



IS001 Battery Energy Storage System

Multi String Battery System MSBS



Installation Manual

V1.1

Introduction

This installation manual provides comprehensive instructions for installing, commissioning, maintaining, and troubleshooting a Battery Energy Storage System (BESS). The scope of this manual covers the entire installation process, from site preparation to final commissioning, and includes essential safety precautions and requirements for connecting the system to the PCS.

Safety

The Greenrich BESS is a high-voltage DC system, operated by skilled/qualified personnel only. Read all safety instructions carefully prior to any work and observe them at all times when working on the system.

Installation and Storage

- This battery set is to be installed only indoors.
- Avoid direct sunlight and store in a dry location to prevent damage from humidity.

Symbol

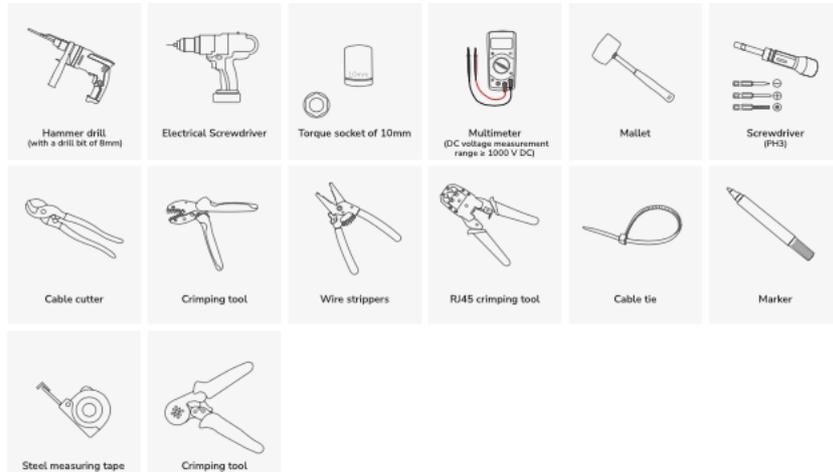
symbol	description
 DANGER	Indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.
 CAUTION	Caution, risk of electric shock.
 WARNING	Indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.
 CAUTION	Indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.
NOTICE	Indicates a potentially hazardous situation which, if not avoided, could result in equipment damage, data loss, performance deterioration, or unanticipated results. NOTICE is used to address practices not related to personal injury.

DANGER

- Before installing, operating, and maintaining the equipment, read this Installation Guide and User Manual and follow up on all the safety instructions on the equipment and in this document.
- Personnel who plan to install or maintain the equipment must receive thorough training, understand all necessary safety precautions, and be able to correctly perform all operations.
- Personnel who will install, operate, and maintain the equipment, including operators, trained personnel, and professionals, should possess the local and national required qualifications in special operations such as high-voltage operations and operations of special equipment.
- Before connecting cables, ensure that the equipment is intact. Otherwise, electric shocks or fires may occur.
- Always disconnect the equipment before installing, operating, and maintaining it from all power.
- Wear proper PPE (Personal protective equipment) before any operations.
- Batteries deliver electric power, resulting in burns or a fire hazard when short-circuited or wrongly installed.
- Lethal voltages are present in the battery terminals and cables. Severe injuries or death may occur if the cables and terminals are touched.

Preparation Tool and Instrument

Essential Tool



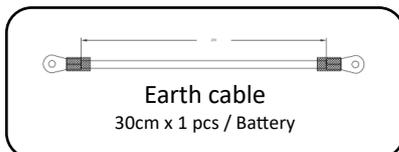
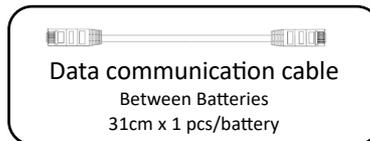
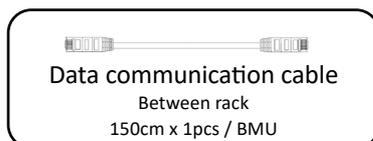
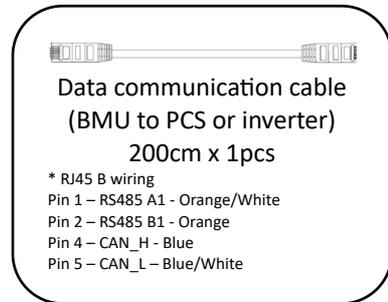
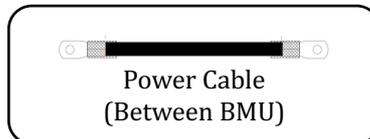
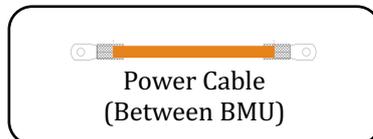
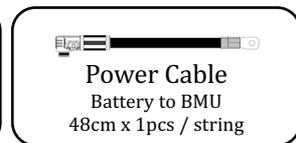
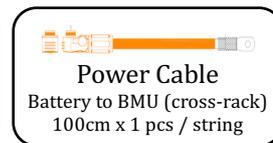
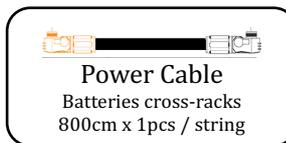
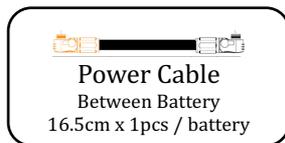
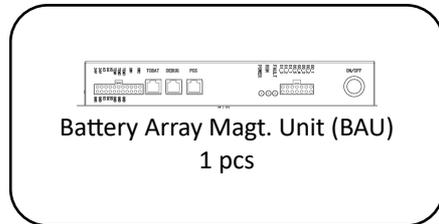
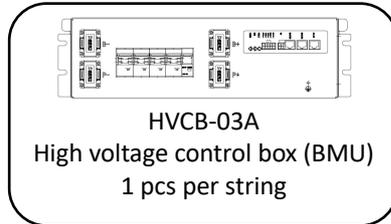
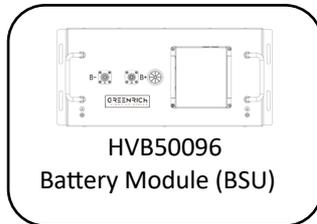
Safety Gear



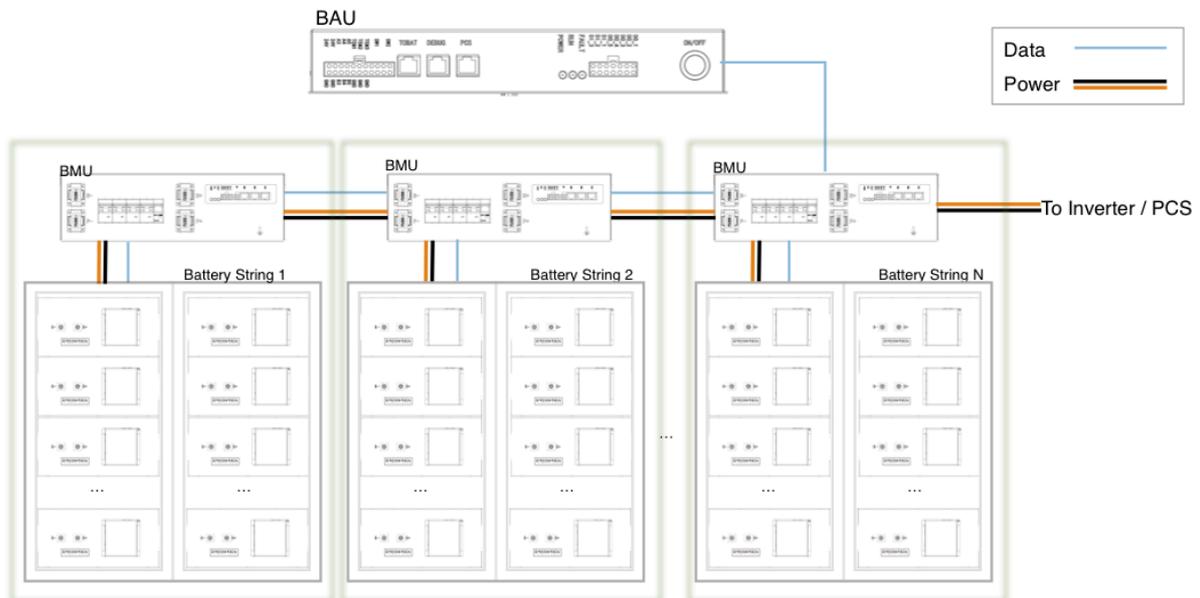
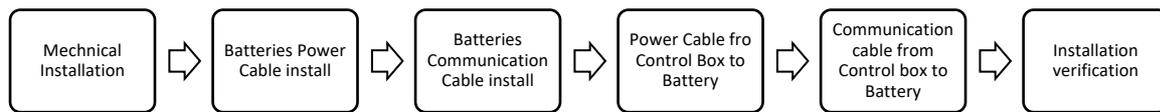
Material list

NOTICE

- Check the outer packing for damage, such as holes and cracks, before unpacking, and check the equipment model. If any damage is found, do not unpack the package and contact the supplier as soon as possible.
- After unpacking, check that the deliverables are intact and complete.
- If any item is missing or damaged, contact the supplier. It is recommended to keep the original package for further needs.



Installation environment and process

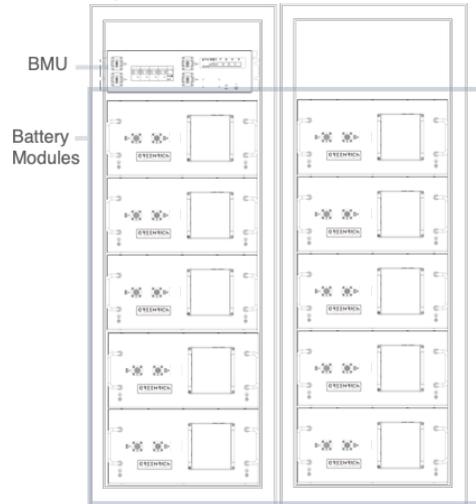
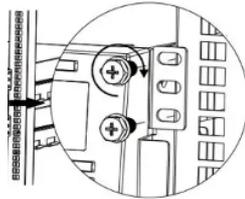
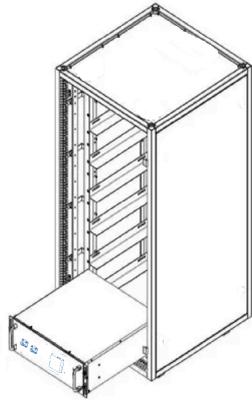


! WARNING

- This battery set is to be installed only indoors.
- Reserve enough clearance around equipment to ensure sufficient space for installation and heat dissipation.
- Assign enough personnel (two or more) to move the battery to avoid personal injury and CAUTION battery damage.
- The single battery module is about 50kg. If without handling tools must more than 2 men to handling it.

1

Install and secure HVCB-03A (BMU) and all Battery modules to racks



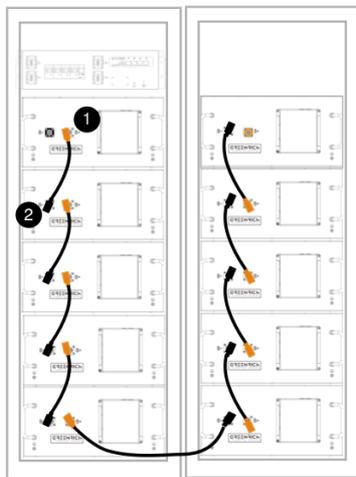
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Install Power Cable in Series

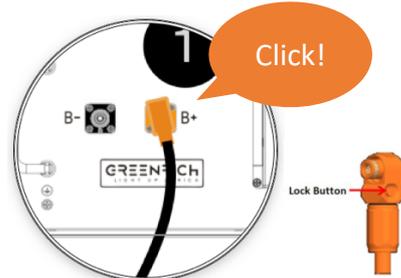
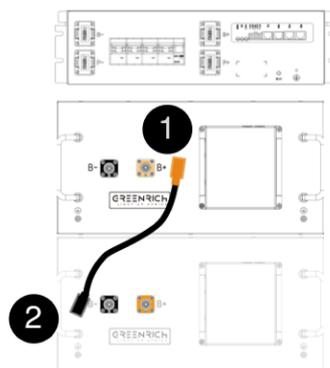


! DANGER

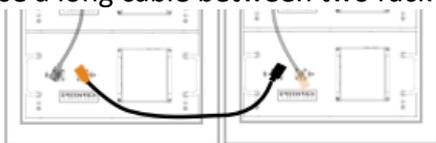
All the plugs and sockets of the power cables must be orange to orange and black to black. The battery system is high voltage DC system. Must make sure the grounding of the rack is stable and reliable.



Plug cable header **B+ (Orange)** of the 1st battery module (nearest to BMU) and the **B- (Black)** of the 2nd module



Use a long cable between two rack

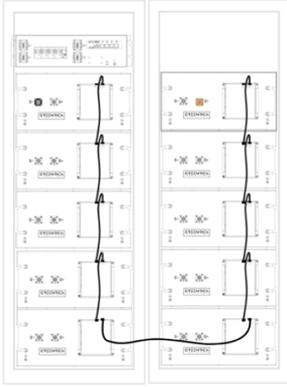


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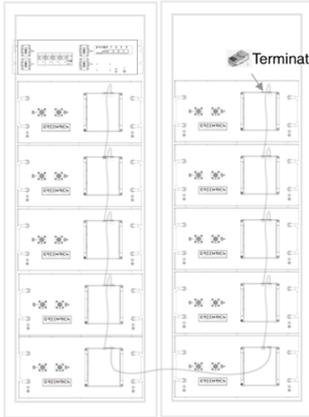
Install Data Communication Cables



! CAUTION A wrong communication cable connection will cause the battery system failure.

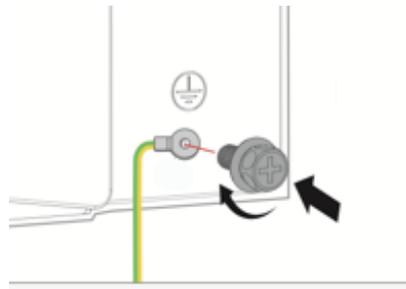
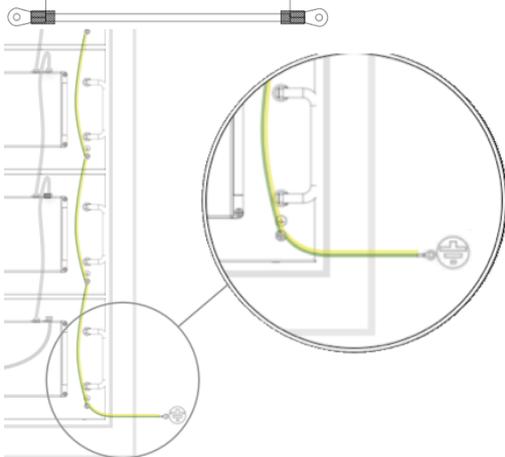


Battery Data termination plug insert at the end of the battery series



4

Grounding Cable



! DANGER

- Battery terminals, and cables connected are live and cannot be switched off. When connected in series have lethal high DC voltage. Must be careful to handle the Power Plugs.
- Make sure the Control Box (HVCB-02A) is switched off.

5

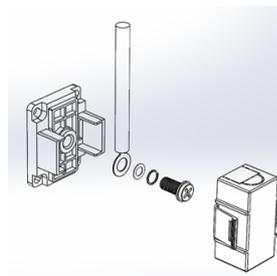
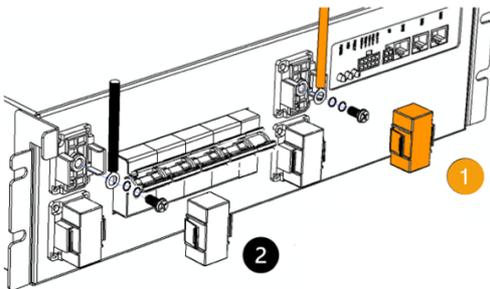
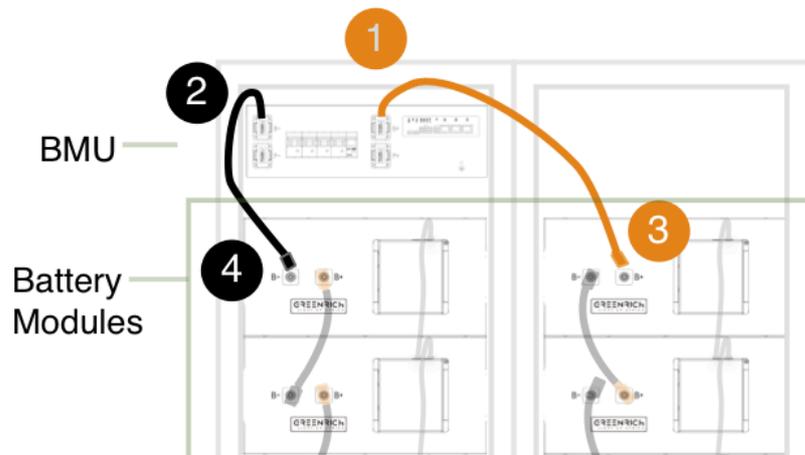
HVCB-03A (BMU) connect to Battery



⚠ DANGER

The positive and negative terminals of the battery series can be over 600V which can cause serious injury or death. Exercise extreme caution.

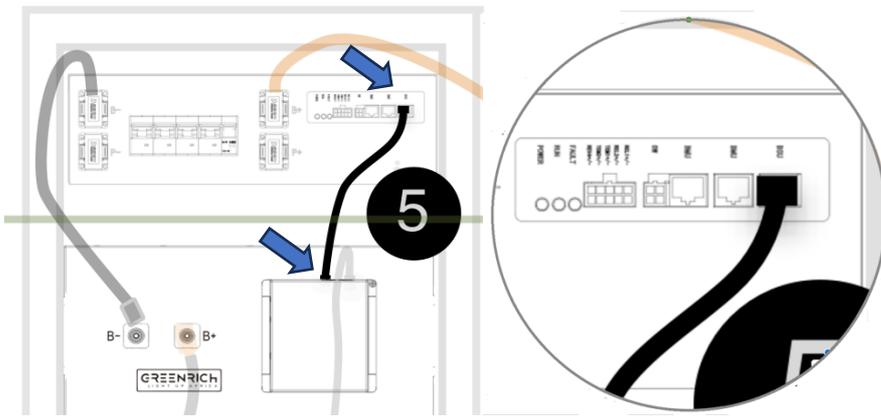
Make sure the BMU is switched off. Be sure to securely tighten all screws and cover the case as in step 1 and 2 before connecting the power cable to the battery terminals. Follow them strictly to avoid any risks



⚠ CAUTION Terminal bolts 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 the data communication cable to the first battery in the string





6

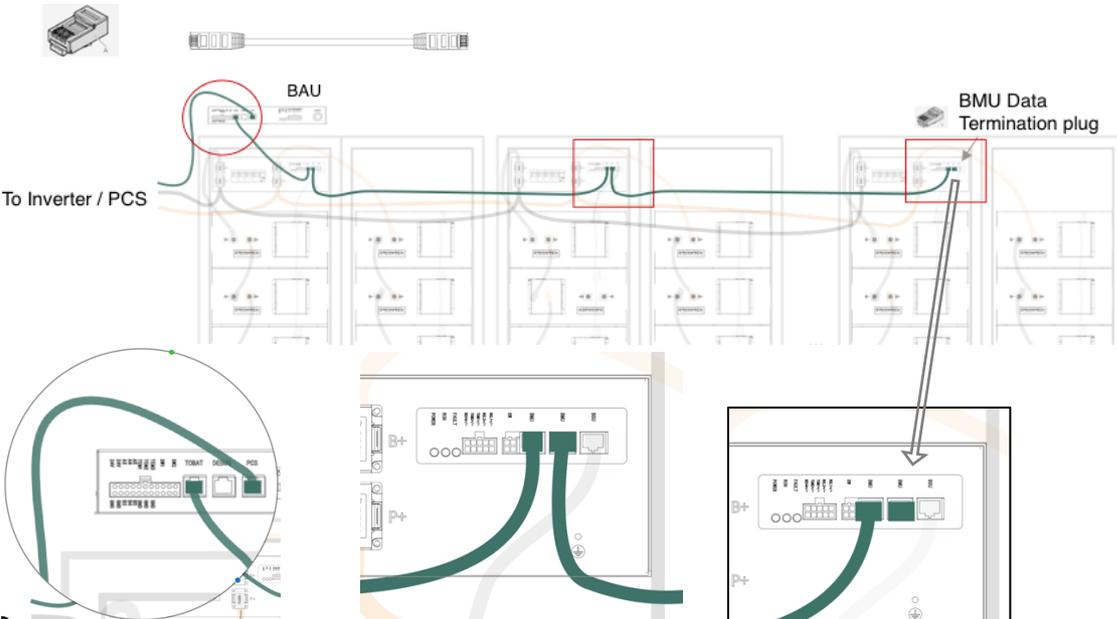
BMU and BAU connections



Power cables connect in series between BMUs



Connect data cables between BMUs and BAU



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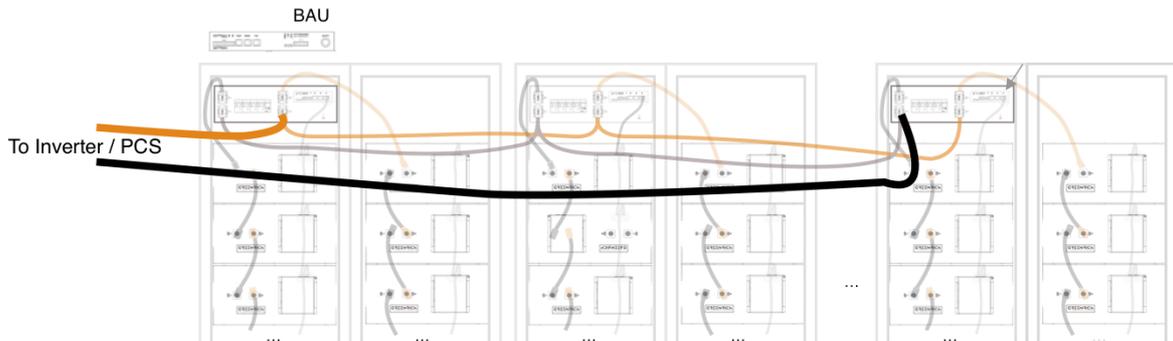
Connect to PCS

Connect Power Cables from BMU to PCS



It is recommended to connect the power cable to both the first and last BMS modules in the string, rather than connecting it to the same BMS module.

This approach ensures a more balanced power distribution and optimal performance within the BMS system.



Connect data communication Cables from BAU to PCS



7

Verification

When everything is all set, turn on the Control box to see if the connectivity works fine. Pull up the green switch to turn on the Control Box



RUN LED turn on (Green)

Connect Control Box to PCS

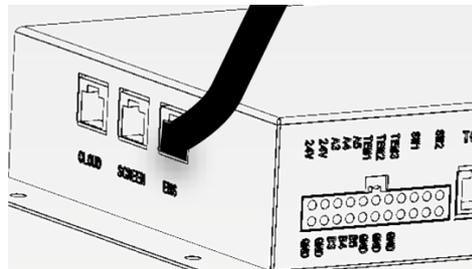
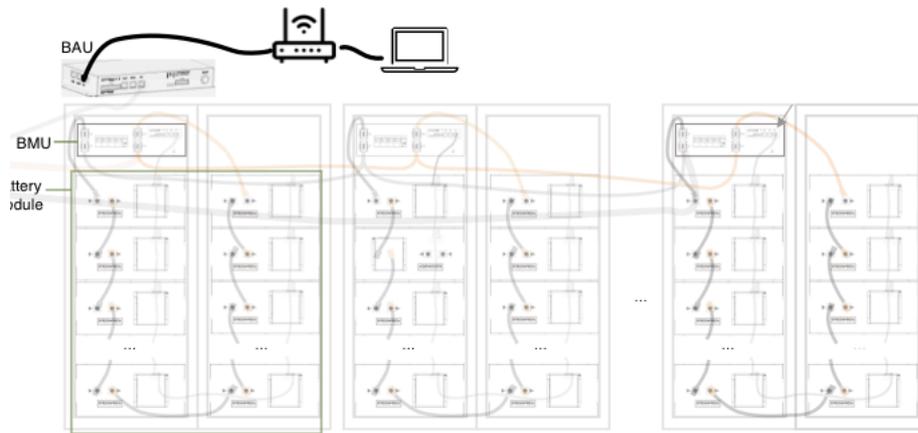
Switch off the control box and proceed to connect to the inverter or PCS.



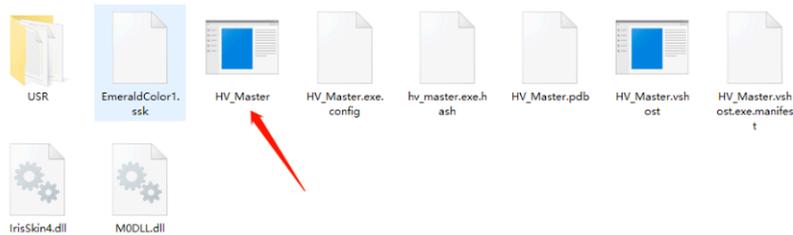
BMU Initial configuration



Connect the Control Box (BMU) to a router with internet access (remote access). Or connect the Windows PC to the same router (direct access)

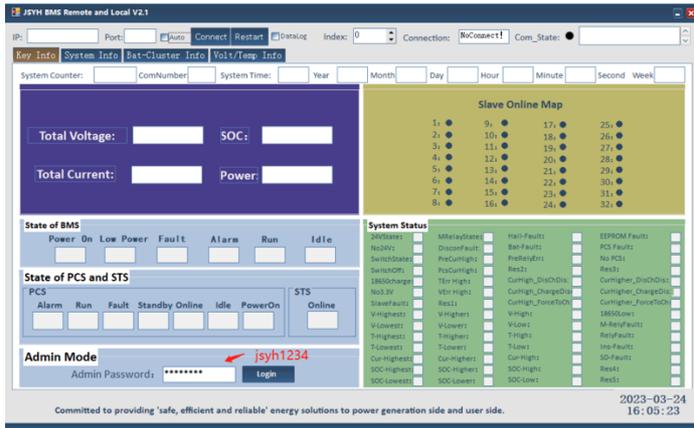


Start HV_Master.exe application on Windows



Login to Admin mode

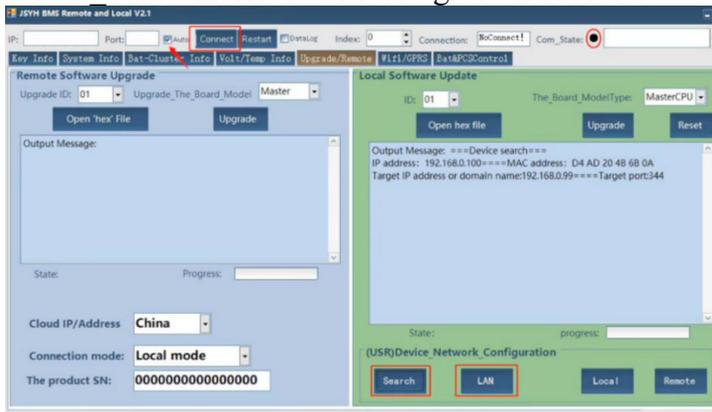
In "Key Info" tab -> "Admin Mode" box, enter "jsyh1234" in "Admin password" and then click "Login"



Connect BMU

1. “Upgrade/Remote” tab
2. Click “Search” to search IP, the output Message shows the detected IP address of PC.
3. Click “LAN” and then “Connect

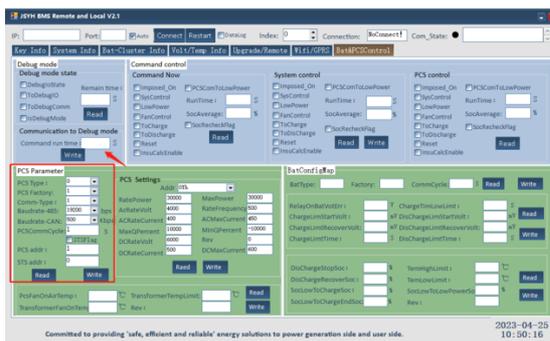
“Com State” indicator will turn green if success.



if connect the PC->Router->BMU through LAN. Suggest turning off PC wifi as the automatic IP detection may falsely detect wireless network IP address instead of LAN.

Configure PCS

1. Enter “Bat&PCS Control” tab, enter“ 30000” and click “Write” to activate the debug mode



2. Setting “PCS parameter” to match your PCS

PCS Brand	Type	Factor y	Comm - Type	Baudrate - 485	Baudrate - CAN	Comm Cycle	PCS Addr	STS adr
Deye/PYLON	0	1	1	19200	500	1	1	0
Goodwe / Sunways	0	6	1	19200	250	1	1	0
ATESS	0	8	1	19200	250	1	1	0
MEGAREVO / Solis	0	5	1	9600	500	1	1	1
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.

e) Go to remote mode:

After the PCS runs well, go to the “Upgrade/Remote” tab, click “Search” and “Remote”, then the battery system can be monitored remotely online.

