IS001 Battery Energy Storage System Setup and Usage Guide

Version 2.1



Catalog

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1. Introduction Battery Energy Storage System (IS001)

IS001 is a Battery Energy Storage System suitable for small and medium-sized industrial or commercial businesses. It supports higher voltage by series by connecting 4 to 15 batteries in series as a module. And parallel the modules up to higher energy battery storage system.

It included levels of the management system to monitor and collect voltage, current, and temperature of each cell and module in real time.

Equipment includes:

- Server rack batteries modules HVB50096
- High voltage control box (HVCB-02A) or
- High voltage control box (HVCB-03A) and BAU

And accessories

- Positive and Negative color coded power cables
- Inter-battery communication cables

To achieve remote battery health monitoring and diagnostic check, it is

recommended to connect to a router for internet access.

Here are the introductions of every part:

1.1 Server Rack Battery module (HVB50096):



Fig1. HVB50096 images

The Server rack battery HVB50096, rated voltage 51.2V, rated capacity 96.6Ah. Basic parameters are shown in Table 1.

Table1. Parameters of HVB		
Battery Pack		
Item	Parameters	
Cell Type	LiFePO4	
Nominal Voltage	51.2V	
Nominal Capacity	96600mAh/4946Wh	
Working Voltage Range	46.4V~56.8V	
Working	Charging: 0∼55℃	
Temperature	Discharging: -20~60°C	
Temperature Sensor Type	B Value 3435 (10K@25°C), 4ways	
Dimension	438mm*536mm*221mm	
Weight	About 50kg	
Communication Type	CAN bus	

Table 2. Description of the battery module panel functions:

No.	Item	Description
1	Cable Outlet	Voltage and Temperature sensors collecting cable outlet
2	Positive terminal	Positive battery connection
3	Negative terminal	Negative battery connection
4	Ground	Ground cable connection
5	CAN-2	Communication port of the BSU
6	CAN-1	Communication port of the BSU



Fig2. Server rack battery HVB50096 images

1.2 High voltage control box (HVCB):

High voltage control box is the terminal of voltage and data collects from a series of Battery modules.

There are 2 types of High Voltage Control Boxes, HVCB-02A and HVCB-03A. The system of single series (at most 15 battery units) works with HVCB-02A. The system parallels battery units that work with HVCB-03A and BAU.

a) HVCB-02A

The HVCB-02A capable to manage one series of battery units which equipped with control devices, fuses and relay safety of the battery. It has functions of fault alarm and protection, safety protection lamp, emergency stop and step-by-step disconnect of the system during maintenance. The technical parameters are shown in Table 2:

Besides, there is a WIFI module included in HVCB-02A and can be remotely monitored and controlled separately.

HVCB 02A		
IIVCD-02A		
Operating voltage range	150V~900Vdc	
Rated Current	ent 100A(125A at max)	
Operating temperature range	e -40°C~85°C	
Communication port	2 ways of CAN@ 3 ways RJ45 physical interface	
Analog Signal port	5 ways of dry contact@ 2ways in 3 ways out	
Dimension	478mm*434mm*133mm (W*L*H)	
Weight	3500m	
Installation mode	Screw fixation	
	Short protection	
	Over current protection	
	Over Voltage protection	
Protection	Under Voltage Protection	
	Temperature Protection	
	Breaker Monitor	
	Remote Control	

Table ₃ .	Parameters	of HVCB-02A
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The image of the HVCB-02A is as follows:



Fig3. HVCB-02A images

- 1. Battery system negative input B-;
- 2. Battery system negative output P-;
- 3. Circuit breaker;
- 4. Battery system positive input B+;
- 5. Battery system positive output P+;
- 6. Battery system energy input indicator;
- 7. Battery system running indicator;
- 8. Battery system fault indicator light;
- 9. WIFI Antenna;
- 10. IPC;
- 11. EMS;
- 12. PCS;
- 13. BSU.

The electrical drawing of HVCB-02A is as follows:



Fig4. HVCB-02A-Electrical drawing

As HVCB-02A need to communicate with the PCS, so here are the order definition of PCS port:

Item	PIN	Cable color	Net definition	Remarks
RJ45 Type B	1	Orange & White	A1	485
connection	2 Orange		B1	Communication
1	3	Green & White	/	
8	4	Blue	CAN_H	CAN
	5	Blue & White	CAN_L	Communication
	6	Green	/	
	7	Brown & White	/	
$\langle \rangle \sim$	8	Brown	/	

Table4. Definition of PCS port

b) HVCB-03A with BAU

It is for systems with a structure of more than one series of battery units to achieve higher energy storage. Each series of the batteries is connected to its HVCB-03A, and then connects and communicates with BAU as a whole communication unit.

Similar to HVCB-02A, HVCB-03A equipped with control devices, fuses and relays. It has the functions of fault alarm, fault protection and safety protection lamp to ensure the safety of the battery. At the same time, it has the function of emergency stop and step by step disconnect the system during maintenance. The technical

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parameters are shown in Table 3.

BAU is the central information hub of the battery control system, it obtains information from all HVCB-03A including voltage, current, temperature, insulation impedance, SOC, relay status and fault status information through the internal CAN bus. BAU has option to communicate with EMS (energy management system) and PCS through Ethernet, to deploy request based on EMS control strategy, and realize energy scheduling, system thermal management and fault handling.

The HVCB-03A needs to bundle BAU or there will be no function and the device will not even start up.

Here are the parameters of HVCB-03A and BAU:

HVCB-03A		
Operating voltage range	150V~900Vdc	
Rated Current	100A(125A at max)	
Operating temperature range	-40°C~85°C	
Communication port	2 ways of CAN@ 3 ways RJ45 physical interface	
Analog Signal port	5 ways of dry contact@ 2ways in 3 ways out	
Dimension	478mm*434mm*133mm (W*L*H)	
Weight	3500m	
Installation mode	Screw fixation	
	Short protection	
	Over current protection	
	Over Voltage protection	
Protection	Under Voltage Protection	
	Temperature Protection	
	Breaker Monitor	
	Remote Control	

Table5. Parameters of HVCB-03A

Table6. Parameters of BAU		
BAU		
Operating voltage	24Vdc	
Operating temperature	-30°C~75°C	
Working humidity	5%~95%	
485 Communication	5 ways @ Modbus	
Ethernet Communication	3 ways @ TCP/IP	
CAN Communication	2 ways @ CAN 2.0B	
Dry Contact	9 ways @ 5ways output, 4 ways input	
Temperature Detection Range	-40°C~120°C	
Temperature detection accuracy	≤±1℃	
Operating Power Consumption	<3.8W	
Sleep Power Consumption	<0.03mW	
SD Card Storage	64G TF Card	
PCS Communication	485 or CAN	
EMS Communication	TCP/IP	
Dimension	348mm*150mm*48mm (W*L*H)	

The image of the HVCB-03A is as follows:



Fig 5. HVCB-03A images

- 1. Battery system negative input B-;
- 2. Battery system negative output P-;
- 3. Circuit breaker;
- 4. Battery system positive input B+;

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- 5. Battery system positive output P+;
- 6. Battery system energy input indicator;
- 7. Battery system running indicator;
- 8. Battery system fault indicator light;
- 9. BMU, Cluster Parallel or communicate with BAU;
- 10. BMU, Cluster Parallel or communicate with BAU;
- 11. BSU, Communicate with Slave Unit.

The electrical drawing of HVCB-03A is as follows:

BAT1-	HVCB-03A		BAT1+	
PACK1-	BMU	BMU	BSU	PACK1+

Fig 6. HVCB-03A images-Electrical drawing



Fig 7. BAU images

- 1. TOBAT Communication Port;
- 2. Communication Port;
- 3. DEBUG Communication Port;
- 4. PCS Communication Port;
- 5. Power indicator light;
- 6. Run indicator light;
- 7. Fault indicator light;
- 8. Dry Contact Port;
- 9. ON/OFF Power;

The electrical drawing of BAU is as follows:



Fig 8. BAU images-Electrical drawing

As BAU need to communicate with the PCS, so here are the order

definition of PCS port:

Item	PIN	Cable color	Net definition	Remarks
RJ45 Type B	1	Orange & White	A1	485
connection	2	Orange	B1	Communication
1	3	Green & White	/	
8	4	Blue	CAN_H	CAN
	5	Blue & White	CAN_L	Communication
	6	Green	/	
	7	Brown & White	/	
~ ~	8	Brown	/	

Table7. Definition of PCS Port

1.3 BR3000 – Remote energy management system

The EMS is energy management on top of battery modules and/or PCS (Power control system). It used to remotely collect information of the all batteries and PCS, configure and deploy energy management strategy and logic.

Basically, we can get all the cell voltage, temperature, current and fault status information from the EMS as well as PCS. Connect the EMS to the internet, we can get all the information remotely.

We offered BR3000 EMS and Router, specifications as shown in the attachment. Please contact us if you want to use your own brand.

2. Hardware Wiring and Configuration

2.1 Hardware Wiring and configuration for HVCB-02A

How to connect Cables to the Battery Terminal

1. Identify the positive B+ and negative B- terminals on your battery using the Power cable (color in orange). Terminals are labeled.

2. Verify you have all hardware to attach the cable properly. Check to ensure the bolt insert for the terminal fully seats and can be tightened to the proper torque.

3. Connect the cables to your battery terminals by removing the terminal bolts, inserting them through the eyelet of the proper cable, and reseating the bolt into the terminal block to the correct torque.

4. DO NOT finger-tighten the terminal bolts. They require a specific torque (60 in-lb/7nm) to ensure they do not loosen during operation. Failure to properly tighten the terminal bolts can result in serious damage and will void your warranty.

Connect Your Batteries in SERIES – batteries are needed to connect in SERIES to achieve higher voltage.

Power cable connection

1. Connect the positive terminal B+ to the negative terminal B- of the next battery.

2. Connect one end of the battery B+ terminal to HVCB B+ terminal. Connect the other end of the battery B- terminal to HVCB B- terminal as below pic.

Data (communication) cable connection

- 1. Connect HVCB BSU to the CAN-1 port of the nearest battery.
- 2. Follow the connection sequence of power cable.

Connect the CAN-2 port to the CAN-1 port of next battery. The last blank CAN port should insert a

CAN plug to match communications.

All battery information will be uploaded to HVCB through the BSU communication port.

3. Connect the EMS port to router to access the internet to achieve remote data management.

Application program is needed to install to configure the HVCB internet access.

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Grounding

Connect the grounding screw with ground cables provided and then connect to the grounding

conductor.

Warning - DO NOT ground rack/cabinet or door to negative or positive terminal in the battery



Fig 9. Hardware wring for HVCB-02A

PC Software installation and configuration:

A PC is needed to run a Windows application program. It is used as a diagnostic and configuration tool (for remote access) for HVCB-02A.

Connect PC to the router LAN port.

Confirm the network setting in PC

1) Network settings on PC(Automatically)

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HVCB-02A and PC automatically get the IP address from the router (DHCP).

Windows default network settings are shown as below.



Fig10. Network Setting: automatically get IP address

2) Application HV_Master configures on Windows OS

Note: Application is supported on Windows OS only

a. Start HV_Master application in PC

Open the folder and double click this icon: HV_Master.exe to start the

application.



Fig11. Open HV_Master application

b. Login to Admin mode

In "Key Info" tab -> "Admin Mode" box, enter "jsyh1234" in "Admin password" and then click "Login"

Port: Connect Restart Datalog Ind	ex: 0 Connection: NoConnect! Com_State: •	
ystem Counter: ComNumber System Time: Year	Month Day Hour Minute Second Week	
	Slave Online Map	
	1: ● 9: ● 17: ● 25: ●	
Total Voltage: SOC:	2: ● 10: ● 18: ● 26: ●	
	3: ● 11: ● 19: ● 27: ●	
	4: 12: 20: 28:	
Total Current: Power:	5: • 13: • 21: • 29: •	
	b: • 14: • 22: • 30: •	
State of BMS	System Status	
Power On Low Power Fault Alarm Run Idle	24VState: MRelayState: Hall-Fault: EEPROM Fault: No24V: DisconFault: Bat-Fault: PCS Fault: PCS Fault: SwitchState: PreCurtlight PreRelyErr: No PCS: No PCS:	
Power On Low Power Fault Alarm Run Idle	24VState: MRelayState: Hall-Fault: EERROM Fault: No24V: DisconFault: Bat-Fault: PCS Fault: SwitchState: PreCurrHigh: PreRelyErr: No PCS: SwitchOff: PesCurrHigh: Res2: Res3: 1965/Fhame Texture Hate: CurrHigh Information: CurrHigh Information:	Dis:
Power On Low Power Fault Alarm Run Idle	24VState: MRelayState: Hall-Fault: EEROM Fault: No24V: DisconFault: Bat-Fault: PCS fault: SwitchState: PreCurrlight: Bat-Fault: No PCS: SwitchOff: PcsCurrlight: Res2: Res3: 16650charget TErr Hight: Currlight: Currlight: No 33 VErr Hight: Currlight: Currlight:	Dis:
Power On Low Power Fault Alarm Run Idle	24VState: MRelayState: Hall-Fault: EERROM Fault: No24V: DisconFault: Bat-Fault: PCS fault: SwitchState: PreCurHigh: PreRelyErr: No PCS: SwitchOff: PscCurHigh: Res2: Res3: 16650charget TErr High: CurHigh_OhargeDis CurHigher_DisCh No 3.3V VErr High: CurHigh_ChargeDis CurHigher_Charg SlaveFault: Res1: CurHigh_CoreCoTo: CurHigher_Force	Dis: eDis: ToCh:
Power On Low Power Fault Alarm Run Idle State of PCS and STS PCS Alarm Run Fault Standby Online Idle PowerOn Online	24VState: MRelayStates Hall-Fault: EERROM Fault: No24V: DisconFault: Bet-Fault: PCF-Fault: SwitchState: PreCurrlight: PreRelyErr: No PCS: SwitchOff: PcsCurrlight: Res3: Res3: 1865Orange: Ter Hight: Currlight_ChargeOis Currligher_Disch No3.3V VEr Hight: Currlight_ForceToCh: Currligher_ForceToCh: SlaveFault: Res1: Currlight_ForceToCh: Currlight_ForceStoLow:	Dis: eDis: foCh:
Power On Low Power Fault Alarm Run Idle State of PCS and STS PCS Alarm Run Fault Standby Online Idle PowerOn	ZuVState: MRelayState: Hall-Fault: EERROM Fault: No24V: DisconFault: Bat-Fault: PCS Fault: SwitchState: PreCurrligh: PerRelyErr: No PCS: SwitchOff: PesCurrligh: Res2: Res3: 18650charge: TErr High: Currligh_ChargeDis: Currligher_Disch No 33: VErr High: Currligh_ChargeDis: Currligher_ChargeDis: SlaweFault: Res1: Currligh_ForceToCh Currligher_ChargeDis: V-Highest: V-Higher: 18650cmar 18650cmar	Dis: eDis: ToCh:
Power On Low Power Fault Alarm Run Idle State of PCS and STS PCS Alarm Run Fault Standby Online Idle PowerOn Online	24VState: MRelayState: Hall-Fault: EEROM Fault: No24V: DisconFault: Bat-Fault: PCS Fault: SwitchState: PreCurHigh: PreRelyErr: No PCS: SwitchOff: PesCurHigh: Res2: Res3: 18550charge: TE:r High: CurHigh_DischDis: CurHigher_Disch No 33V VEr High: CurHigh_DrareDisC CurHigher_DischDischDisc V-Highest: V-Higher V-High: 18650clow: V-Lower: V-Low: M-RelyFault: T-Highest: T-Higher: T-High:	Dis: eDis: foCht
Power On Low Power Fault Alarm Run Idle State of PCS and STS PCS Alarm Run Fault Standby Online Idle PowerOn Online Comparison Manda	ZAVState: MRelayStates Hall-Fault: EERROM Fault: No24V: DisconFault: Bet-Fault: PCS-Fault: SwitchState: PreCurrHigh: PreRelyErr: No PCS: SwitchOff: PesCurrHigh: Res3: No PCS: SwitchOff: PesCurrHigh: CurrHigh_ChargeDis CurrHigher_DisCh No3.3V VEr High: CurrHigh_ChargeDis CurrHigher_ForceToCh: CurrHigher_ForceToCh: Viamest: V-Higher: V-High: M-RelyFourt: M-RelyFourt: V-Lowest: V-Lower: V-Low: M-RelyFourt: T-Lower: T-Low: T-Lowest: T-Lower: T-Low: Ins-Fault: Sourt:	Dis: eDis: ToCh:
Power On Low Power Fault Alarm Run Idle State of PCS and STS PCS Alarm Run Fault Standby Online Idle PowerOn Admin Mode	ZAVState: MRelayState: Hall-Fault: EERROM Fault: No24V: DisconFault: Bat-Fault: PCS Fault: SwitchOft: PreCurrHigh: PreRelyErr: No PC3: SwitchOft: PesCurrHigh: Res2: Res3: 1865Dhange TErr High: CurrHigh_ChargeDis CurrHigher_DisCh No3:3V VErr High: CurrHigh_ForesToCh CurrHigher_ChargeDis SlaveFault: Res1: CurrHigh_ForesToCh CurrHigher_ChargeDis V-Lowest: V-Lower: V-High: 1865Clows: V-Lowest: V-Lower: V-Low M-RelyFault: T-Lighest: T-Higher: T-High: RelyFault: T-Lower: T-Lower: T-Low Ins-Fault: CurrHigher: CurrHight: SD-Fault: CurrHight:	Dis: eDis: foCh:

Fig12. Admin password: jsyh1234

c. Detect local and setting

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i) Go to "Upgrade/Remote" tab;

ii) Click "Search", output Message will show the detected IP address of the PC, then click "LAN", and then click "Connect", the "Com_State" light will turn green after the battery system get connected with the application program;

JSYH BMS Remote and Local V2.1	
IP: Port: Puto Connect Restart Datalog Inde	x: 0 Connection: NoConnect! Com_State:
Rey fillo System fillo Dat Cruster fillo Volt/Teap fillo opgrade/re	Local Software Undate
Remote Software Opgrade	Local Software Opdate
Upgrade ID: 01 Upgrade_The_Board_Model	ID: 01 • The_Board_ModelType: MasterCPU •
Open 'hex' File Upgrade	Open hex file Upgrade Reset
Output Message:	Output Message: ===Device search=== IP address: 192.168.0.100====MAC address: D4 AD 20 4B 6B 0A Target IP address or domain name:192.168.0.99====Target port:344
a di landarada	(IISB)Device Network Configuration
Connection mode: Local mode	
The product SN: 000000000000000	Search LAN Local Remote
Committed to providing 'safe, efficient and reliable' energy solutions	to power generation side and user side. 2023-03-16 20:22:54

Fig13. Search-LAN-Connect-Com_State light turns green

iii) Go to "Bat&PCS Control" tab, enter" 30000" in command run time, then



USYH BMS Remote and Local V2.1	
IP: Port: PAuto Connect Restart DataLog Index:	Connection: NoConnect! Com_State: •
Key Info System Info Bat-Cluster Info Volt/Temp Info Upgrade/Remu	ote Wifi/GPRS Bat&PCSControl
Key Info System Info Bat-Cluster Info Volt/Temp Info Upgrade/Kem Debug mode Command control Command control Debug mode state Imposed On PCSComToLowPower S ToDebugloState Imposed On PCSComToLowPower S IsDebugMode Read Command control S Communication to Debug mode SocAverage: % Command run time : S InsuCalcEnable Read PCS Parameter PCS Settings Read S PCS Type : AcRateVolt MaxPower 30000 RatePower 30000 RatePrequency 500 Baudrate-485: 13200 • bps Baudrate-CAN: 500 • kbps AcRateVolt 400 • AcMaxCurrent 600 PCS addr : 1 S DCRateVolt S DCMaxCurrent 600 PCS addr : 0 S CRateVolt 600 • CMaxCurrent 600 •	ste Viii/GPKS Batk#PGSControl ystem control PCS control Jimposed_On PCS control JsysControl RunTime : JsysControl SocAverage: SocAverage: % ToCharge SocAverage: ToCharge SocRecheckFlag ToSisCalcEnable Read Write PatControl DissCalcEnable Read BatYop: Factory: CommCycle: S Read Write BatYpe: Factory: CommCycle: S Read Write BatYpe: Factory: CommCycle: S Read Write ChargeLimStartVolt: nV Read Write DisChargeStopSoc: % TemHighLimit: © Read SocLowToChargeScoc: SocLowToChargeScoc: % SocLowToChargeScoc: % SocLowToLowPowerSoc: %
Committed to providing 'safe, efficient and reliable' energy solutions to	2023-04-25 power generation side and user side. 10: 50: 16

click "Write" to let the battery system go into test mode;

Fig14. Enter 30000 in Command run time in case the HVCB-02A goes into sleep mode

IV) Setting "PCS parameter" to match the different brands of PCS, shown in Fig14. Here are the settings of different brands of PCS:

PCS Brand	PCS	PCS	Comm	Baudrate	Baudrate	PCS	PCS	STS
	type	Factor	-Type	-485	-CAN	Comm	addr	adr
		у				Cycle		
Deye/PYLON	0	1	1	19200	500	1	1	0
Goodwe	0	6	1	19200	250	1	1	0
/Sunways								
ATESS	0	8	1	19200	250	1	1	0
MEGAREVO/	0	5	1	9600	500	1	1	1
Solis								
Growatt	0	9	1	19200	500	1	1	0

d) Trail Run:

After all the parameters are set, start the PCS to Trail run and see if there are any alarm in red.

If there is an alarm, please check the connections and settings, if there are still

problems, please feel free to contact us.

e) go to remote mode:

After the PCS run well, go to "Upgrade/Remote" tab, click "Search" and

"Remote", then the battery system can be monitored remotely online.

E JSYH BMS Remote and Local V2.1		- 🛛
IP: Port: PAuto Connect Restart DataLog Inde	ex: 0 Connection: NoConnect! Com_State: ●	×
Key Info System Info Bat-Cluster Info Volt/Temp Info Upgrade/Re	emote Vifi/GPRS Bat&PCSControl	
Remote Software Upgrade	Local Software Update	
Upgrade ID: 01 Upgrade_The_Board_Model Master	ID: 01 - The_Board_ModelType:	MasterCPU 👻
Open 'hex' File Upgrade	Open hex file Upgrade	Reset
Output Message:	Output Message:	
Cloud IP/Address China -	State: progress:	
Connection mode: Local mode -	(USR)Device_Network_Configuration	
The product SN: 0000000000000000	Search LAN Local	Remote
Committed to providing 'safe, efficient and reliable' energy solutions	to power generation side and user side.	2023-04-25 11:30:52

Fig15. Search-Remote, then the battery system can be monitored remotely

2.2 Hardware Wiring and configuration for HVCB-03A and BAU

Each HVCB-03A connected to one series of HVB50096 batteries. Batteries are connected in series to achieve the expected voltage.

And connect all HVCB-03A in parallel to obtain the accumulated capacity.



Fig16. All HVCB-03A in parallel

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How to connect Cables to the Battery Terminal

Identify the positive B+ and negative B- terminals on your battery using the Power cable (color in orange). Terminals are labeled.

2. Verify you have all hardware to attach the cable properly. Check to ensure the bolt insert for the terminal fully seats and can be tightened to the proper torque.

3. Connect the cables to your battery terminals by removing the terminal bolts, inserting them through the eyelet of the proper cable, and reseating the bolt into the terminal block to the correct torque.

4. DO NOT finger-tighten the terminal bolts. They require a specific torque (60 in-lb/7nm) to ensure they do not loosen during operation. Failure to properly tighten the terminal bolts can result in serious damage and will void your warranty.

Power cable connection

- 1. Connect the positive terminal B+ to the negative terminal B- of the next battery, one after the other within the same series of battery.
- 2. Within the series of battery, connect one end of battery B+ terminal to HVCB B+ terminal. And connect the other end of the battery B- terminal to HVCB B- terminal.
- 3. Connect in parallel the PACK+ and PACK- of all HVCB-03A and to the PCS

Data (communication) cable connection

1. Connect HVCB BSU port to the CAN port of the first series connected battery.

2. Follow the connection sequence of power cable. Connect CAN port of battery to CAN port of next battery within the series. the last blank CAN port in the series should insert a CAN plug to match communications.

All battery information will be uploaded to HVCB through the BSU communication port.

- 3. Connect BMU to BMU port in series between HVCB-03A
- All information will be collected to BAU.
- 4. Connect BMU of one end of HVBC-03A to BAU "To BAT" port.
- 5. Connect the CTRL port to router to access the internet to achieve remote data management.

Application program is needed to install to configure the HVCB internet access.

Grounding

Connect the grounding screw with ground cables provided and then connect to the grounding

conductor.

Warning - DO NOT ground rack/cabinet or door to negative or positive terminal in the battery.

The electrical drawing of HVCB-03A system are shown as below example:



Fig17. Three Cluster Battery Module Connection Example





Fig18. Electrical drawing of HVCB-03A system

After all the cable connected well, start the system (start the breaker and then press the ON/OFF button on the BAU) and operate as below:

1) Network settings on PC(Automatically)

HVCB-03A and PC automatically get the IP address from the router (DHCP).

Windows default network settings shown as below.



Fig19. Network Setting: automatically get IP address

2) Application HV_System configures on Windows OS

Note: Application is supported on Windows OS only

a. Start HV_System application in PC

Open the folder and double click this icon: HV_System.exe to start the

Application program.



Fig20. Open HV_Master application

b. Login to Admin mode

In "Key Info" tab -> "Admin Mode" box, enter "jsyh5678" in "Admin

password" and then click "Login"

System16S_English					- 🗆
. 192.168.1.184 Port: 344 🗹 Auto Open Close DataLog His-i	ndex: 0	•	Connection: Con	nect! 192. 168. 1. 10	5:20108 Coming!
iys-Info System Master Slave, Air Meter PCS Remote/Upgrade Control	M-MCU S-	MCU	Environment		
System Counter: 0 Com	Number:	1	1		
	Battery clust	er ma			
		-			
482 08 V 00 00 %	1	9.	17: a 25. a	1, 9, .	17. a 25. a
Total Voltage: 402.50 V SOC: 55.55 A	21 .	10.	18:0 26:0	2: 10:	18:0 26:0
	3: •	11: 🜰	19: 27: 0	3: • 11:•	19: 27:
	4: •	12:0	20: 28:	4: 12:	20: 28:
Total Current: 0.18 A Power: 0.09 KW	5: 0	13:0	21: 29:	5: 13:	21: 29:
	7:	15:0	23: 30:	7: 15:	23: 30:
	8: 🌒	16: 🔴	24: 32:	8: 16:	24: 32:
State of BMS	System Statu	JS			
Power On Low Power Fault Alarm Run Idle	PCS Fault:		Sys-T samp Fault:	Temp Higher:	Switch-On:
	No PCS:	н	Temp highest:	Temp high:	Battery-On:
	No LIPS:	н	Temp lowest:	Temp low:	UPS Online:
	Insu Fault:	н	Trans-T high:	Exter-Fan alarm:	Switch-Off:
State of PCS and STS	S-MCU Fault:	н	18650 Alarm:	Clu-TSamp alarm:	No 24V:
State of FCS and STS	Temp Fault:	н	Battery alarm:	Sys-TSamp alarm:	E2prom Fault:
PCS STS	PCS Stop:		PCS alarm:	STS alarm:	18650 Fault:
Alarm Run Fault Standby Online Idle PowerOn Online	Meter Fault:		UPS alarm:	PCS temp alarm:	Bat-Fault:
	Clus-T Fault:	ш.	S-MCU alarm:	PCS trans alarm:	No Battery:
	ComStCharge:		StEmgCharge:	VMaxMinErrHigh:	THighBreakOff:
jsyh5678	THighComStDCS	:	THighEmeStDCS.	VHighBreakOff:	EMS-Faukt:
Admin Wode	TLowComStPCS:	Н	TLOWEmgStPCS:	VLowBreakOff:	SD-Fault:
Admin Password: ******* Logout	Fir_Err:	Н	Scram:	AirConditioningErr	Reservet:
Committed to providing 'safe, efficient and reliable' energy soluti	Fir_Err:	gener	ation side and use	arr.conditioningErr	2023-04-

Fig21. Admin Password: jsyh5678

c. Detect local and setting

i) Go to "Upgrade/Remote" tab;

ii) Click "Search", output Message will show the detected IP address of PC, and then click "LAN", and then click "Connect", the "Com_State" light will turn green

💀 System16S_English	– 🗆 X
IP: 192.108.1.184 Port: 344 Auto Open Close DataLog Sys-Info System Master Slave, Air Meter PCS Remote/Upgrade	His-index: 0 Connection: Connect!
Remote Software Upgrade	Local Software Update
Upgrade ID: 01 Vpgrade_The_Board_Model	ID: 01 v The_Board_ModelType: MasterCPU v
Open 'hex' File Upgrade	Open hex file Upgrade Reset
Output Message:	Output Message: ===Device search=== IP address: 192.168.1.106====MAC address: D4 AD 20 4F 38 99 Target IP address or domain name:172.16.13.37===Target port:344 Set success! Set success! The equipment Settings are completed, please make the next connection and upgrade!
Cloud IP/Address Clinia V	State: Waiting progress:
Connection mode: Local mode ~	(USR)Device_Network Configuration
The product SN:	Search LAN Local Remote
Committed to providing 'safe, efficient and reliable' energy	solutions to power generation side and user side. $\begin{array}{c} 2023-04-25\\ 15:17:57\end{array}$

after the battery system get connect with the application program;

Fig22. Search-LAN-Open, the connection light will turn green if connected

iii) Go to "Environment" tab Setting PCS parameter to match different brand of

PCS Brand	PCS	PCS	Comm	Baudrate	Baudrate	PCS	PCS	STS
	type	Factor	-Type	-485	-CAN	Comm	addr	adr
		у				Cycle		
Sinexcel 100kw	0	2	1CAN	19200	250	1	1	0
Goodwe	0	6	1CAN	9600	250	1	1	0
Sinexcel	0	7	1CAN	9600	250	1	1	0
Deye/PYLON	0	9	1CAN	19200	500	1	1	0
ATESS	0	10	1CAN	19200	250	1	1	0
MEGAREVO	0	11	1CAN	9600	500	1	1	0

PCS, shown in Fig. Here are the settings of different brand of PCS:

🛃 System16S_English	- 🗆 ×
	Erorr No Socket!
IP: 192.108.1.184 Port: 344 Auto Open Close Datalog His-	-index: 0 Connection: NoConnect!
Sys-Info System Master Slave Air Meter PCS Remote/Upgrade Control	ol M-MCU S-MCU Environment
Temp Config	BatConfigMap
Temp high limit : 0 C Air-Conditioner Control	BatType: ⁰ Factory: ⁰ CommCycle: ⁰ Read Write
Temp higher limit : 0 안 Cooling Temp: 0 안	RelayOnBatVotErr: 0 DisChargeLimStartVolt: 0
Temp highest limit : 0 °C Heating Temp: 0 °C	ChargeLimStartVolt: 0 DisChargeLimtRecoverVolt: 0 Read
Temp low limit : 0 ို Temp protect diff: : 0 ို	ChargeLimtRecoverVolt: 0 ChargeTimLowLimt: 0 Write
Temp lower limit : 0 °C Humidity protect diff: 0	ChargeLimtTime: 0 DisChargeLimtTime: 0
Temp lowest limit : 0 °C Read Write	Dischaussfausfaus
	Dischargestopsoc: 0 TemLowLimit: 0 Read
Air-conditioner Config Air-1	SocLowToChargeSoc: 0 SocLowToLowPowerSoc: 0 Write
Control Coolling: 0 °C Heating: 0 °C Humidity: 0	SocLowToChargeEndSoc: 0 Res: 0
🔤 🗸 Co-diff: 0 🕆 Hea-diff: 0 🕆 Hu-diff: 0	BTemHigh: 0 BTemLow: 0 VoltErrHigh: 0
Air-2	BTemHigher: 0 BTemLower: 0 ChargeRecoverSOC: 0
Control Coolling: C Heating: C Humidity: C	BTemHighest: 0 BTemLowest: 0 Rev: 0 Write
🔤 🗸 Co-diff: 0 🕆 Hea-diff: 0 🕆 Hu-diff: 0	PCS Parameter
Air.3	PCS Type: PCS Config
Control Coolling: 0 ° ° Heating: 0 ° Humidity: 0 Read	PCS-Factory: 6 GoodWe V RatePower 0 MaxPower 0 Addr
Auto V Co-diff: 0 °C Hea-diff: 0 °C Hu-diff: 0	CommType: 1CAN
Air-4	Baudrate-CAN: 250 V MaxOPercent 0 MinOPercent 0 Read
Control Coolling: 0 C Heating: 0 C Humidity: 0	PCSCommCycle:1 STSFlag DCRateVolt 0 Reserve 0
kuto ∨ Co-diff: 0 ℃ Hea-diff: 0 ℃ Hu-diff: 0 Writ	PCS Addr: 1 STS Addr: 0 DCRateCurrent 0 DCMaxCurrent 0
Air-5	Read Write
Control Coolling: C Heating: C Humidity: C	
kuto ∨ Co-diff: 0 ℃ Hea-diff: 0 ℃ Hu-diff: 0	PespanonAiriemp: 0 IransformeriempLimit: 0 Read Write
	Reserve:
Committed to providing 'safe, efficient and reliable' energy solu	tions to power generation side and user side.
	15:39:43

Fig23. PCS Parameter Settings

d. Number of high voltage control box setting

GREENRICH

Setting the number of high voltage control box in "PCS" tab -> "Master Map" box, for example, choose "0" if the there is only one HVCB-03A, choose "1" if there are two HVCB-03A, and so on, in total, we can set 32 HVCB-03 boxes in the system.

🖳 System16S_English	- 0	×			
IP: 192.108.1.184 Port: 344 Auto Open Close DataLog His-index: 0 Sys-Info System Master Slave Air Meter PCS	Connection: Connect!				
PCS state Alarm Run Fault Standby Online Idle PowerOn OnGrid OffGrid	BMS_TO_PCS info Total Voltage: 0 V Total Current: 0 A Power: 0.15 KV SOC: 90.74 Max char Cur: 104.5 A Max Discha Cur: 104.5 Max char P: 50.19 KW Discha P: 50.19	A			
PCS info Frequency 0 Hz Power Factor 0 Sum_P 0 KV Sum_Q 0 KV Sum_Apparent_F 0 KV Volt_PU 0 V Volt_LU 0 V P_PU 0 KV P_LU 0 KV Cur_PU 0 A Cur_LU 0 A Q_PU 0 KV Q_LU 0 KV	Unit number、Wakeup flag、Wakeup time OnGoid OffGrid Key Key UnitNum: U Charge paln Charge paln 18650 Low 18650 Low Wakeup time: Auto activate Auto activate SridAlive GridAlive GridAlive PowerGenerateAlive Read Write OffGridKey OffGridKey PCS_Comm_WakeUp PCS_Comm_WakeUp	e			
Volt_PV 0 V Volt_LV 0 V P_PV 0 KV P_LV 0 KV Cur_PV 0 A cur_LV 0 A q_PV 0 KV q_LV 0 KV Volt_PW 0 V volt_LW 0 V P_PW 0 KV P_LW 0 KV Cur_PW 0 A cur_LW 0 A q_PW 0 KV q_LW 0 KV	MasterMap 0 8 16 24 1 9 17 25 2 10 18 26 Read 3 11 19 27 4 12 20 28 5 13 221 29 Write 6 14 22 30 7 15 23 31				
Committed to providing 'safe, efficient and reliable' energy solutions to power generation side and user side. $17:34:15$					

Fig24. Number of HVCB-03A box setting

e) Trail Run:

After all the parameters are set, start the PCS to Trail run and see if there are any alarm.

If there is an alarm, please check the connections and setting, if there are still problems, please feel free to contact us.

And record the SN number of the BAU as below

💀 System16S_English	- 🗆 ×
IP: 192.108.1.184 Port: 344 ✓ Auto Open Close □ Datalog Hi Sur Info Custor Matter PC5 Restrict Matter Cost Cost	s-index: 0 ÷ Connection: Connect! • [192.166.1.108.20108 Coming!
system waster slave. Air weter PCS Remote/opgrade Cont	No MCO S-MCO Environment
Demand power control Sys ConfigMap ProductSN:	Date of manufacture
AutikenaxpowerLint: 0 Kva Read	Addr: 0 0 Year 0 Month 0 Day Read Write
Demand\SocLowLimt: 0 %	Fault mark
DemandPower: 0 Write Read Writ	
OffGrid Control	Switch off Bat-fault 18650 alarm
Offerid VoltSet: 0	E2prom fault PCS fault PCS alarm
Counter: 0 Counter: 0	18650 fault NoPCS UPS alarm
OffGridFreqSet: 0 Hz Write	Insu fault UPS fault S-MCU alarm
FreqLimtStartVolt: 0	
FreqLimtErr: 0 Read	Fault protection time Fault recovery time
FreqLimtRecTime: 0 Writ	TO: 0 S T1: 0 S Read TO: 0 S T1: 0 S Read
Insu Limit: 0 ΜΩ	T2:0 S T3:0 S Writ T2:0 S T3:0 S Writ
Offload SOC : 0 % Read Read Write	Ammeter address settings
Low power SOC : 0 % Writ	Address Ratio
Comm Timpout limit	Netera Read
Offload Time: 0 S Read	SoftwareSN:
Low power time: 0 S Writ Timeout limit : 0 S	Meters 00000000 Pead
	Meter4
Offload voltage: 0 mV Read Read Write	Meter5
Lowpower voltage: 0 mV Writ	Read Write
Committed to providing 'safe, efficient and reliable' energy sol	utions to power generation side and user side. 2023-04-25

Fig25. PCS Parameter Settings

f) go to remote mode:

After the PCS run well, go to "Upgrade/Remote" tab, click "Search" and

"Remote", then the battery system can be monitored remotely online.

System16S_English		- 🗆 ×
P: Port: Auto Open Close DataLog Sys-Info System Master Slave、Air Meter PCS Remote/Upgrade	His-index: 0 Connection: NoConnect! Control M-MCU S-MCU Environment	\$
Remote Software Upgrade	Local Software Update	
Upgrade ID: 1 Vpgrade_The_Board_Model Master ~	ID: 01 - The_Board_ModelType:	MasterCPU ~
Open 'hex' File Upgrade	Open hex file Upgrade	Reset
Output Message:	Output Message:	~
Cloud IP/Address Germany ~		
	State: Waiting progress:	
Connection mode: Remote mode	(USR)Device_Network_Configuration	
The product SN:	Search LAN Local	Remote
Committed to providing 'safe, efficient and reliable' energ	y solutions to power generation side and user side.	2023-04-25 17:18:41

Fig26. Search-Remote

3. APP download and application

3.1 App download and register



Fig27. Batterich App download

Use the QR code to download app and register with your own e-mail

Batterich Battery

Login —	Register
Please enter the email Please enter password	
	•
•	

Fig28. Register with E-mail account

3.2 App application

a) Bind your own device, there are three ways to bind, as below





b) After the device is binded, the information of the whole system can be checked on your mobile phone.



Fig30. Information Interface