rack.







## Notes:

1. Install the system correctly according to the diagram, and be careful not to use a single cable to connect the positive and negative poles of the same module directly.
2. Before installing the cables, make sure that all circuit breakers are in the closed state.
3. Before starting the system, a self-running test of the battery system is required.

# Battery self-test

**Note:** Ensure that the circuit breaker between the battery and the inverter is in the open position.



1

Switch the DC BREAKER of BDU to the "ON" state



2

Switch on the "POWER ON" switch



3

Press the "POWER WAKE" button for about 10S. The system start-up.



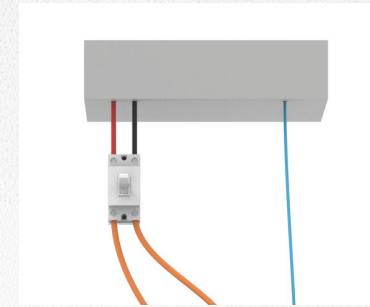
4

Switch off the "POWER ON" switch.

After the BDU is turned on, use a multimeter to measure the output voltage of the inverter of the BDU and check if it meets the operating voltage of the inverter.

# The system powers on

After completing the self-test of the battery when powered on.



5

Turn on the circuit breaker between the battery and the inverter



6

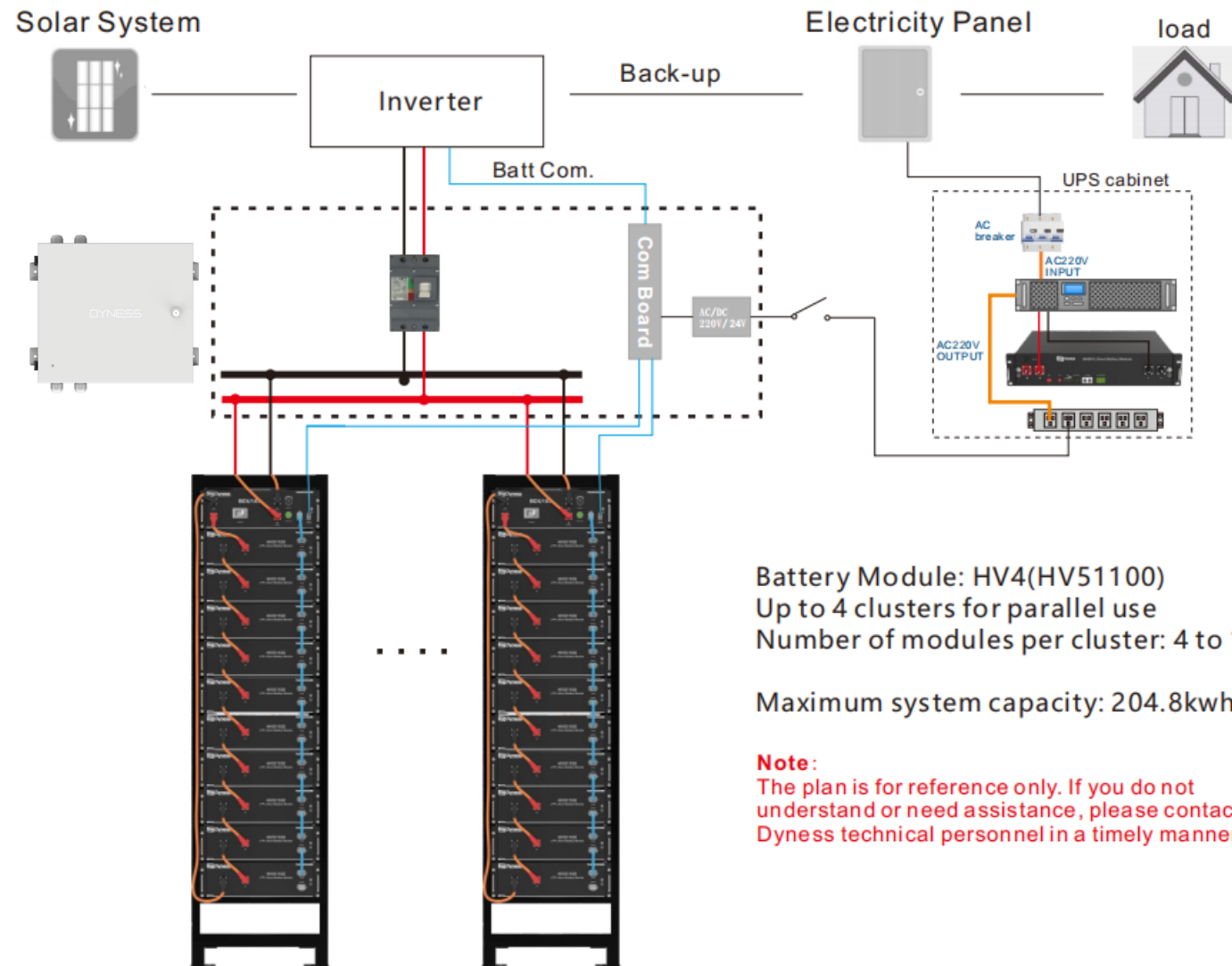
Switch on the "POWER ON" switch



7

Press the "POWER WAKE" button for about 10S. The system start-up. The inverter will also automatically turn on.

System shutdown, just need to turn off the Power Switch button.



Battery Module: HV4(HV51100)  
Up to 4 clusters for parallel use  
Number of modules per cluster: 4 to 10

Maximum system capacity: 204.8kwh

**Note:**  
The plan is for reference only. If you do not understand or need assistance, please contact Dyness technical personnel in a timely manner

# Inverter Compatibility List



01

## System module adaptation

Customers can increase or decrease the number of modules they use according to their needs, without manually changing system parameters. They only need to ensure that the module capacity is consistent when the system is expanded.



02

## Compatible with most inverters on the market

Power Rack HV4 is compatible with most inverter brands on the market, especially when building commercial and industrial systems, customers have more options.



03

## The system configuration is relatively flexible.

The system can be customized from a minimum of 20kWh to a maximum of 675kWh, and customers can choose according to their own needs.



04

## System maintenance is convenient.

In industrial and commercial systems, if a single module fails, the customer can remove the faulty module without affecting the continued operation of the system.



No	Problem	Possible Reason	Solution
1	The battery has no voltage output, and "POWER ON"/ "POWER WAKE" Light is off.	The DC breaker of the BDU didn't be turned on	Turn on the DC breaker of BDU
2		The "POWER ON" switch of the BDU box was not switched on	Switch on the "POWER ON" button
3		Battery is in sleep state.	Long press the "POWER WAKE" button for about 10S
4		Battery gets into over-discharged protection	Charge the battery to relieve the protection state
5	The battery has no voltage output, but "POWER ON"/ "POWER WAKE" are on	The relay in BDU is faulty	Replace a new BDU directly
6	When the battery is connected to the inverter, the DC breaker trips automatically	The circuit between the battery and the inverter has a short circuit point	Check whether there is a short circuit in the circuit between the battery and the inverter ; Check if the inverter is faulty
7	Communication failure between battery and inverter	The wrong battery model type is selected on the inverter	Select correct battery model type on the inverter

0  
1 Q: Can the HV4 system be used in parallel? What is the maximum number of clusters that can be connected in parallel?

A: The HV4 system can be connected in parallel, with a maximum of 12 clusters in parallel.

0  
2 Q: What are the other conditions for achieving multi-cluster paralleling?

A: In addition to a single-cluster system, a junction box with a secondary controller is also required to achieve the parallel operation function of the system.

0  
3 Q: How to maintain the battery system when the module is unbalanced?

A: If the voltage of the battery system is inconsistent, it is necessary to use the detection tool to check the problematic module, and then use the DC power supply to replenish the module that needs to be charged separately.





Lebanon Orphanage Project, 2022



Dutch Industry and Commerce 2023

Xinjiang Oilfield Project, 2021



**Thank you for listening**

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