

PowerRack HV1

USER MANUAL

Battery System
432~720V/50Ah

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Revision History

Revision NO.	Revision Date	Revision Reason
1.0	2021.03.25	First Published
2.0	2021.11.04	Battery low temperature charging protection and recovery threshold modification
2.1	2022.04.14	Update BDU Interface Definition

1 Product Specification

Battery Module

Table 1-1 Parameter of HV4850

Module Name	HV4850
Cell Technology	Li-ion(LFP)
Battery Module Capacity (kWh)	2.4
Battery Module Voltage (Vdc)	48
Battery Module Capacity (Ah)	50
Battery Module Cell Quantity (pcs)	30
Battery Cell Capacity (Wh)	80
Battery Cell Voltage (Vdc)	3.2
Battery Cell Capacity (AH)	25
Battery Module Cell Quantity in Series (pcs)	15
Battery Module Charge Voltage (Vdc)	54
Battery Module Charge Current (Normal)	25
Battery Module Discharge lower-Voltage (Vdc)	42
Battery Module Discharge Current (Normal)	25
Dimension(W*D*H, mm)	481*410*89mm
Communication	CAN
Pollution Degree (PD)	I
IP Grade	IP20
Weight(kg)	23

System Performance Parameter

Table 1-2 The parameter of PowerRack HV1 system -1

Item	PowerRack HV1 -9	PowerRack HV1 -12	PowerRack HV1 -14	PowerRack HV1 -16	PowerRack HV1 -19	PowerRack HV1 -21
Module Type	LFP	LFP	LFP	LFP	LFP	LFP
Nominal Voltage(V)	192V	240V	288V	336V	384V	432V
Work Voltage Range(V)	168~216	210~270	252~324	294~378	336~432	378~486
Module configuration	4 Series	5 Series	6 Series	7 Series	8 Series	9 Series
Nominal Energy(kWh)	9.6	12	14.4	16.8	19.2	21.6
Nominal Power(kW)	5.76	7.2	8.64	10.08	11.52	12.96

Max Power(kW)	9.6	12	14.4	16.8	19.2	21.6
Charging Current(A)	25	25	25	25	25	25
Discharge Current(A)	25	25	25	25	25	25
Dimension(mm)	601*510*1250	601*510*1250	601*510*1250	601*510*1250	601*510*1250	601*510*1250
Weight(kg)	162	185.1	208.2	231.3	254.4	277.5
Battery Module Name	HV4850	HV4850	HV4850	HV4850	HV4850	HV4850
Battery Module Quantity(pcs)	4	5	6	7	8	9

Table 1-3 The parameter of PowerRack HV1 system -2

Item	PowerRack HV1 -24	PowerRack HV1 -26	PowerRack HV1 -28	PowerRack HV1 -31	PowerRack HV1 -33	PowerRack HV1 -36
Module Type	LFP	LFP	LFP	LFP	LFP	LFP
Nominal Voltage(V)	480V	528V	576V	624V	672V	720V
Work Voltage Range(V)	420~540	462~594	504~648	546~702	588~756	630~810
Module configuration	10 Series	11 Series	12 Series	13 Series	14 Series	15 Series
Nominal Energy(kWh)	24	26.4	28.8	31.2	33.6	36
Nominal Power(kW)	14.4	15.84	17.28	18.72	20.16	21.6
Max Power(kW)	24	26.4	28.8	31.2	33.6	36
Charging Current(A)	25	25	25	25	25	25
Discharge Current(A)	25	25	25	25	25	25
Dimension(mm)	601*510*1917	601*510*1917	601*510*1917	601*510*1917	601*510*1917	601*510*1917
Weight(kg)	329	352.1	375.2	398.3	421.4	444.5
Battery Module Name	HV4850	HV4850	HV4850	HV4850	HV4850	HV4850
Battery Module Quantity(pcs)	10	11	12	13	14	15

2 Interface Definition

Front Panel of battery module

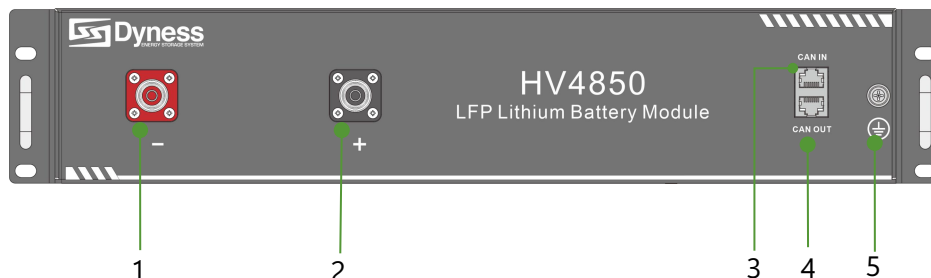


Figure 2-1 The interface of HV4850

Table 2-1 Interface Definition

Item	Name	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

Front Panel of BDU module

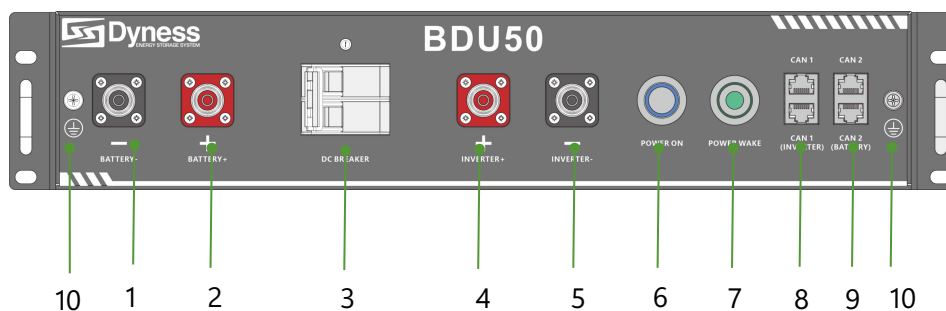



Figure2-2 The interface of BDU50

Table 2-2 Interface Definition

Item	Name	Definition
1	Negative socket	Battery input cable
2	Positive socket	Battery input cable
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.

Item	Name	Definition
4	Positive socket	Battery output cable
5	Negative socket	Battery output cable
6	Power On button	Turn on the switch to power the BMS system
7	Power Wake Button	Long press this button to start the battery system
8	CAN 1	RJ45 communication port between the battery system and inverter
9	CAN 2	RJ45 communication port between battery module and BDU
10	Grounding	 Shell ground connection

Alarms and protection

Note: "N" in the table is Battery Module Quantity

No.	Item	Default value	Remark
1	High charging voltage protection and recovery	Alarm value	52.5V*N
		Alarm recovery value	51V*N
		Protection value	54.75V*N
		Protection recovery value	52V*N
2	Low discharging voltage protection	Alarm value	43.5V*N
		Alarm recovery value	46.5V*N
		Protection value	38.25V*N
		Protection recovery value	42V*N
3	Low cell voltage protection and recovery	Alarm value	2.9V
		Alarm recovery value	3.1V
		Protection value	2.55V
		Protection recovery value	2.8V
4	High cell voltage protection and recovery	Alarm value	3.6V
		Alarm recovery value	3.6V
		Protection value	3.65V
		Protection recovery value	3.45V
5	Charging over current protection	Alarm value	50A
		Alarm recovery	After the alarm, restored when the current release or if there is a discharging current recovery.
		Protection value	55A

No.	Item	Default value	Remark
		Protection recovery	After protection, restored in 1s delay or immediately when there is discharging current.
6	Discharging over current protection	Alarm value	50A
		Alarm recovery	After the alarm, restored when the current release or if there is a charging current recovery.
		Protection value	55A
		Protection recovery	After protection, restored in 1s delay or immediately when there is charging current.
7	Cell over temperature protection and recovery	Charging alarm value	55°C
		Charging alarm recovery value	54°C
		Charging protection value	60°C
		Charging protection recovery value	59°C
		Discharging alarm value	55°C
		Discharging alarm recovery value	54°C
		Discharging protection value	60°C
		Discharging protection recovery value	59°C
8	Cell low temperature protection and recovery	Discharging alarm value	0°C
		Discharging alarm recovery value	1°C
		Discharging protection value	-10°C
		Discharging protection recovery value	-9°C
		Charging alarm value	0°C
		Charging alarm recovery value	1°C
		Charging protection value	-1°C
		Charging protection recovery value	0°C

Communication port

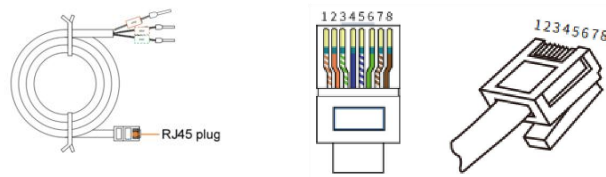


Figure 2-3 CAN interface definition

Table 2-3 BDU CAN1 Pin Definition

Foot position	Color	Definition
PIN1	Orange/white	Reserve
PIN2	Orange	XGND
PIN3	Green/white	Reserve
PIN4	Blue	CANH
PIN5	Blue/white	CANL
PIN6	Green	Reserve
PIN7	Brown/white	Reserve
PIN8	Brown	Reserve

Table 2-4 BDU CAN2 & Battery CAN Pin Definition

Foot position	Color	Definition
PIN1	Orange/white	WAKE
PIN2	Orange	24V+
PIN3	Green/white	24V+
PIN4	Blue	CANSH
PIN5	Blue/white	CANSL
PIN6	Green	24V-
PIN7	Brown/white	24V-
PIN8	Brown	CANSG

Remark: HV4850 module need to be used with BDU.



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