



Lithium-Ion Phosphate Energy Storage System
RB-HVS-XXX-50/74
Operation Manual

Battery storage system. Please read this manual before you install the battery and follow the instruction carefully during the installation process. Any confusion, please contact Pylontech immediately for advice and clarification.

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1. Safety

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

Incorrect operation or work may cause:

- injury or death to the operator or a third party;
- damage to the system hardware and other properties belonging to the operator or a third party.

Skills of Qualified Personnel

Qualified personnel must have the following skills:

- training in the installation and commissioning of the electrical system, as well as the dealing with hazards;
- knowledge of this manual and other related documents;
- knowledge of the local regulations and directives.

1.1 Symbol

	Danger	Lethal voltage! ● Battery strings will produce high voltage DC power and can cause a lethal voltage and an electric shock. ● Only qualified person can perform the wiring of the battery strings.
	Warning	Risk of battery system damage or personal injury ● DO NOT pull out the connectors while the system is operating! ● De-energize from all multiple power sources and verify that there is no voltage.
	Caution	Risk of battery system failure or life cycle reduction.

	Symbol in label	Read the product and operate manual before operating the battery system
	Symbol in label	Danger safety!

	Symbol in label	Warning electric shock!
	Symbol in label	Do not place near flammable material!
	Symbol in label	Do not reserve connection the positive and negative
	Symbol in label	Do not place near open flame
	Symbol in label	Do not place at the children and pet touchable area
	Symbol in label	Recycle label

	Symbol in label	Label for Waste Electrical and Electronic Equipment (WEEE) Directive (2012/19/EU)
	Symbol in label	The certificate label for EMC
	Symbol in label	The certificate label for safety by TUV SUD

 Type Approved Safety Regular Production Surveillance www.tuv.com ID 0000000000	Symbol in label	The certificate label for safety by TUV Rheinland
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Danger: Batteries deliver electric power, resulting in burns or a fire hazard when they are short circuited, or wrongly installed.

Danger: Lethal voltages are present in the battery terminals and cables. Severe injuries or death may occur if touch the cables and terminals.



Warning: DO NOT open or deform the battery module, otherwise the product will be out of warranty scope

Warning: Whenever working on the battery, wear suitable personal protective equipment (PPE) such as rubber gloves, rubber boots and goggles.

Warning: System working temperature range: 0°C ~ 50°C; Optimum temperature: 18°C ~ 28°C. Out of the working temperature range may cause the battery system over / low temperature alarm or protection which further lead to the cycle life reduction as well as. It will affect the warranty terms as well.



Caution: Improper settings or maintenance can permanently damage the battery.

Caution: Incorrect inverter parameters will lead to a further faulty/damage to battery.



Reminding:

- 1) It is necessary to read the user manual carefully before installing or using battery. Failure to do so may result in electrical shock, serious injury or death or can damage the battery, potentially rendering it inoperable.
- 2) If the battery is stored for long time, it is required to charge every 6 months and the SOC should higher than 90%
- 3) Battery needs to be recharged within 12 hours after fully discharged.
- 4) Do not expose cable outside.

2. System Introduce

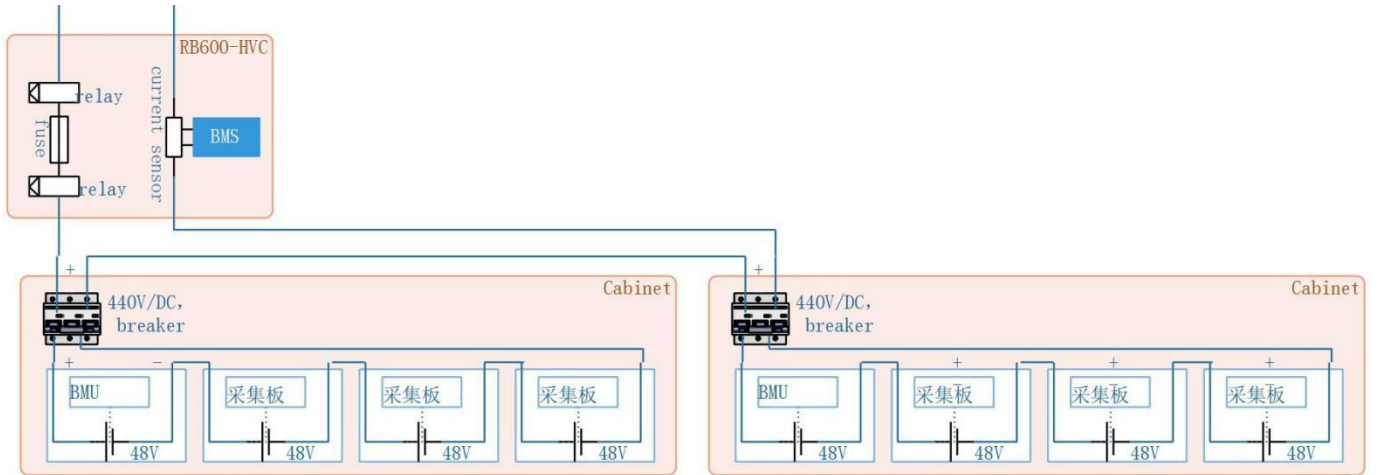
2.1 The parameter of system

No.	Battery Controller Name	RB600-40S
1	Handle	YES
2	12V output for FANs	YES
3	Dimension WDH/mm	400*260*132
4	Weight/ kg	7

No.	Product Type	RB-HVS- 192-50	RB-HVS- 240-50	RB-HVS- 288-50	RB-HVS- 336-50	RB-HVS- 384-50
1	Battery System Capacity(kWh)	9.6	12.0	14.4	16.8	19.2
2	Battery System Usable Capacity(kWh)	8.64	10.8	12.96	15.12	17.28
3	Battery System Voltage(Vdc)	192	240	288	336	384
4	Battery Module Name	H48050				
5	Battery Module Quantity(pcs)	4	5	6	7	8
6	Battery System Charge Upper-Voltage(Vdc)	219	273.75	328.5	383.25	438
7	Battery System Discharge lower-Voltage(Vdc)	162	202.5	243	283.5	324
8	Weight (kg)	140	205.5	228	250.5	273
9	Operation Life(Years)	15 years				
10	Warranty	10 years				
11	Operation Temperature(°C)	Charge: 0~50, 30A; 50~55: 10A Discharge: -10~50, 30A; 50~55:10A				
12	Storage Temperature(°C)	20~60				
13	Product Certificate	IEC62619, IEC62477-1, IEC62040, CE				
14	Transfer Certificate for battery module	UN38.3				
15	Battery System Current(Standard)	10				
16	Battery System Current(Normal)	25				
17	Battery System Current(Max.)	30				
18	Battery System DC Rate Power(kW)	4.8	6.0	7.2	8.4	9.6
19	Battery System DC Max.DC Power(kW)	5.76	7.2	8.64	10.08	11.52
20	Efficiency %	96				
21	Depth of discharge %	90				
22	Communication	CAN, MODBUS RTU				
23	System protection class	IP54				

No.	Product Type	RB-HVS- 192-74	RB-HVS- 240-74	RB-HVS- 288-74	RB-HVS- 336-74	RB-HVS- 384-74
1	Battery System Capacity(kWh)	14.21	17.76	21.31	24.86	28.42
2	Battery System Usable Capacity(kWh)	12.79	15.98	19.18	22.37	25.59
3	Battery System Voltage(Vdc)	192	240	288	336	384
4	Battery Module Name	H48074				
5	Battery Module Quantity(pcs)	4	5	6	7	8
6	Battery System Charge Upper-Voltage(Vdc)	219	273.75	328.5	383.25	438
7	Battery System Discharge lower-Voltage(Vdc)	162	202.5	243	283.5	324
8	Weight (kg)	178	253	285	317	349
9	Operation Life(Years)	15 years				
10	Warranty	10 years				
11	Operation Temperature(°C)	Charge: 0~50, 30A; 50~55: 10A Discharge: -10~50, 30A; 50~55:10A				
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20	Efficiency %	96				
21	Depth of discharge %	90				
22	Communication	CAN, MODBUS RTU				
23	System protection class	IP54				

2.2 System Diagram



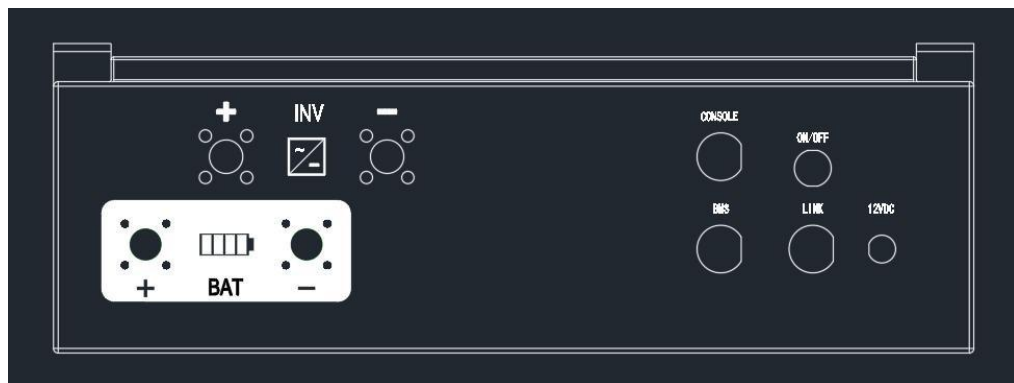
the RB-HVS-XXX-50/74

For 2~4 battery modules, use 1 cabinet

For 5~8 battery modules, use 2 cabinets

Each cabinet has one breaker.

2.3 Panel



Port	Name	Function
Positive	BAT +	Battery +
Negative	BAT -	Battery -
Positive	INV +	DC side +
Negative	INV -	DC side -

RJ45	Console	For debug
RJ45	BMS	Communication
RJ45	LINK	Connect battery module
Button	ON/OFF	Power ON/OFF BMS
2 PIN	12V/DC	12V/DC for FANs NOTE: RB600

3. Installation

Please check every installation step in detail at <**Annex 2: Installation and System Turn ON Progress List**> during the install.

3.1 Tools

The following tools are required to install the battery pack:

 Wire Cutter	 Crimping Modular Plier	 Cable Ties
 Screw Driver Set	 Electric Screw Driver	 1000VDC Multimeter
 Adjustable Wrench	 Sleeve Piece	

NOTE

Use properly insulated tools to prevent accidental electric shock or short circuits.

If insulated tools are not available, cover the entire exposed metal surfaces with available insulated alternatives, except their tips, with electrical tape.

3.2 Safety Gear



Insulated gloves



Safety goggles



Safety shoes

It is recommended to wear the following safety gear when dealing with the battery pack

3.3 System Working Environments Checking

3.3.1 Cleaning



The battery system has high voltage connectors. The cleaning condition will affect the isolation performance of the system.

Before installation and system power on, the dust and iron scurf must be removed to keep a clean environment. And the environment must have certain anti-dust ability.

Dust and humidity condition shall be regularly checked during the system continuous operation. If it's detected the above two elements are not in the working range, the system shall be stopped for cleaning purpose.



Danger: the power cables and plugs will have high voltage DC power from serial connected battery modules (battery module has active DC power at terminal all the time), must be careful to handle the Power Plugs.

3.3.2 Temperature



System working temperature range: 0°C ~ 50°C; Optimum temperature: 18°C ~ 28°C.

Caution: Out of the working temperature range will cause the battery system over / low temperature alarm or protection which further lead to the cycle life reduction.



3.3.3 Cooling System

It is essential to equip a cooling system to keep the battery system in a relevant temperature range.

Caution: Out of the working temperature range will cause the battery system over / low temperature alarm or protection which further lead to the cycle life reduction.



3.3.4 Heating System

It is essential to equip a heating system to keep the battery system in a relevant temperature range.

If the environment is lower than 0°C, the system may be shut down for protection purpose. It is necessary to open the heating system at first.

Caution: Out of the working temperature range will cause the battery system over / low temperature alarm or protection which further lead to the cycle life reduction.



3.3.5 Fire-extinguisher System

The room must be equipped with fire-extinguisher system for safety purpose.

The fire system needs to be regularly checked to be in normal condition. Refer to the using and maintenance requirements please follow local fire equipment guidance.



3.3.6 Grounding System

Before the battery installation must make sure the grounding point of the basement is stable and reliable. If the battery system is installed in an independent equipment cabin (e.g. container), must make sure the grounding of the cabin is stable and reliable.

The resistance of the grounding system must $\leq 100\text{m}\Omega$

3.3.7 Guide to AS5139 installation requirements

For AS5139:2019 compliance, the RB-HVS Series is defined as a pre-assembled battery system. AS5139 prescribes allowable battery system locations and fire-proofing requirements. AS5139 is referenced in AS4777.1, AS3000 and the BCA, and all new or modified battery system installations must comply.

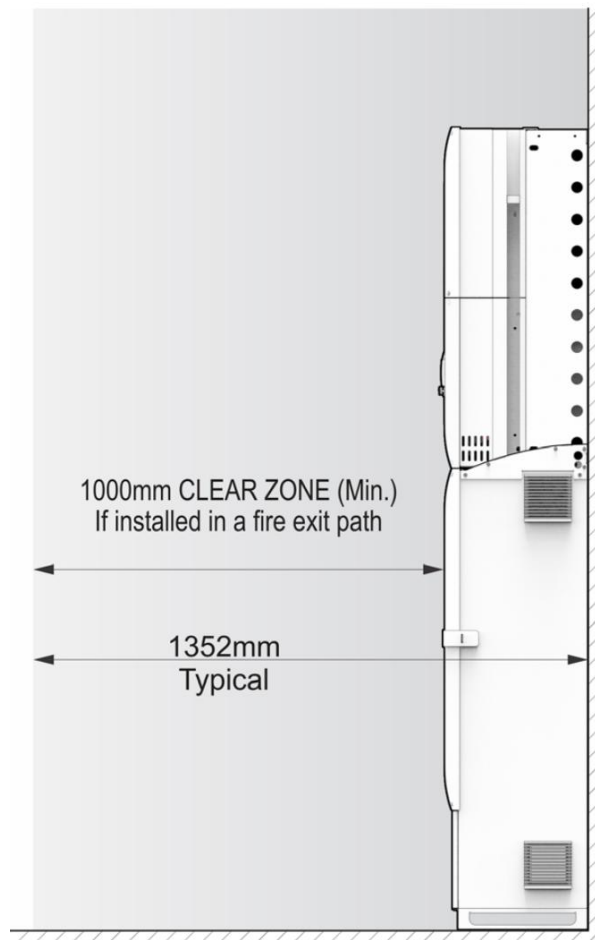
The installer is responsible for completing installation in accordance with all relevant standards and regulations. The key AS5139 requirements for RB-HVS Series installation are:

- Install the RB-HVS Series against a wall in a clear zone containing no windows, doors, exits, vents, or appliances other than the Redback ST10000 inverter.

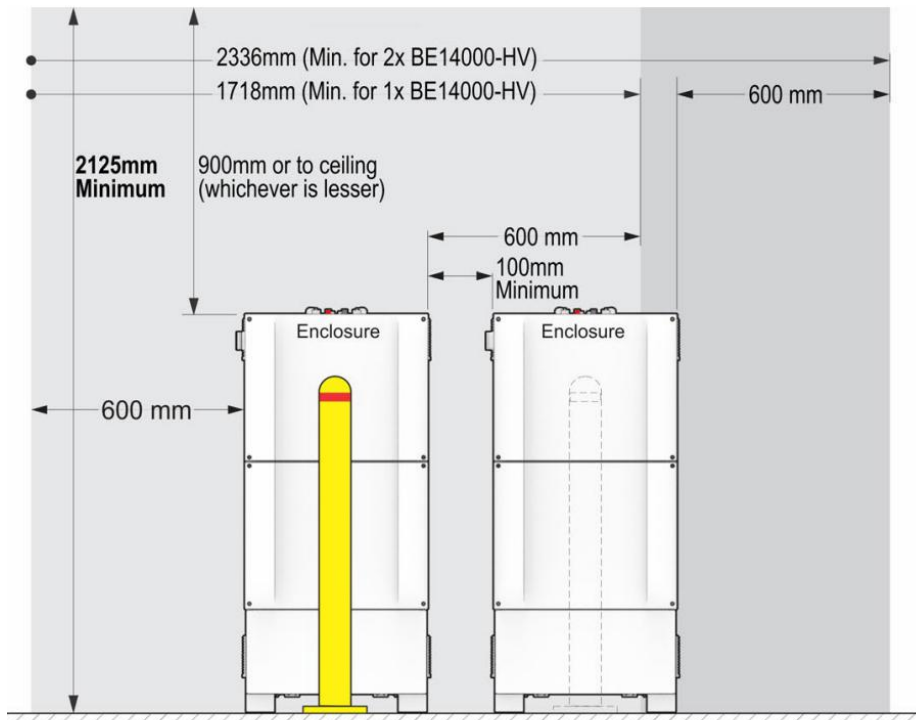
- Include in the zone any wall within 600mm of the sides and 900mm above the RB-HVS Series .
 - Fireproof any combustible wall in the zone if a habitable room exists on the opposite side of that wall. Fire-proofing materials must comply with AS1530.
 - Fireproof any structure e.g. ceiling or eave less than 900mm above the RB-HVS Series to the full width of the clear zone and the lesser of 950mm from the wall or to the edge of the structure. •
- Use fire-retardant sealant to seal all penetrations through the wall that exceed 5mm internal diameter.
- Ensure 1m clearance in front of the RB-HVS Series if it is located on a fire exit path.
 - Protect the RB-HVS Series from vehicle impact if this is a likely occurrence– use a bollard or similar device.

Caution: RB-HVS system is in-door design. please avoid frost or direct sunlight. Out of the working temperature range will cause the battery system over / low temperature alarm or protection which further lead to the cycle life reduction. According to the environment, the cooling system or heating system should be installed if it is necessary.

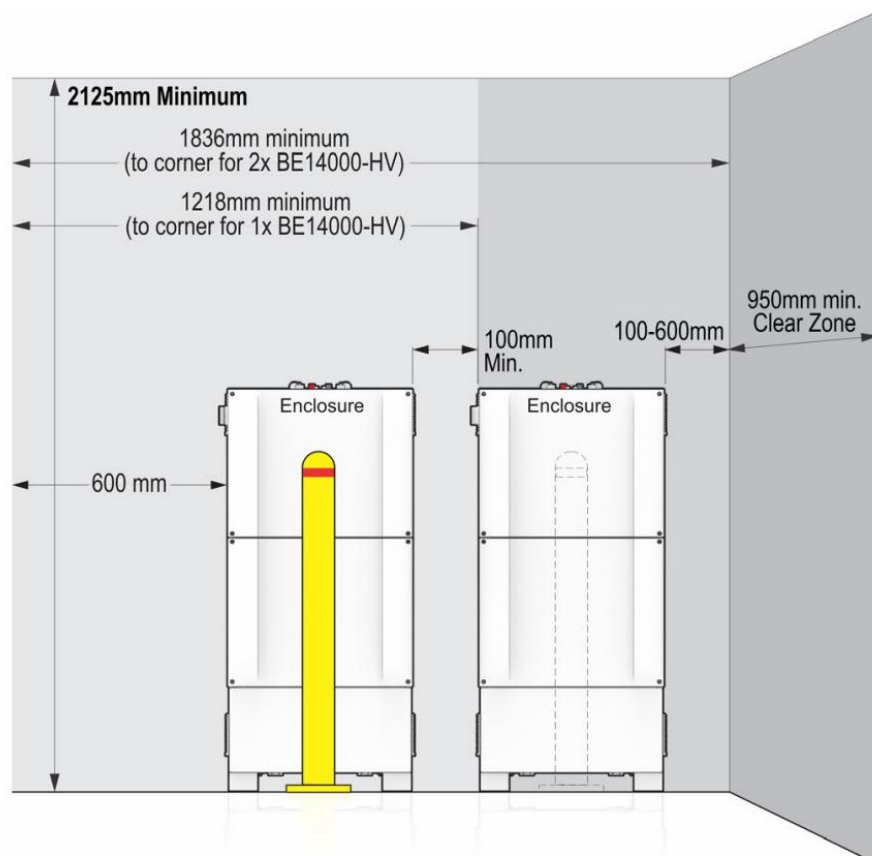
A) INSTALLATION ON AN EXIT PATH



B) INSTALLATION ON A BLANK WALL

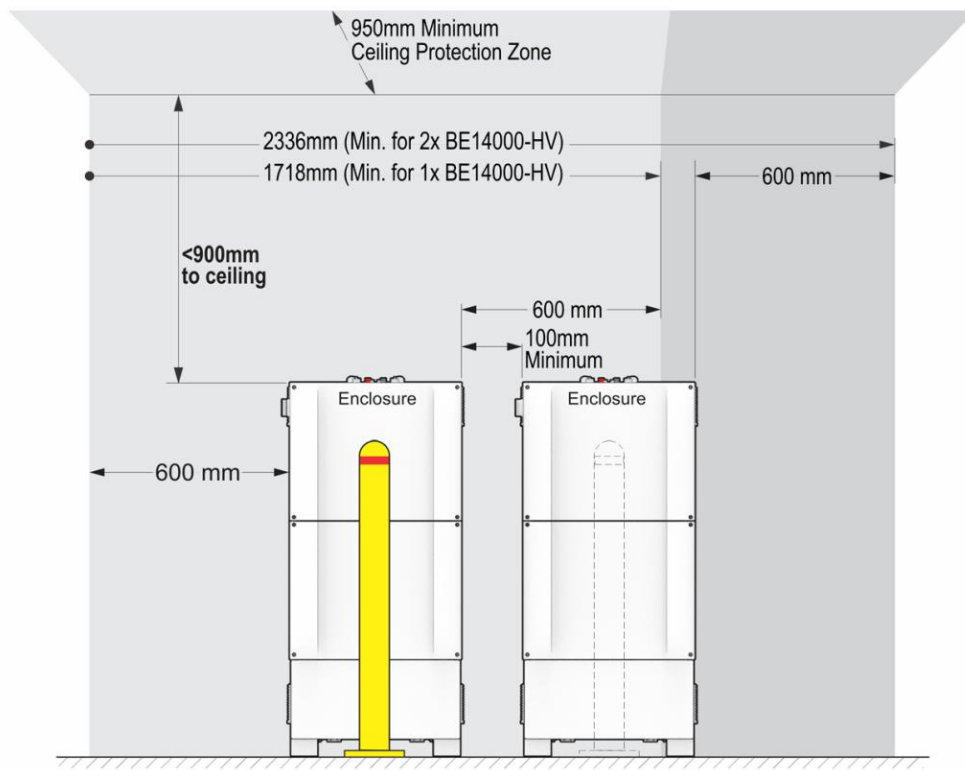


C) INSTALLATION NEAR A CORNER

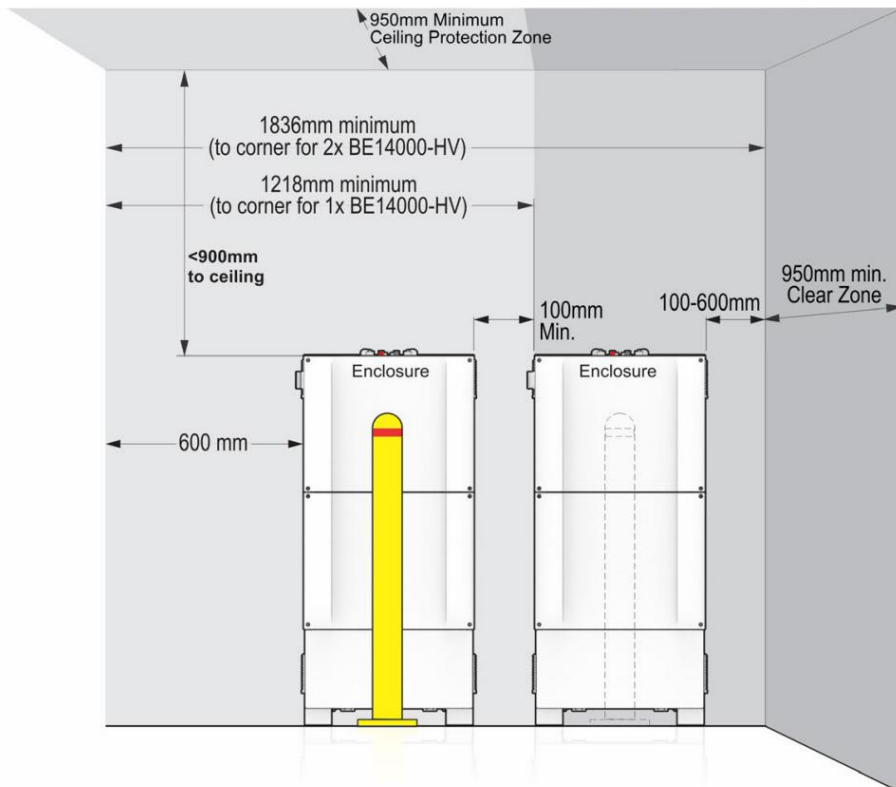


D)

E) INSTALLATION WITH A LOW CEILING



F) INSTALLATION NEAR A CORNER, WITH LOW CEILING

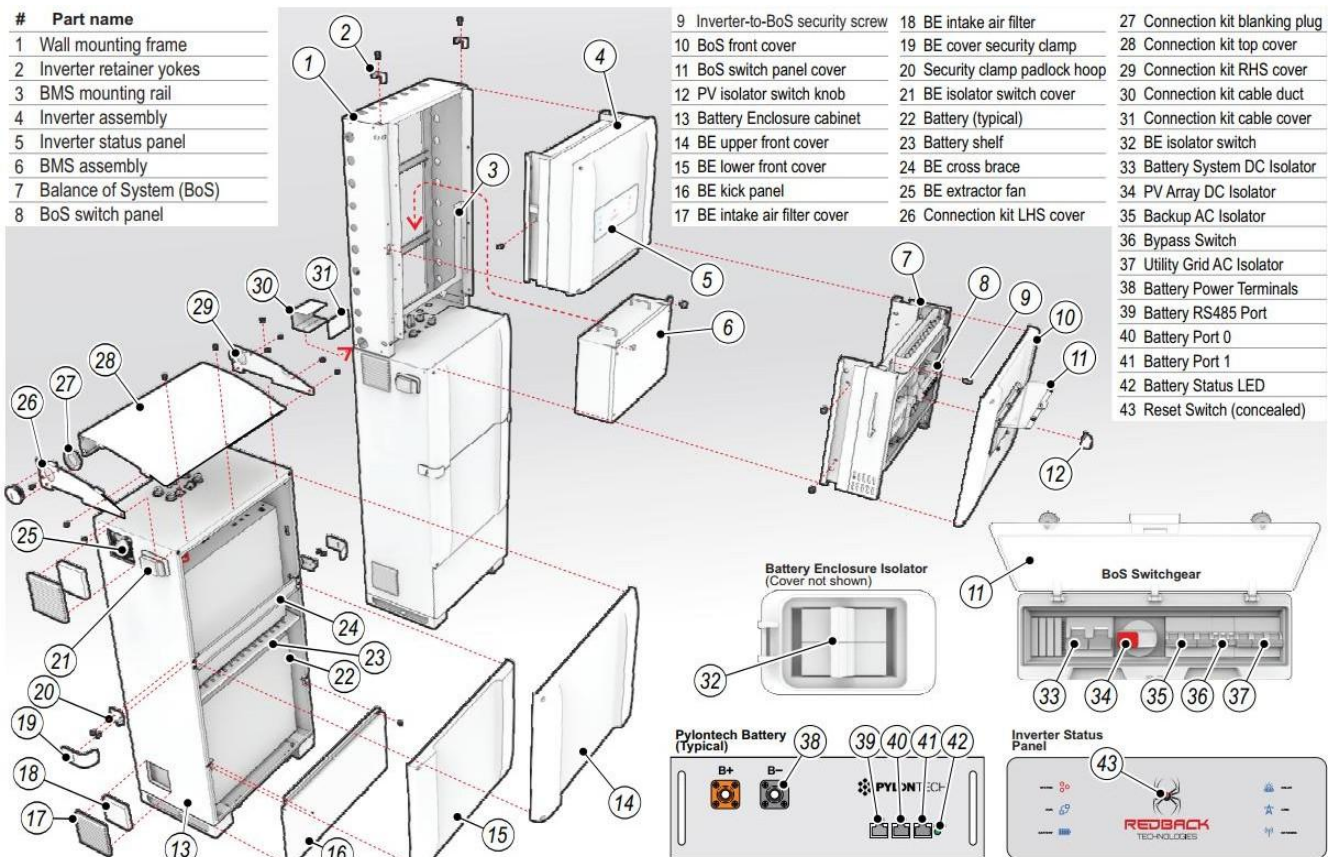


4. installation for RB-HVS-XXX-50/74

The RB-HVC-600-40 BMS Controller is behind the #4 inverter assembly after installation, the cables connectors are not able to disassemble.

Single battery module is 22.5kg/32kg. If without handling tools must have more than 1 man to handling with it.

Overview: the #13 is the battery cabinet. The #6 is the RB600-40S BMS controller



4.1 Installing the primary BE14000–HV Battery Enclosure



WARNING TIPPING HAZARD. Keep children and animals out of the worksite. Do not leave the enclosure unattended during installation. Fasten enclosure to the wall as soon as practical.

The BE14000–HV Battery Enclosure is designed for Redback ST10000 Smart Hybrid Inverters. Up to two enclosures may be fitted: The Primary enclosure is installed directly below the inverter. The Secondary enclosure may be placed to the left or right of the primary enclosure.

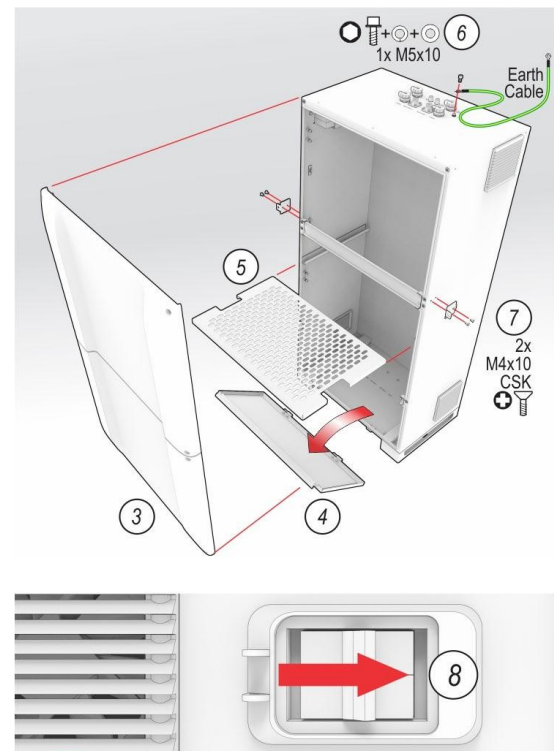
The enclosure is not suitable for other inverters.

The enclosure can house up to four Pylontech H48050 2.4kWh or H48074 3.5kWh batteries. The process is:

- Review the packing list. Verify all parts have been supplied.
- Remove front covers and kick panel.
- Remove battery shelf and upper cross brace (optional).
- Fit padlock hoops.
- Position and install the enclosure.

4.1.1 PRE-ASSEMBLY

1. Open the BE14000–HV carton and locate the packing list. Verify all parts are supplied.
2. Remove the cabinet from the transport carton. Place on a protective surface, front–side up.
3. Remove the upper and lower front covers and set aside. Take care not to damage the internal seal.
4. If batteries are to be fitted, remove the kick panel. The kick panel is hinged at the bottom edge — remove the screws at the top corners, tilt the panel forward and slide it off the hinge pins. Take care not to damage the internal seal.
5. Remove the upper shelf.
6. Attach the longest earth cable to the top of the enclosure using a M5x10 screw, and spring and flat washers, as shown.
7. Attach the two padlock hoops using M4x10 countersunk screws.
8. Ensure Battery Enclosure isolator is OFF (to the Right)



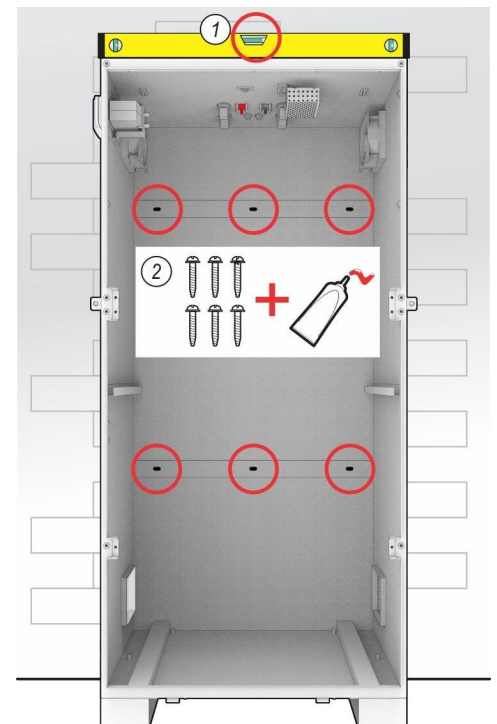
4.2 INSTALLATION

Installation notes

- The BE14000–HV is pre-wired for use with a ST10000 inverter and a second BE14000–HV.
- Reduce heat load by installing out of full sun: ideally, the installation will be indoor installation
- Ensure the location is not flood prone from water across ground, nearby downpipes, or guttering.
- Stand the enclosure on a stable, level surface. Use packers under feet if required.
- Fasten the enclosure to a flat, structurally sound wall. Waterproofing will be affected if the enclosure is twisted or damaged. Use spacers if required.
- Installer to supply suitable wall fasteners, up to $\phi 7\text{mm}$.
- The enclosure features fan-assisted cooling. Ensure there is at least 100mm clear space either side of the enclosure. Do not block the cooling intakes or exhaust vents.
- Ensure at least 1000mm clear height is available above the enclosure (for inverter fitting).

Installation process

- Place the enclosure in the required location: on the floor; against the wall; 100mm clear space both sides.
- Set the enclosure level. Use a spirit level as required. Add packers under feet if necessary.
- Check that the wall is flat. Use spacers as required to ensure the enclosure does not distort when fastened to the wall.
- Six mounting points are provided, as shown at right.
- Fix the enclosure to the wall using suitable fasteners.
- Seal around the fasteners using the supplied sealant.



4.3 Installing the Wall Mounting Frame



WARNING: STRUCTURAL REQUIREMENTS!

The Wall Mounting Frame carries the full weight of the inverter and BoS, totalling 45.5kg. Ensure that the wall and fasteners can withstand this load.

The installation process is:

- Open the Inverter Shipping carton.
- Review the packing list.
- Verify all parts have been supplied.
- Install the Wall Mounting Frame

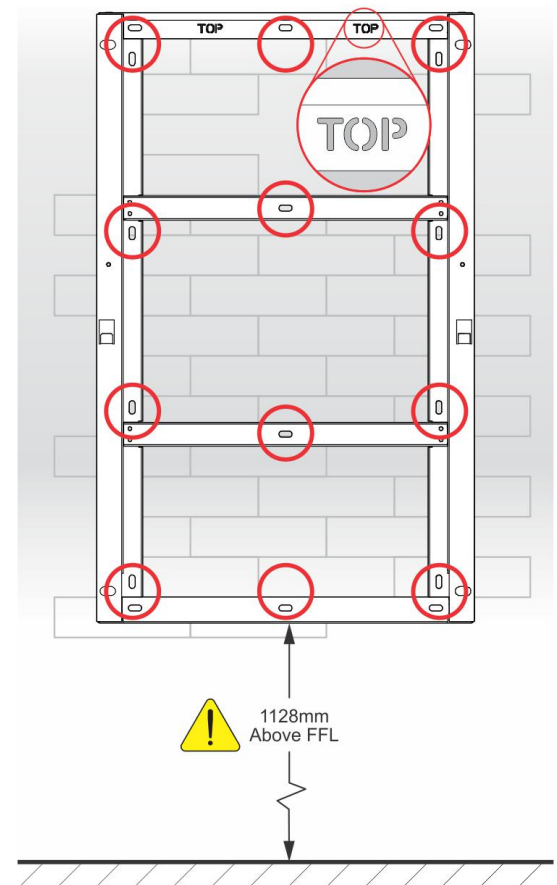
4.3.1 INSTALLATION

Installation notes

- If no BE14000–HV is fitted, install the mounting frame at 1128mm above the finished floor line (FFL): this enables easy retrofitting of BE14000–HV enclosure.
- If a BE14000–HV is in place, stand the mounting frame on top of and aligned to the BE14000–HV, and fix in position.
- The inverter is convection cooled: provide 100mm clearance to top and sides to ensure airflow.
- Install the mounting frame correctly – observe “TOP” markings
- Installer to supply suitable wall fasteners, up to $\phi 7\text{mm}$.

Fasten the Wall Mounting Frame to the wall.

1. The mounting frame is secured by eight fasteners at any of 16 points. Choose fastener locations that will spread loads to the structural part of the wall.
2. Use the mounting frame as a template for fasteners.
3. Fix the enclosure to the wall using eight (8) suitable fasteners.
4. Check the frame is level—use a spirit level—then tighten the fasteners.



4.4 Installing a second Battery Enclosure

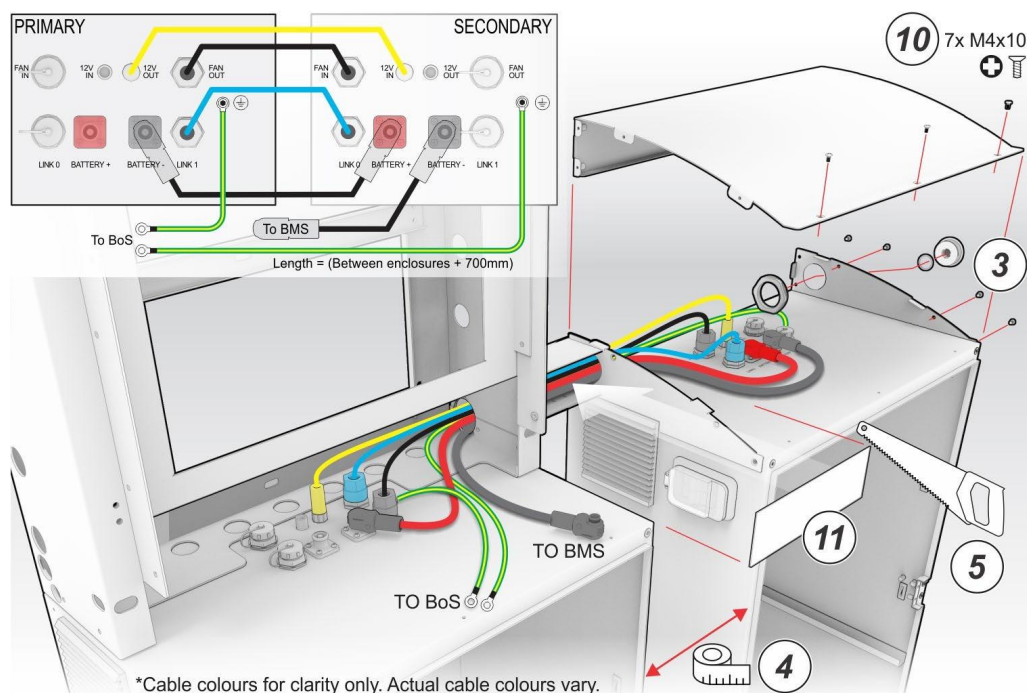


OPTIONAL Go to Section 2.10 if a second BE14000–HV is not required.

The BE14000–HV Connection Kit includes parts to complete the installation of a 2nd battery cabinet up to 500mm from the primary cabinet. For cabinets more than 500mm apart, installers will need to fabricate all cables and supply a suitable 60x60mm cable duct.

Installation procedure

1. Select a suitable location.
2. Install the second battery cabinet as in Section 2.7 but do not fit the supplied earth cable.
3. Fit the Connection Kit Side Covers and Blind Grommet as shown below.
4. Note the distance between the Wall Mounting Frame and the nearest side cover.
5. Cut the Extension Kit Cable Duct to the required length (1–2mm less than measured distance).
6. Align the cable duct channel to the 40mm holes in the side cover and fasten to the wall.
7. Identify the Fan/Comms cable harness, battery power cables and earth cable. Thread all cables and the harness through the 40mm holes and cable duct as shown (one at a time).
8. Plug in all cables as shown. Ensure all glands are tight and plugs are fully seated.
9. Attach the earth cable to the secondary enclosure earth point using the supplied screw.
10. Fasten the Connector Kit Cap at top and sides using the 7 screws supplied.
11. Snap on the Cable Duct Cover.



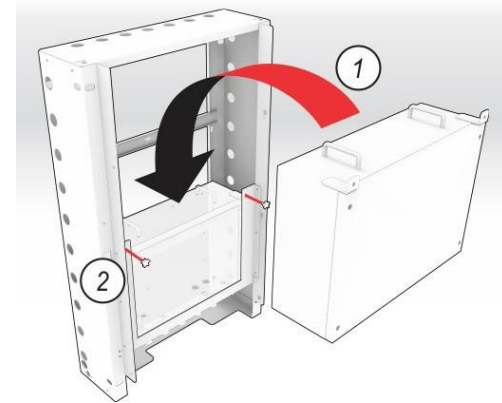
4.5 Battery Management System (BMS) Module

The BMS module manages the performance of connected batteries. The BMS connects to:

- BE14000–HV
- BoS

To mount the BMS module

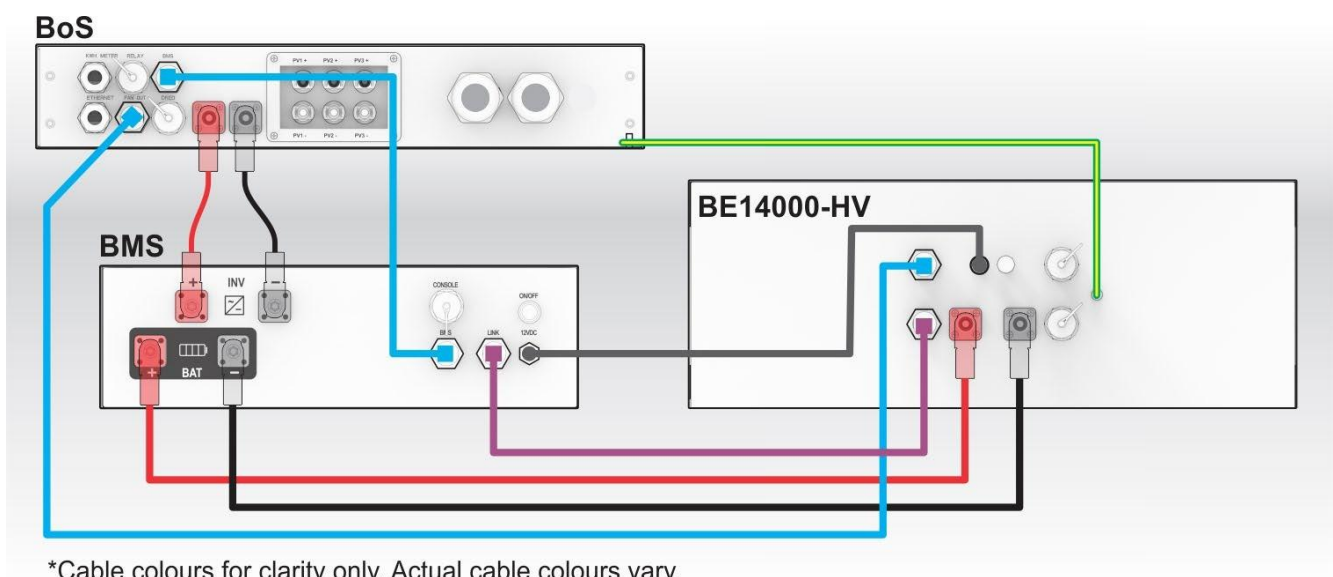
1. Remove Thumbscrews from BMS module. Set aside.
2. Insert BMS Module into the mounting frame. Rest the module on the bottom rail.
3. Fasten the Module to the frame using the thumbscrews. Thumbscrews must be tight—they earth the BMS to the Wall Mounting Frame.



4.6 PRIMARY BATTERY ENCLOSURE CONNECTIONS

The enclosure is fitted with waterproof connectors for power and data, and all cables are fitted with waterproof caps. The battery leads are terminated with colour-coded connectors. An earth lead is supplied.

1. Connect all cables between BMS, BoS and BE14000–HV as shown below.
2. Ensure all plugs are fully seated and all glands are tight.



4.7 Battery installation



WARNING. SHOCK HAZARD. New batteries contain charge. Turn the inverter BATTERY SYSTEM DC isolator OFF during installation.

Installation notes

1. The Redback system has a storage capacity of up to 28.4kWh using four to eight Pylontech batteries and up to two BE14000–HV battery enclosures.
2. Use Pylontech H48050 or H48074 batteries but do not mix models. The nominal capacities are shown right.
3. The battery naming and positioning convention is shown in section 2.16.3.
4. To ensure even cooling, batteries must be installed in the approximate positions shown. Batteries must not touch the rear or sides of the enclosure, or each other.
5. Batteries are unrestrained on the enclosure shelves, held in place by their own weight.
6. Batteries must be independently earthed to the cabinet as shown below.

Qty	Capacity (kWh)	
	H48050	H48074
4	9.6	14.20
5	12.0	17.75
6	14.4	21.30
7	16.8	24.85
8	19.2	28.40

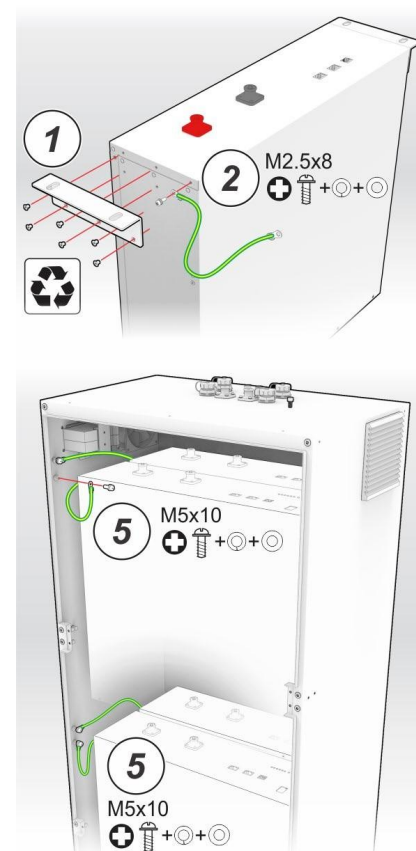
4.7.1 PREPARING PYLONTECH BATTERIES

BMS cables connect the Fan Controller to the first battery, and between subsequent batteries. Each battery must be earthed to the enclosure cabinet.

1. Remove the rack-mounting brackets. Dispose of responsibly.
2. Connect an earth cable to the bracket mount point, as shown, using the M2.5x8 screw and washers.
3. Note the location of enclosure battery earth studs.

4.7.2 BATTERY POSITIONING AND EARTH CONNECTIONS

4. Position batteries in the cabinet as shown right. Place the batteries with approximately equal air gap all round, to optimise cooling.
5. Connect the earth cable from each battery to a nearby earth post

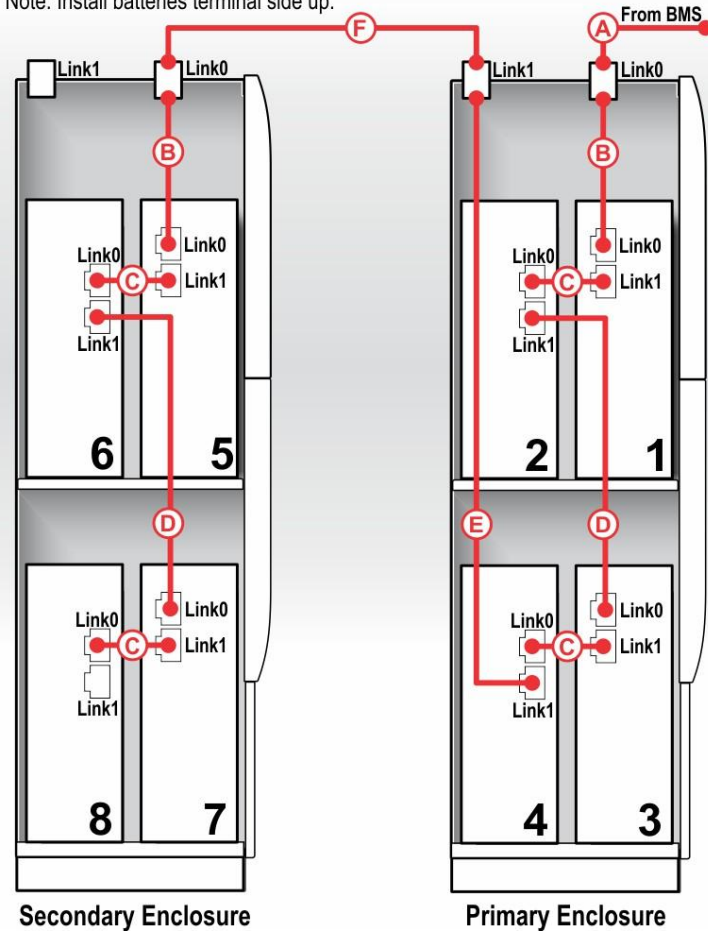


4.7.3 BMS CABLE CONNECTIONS

1. Connect BMS cables in the sequence shown, using the supplied cables.
2. Store any unused cables in the enclosure.

BMS connection

Note: Install batteries terminal side up.



Cable Legend

A	BMS to BE	500mm	1x	Included with ST1000
B	BMS IN	400mm	1x	Pre-fitted to BE14000–HV
C	BMS (BATT to BATT)	300mm	2x	Included with BE14000–HV
D	BMS (BATT to BATT)	900mm	1x	Included with BE14000–HV
E	BMS OUT	1000mm	1x	Included in Connection Kit
F	BMS BE to BE	1200mm	1x	Included in Connection Kit
1,2,3 etc	Battery number (in BMS sequence)			

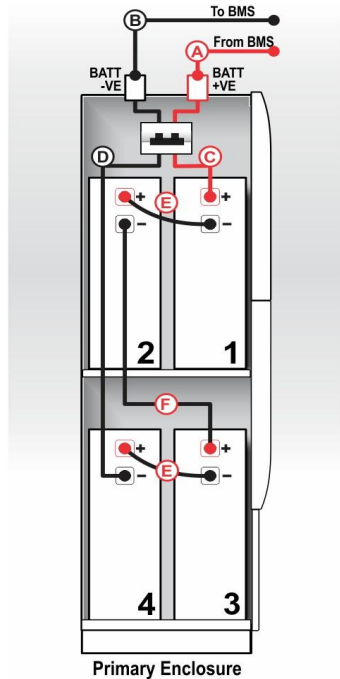
4.7.4 BATTERY POWER AND CONNECTIONS

Connect the battery power connections as shown below.

- Batteries are connected in series: minimum of four batteries, or up to eight batteries, all the same model i.e. all H48050 or all H48074
- Connect battery earth leads to a nearby earth stud (M5x10).
- The battery leads are coiled and zip-tied in place for transport. Use end cutters to release.
- Route cables to the lower shelf via the portals at sides of the upper shelf. Do not pinch cables.
- Store any unused cables in the enclosure.

Single Enclosure

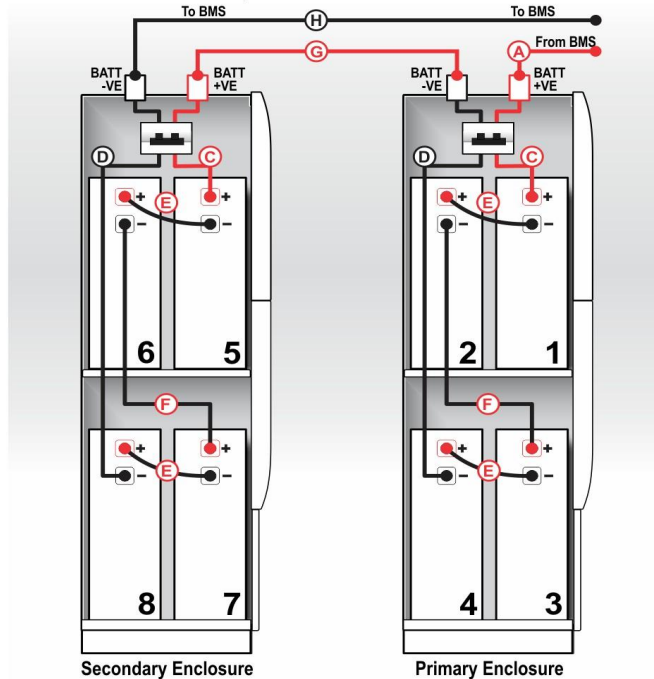
Note: Install batteries terminal side up.



Primary Enclosure

Dual Battery Enclosures

Note: Install batteries terminal side up.



Secondary Enclosure

Primary Enclosure

Cable Legend

A	BMS to BE (Red)	500mm	1x	Included with ST10000
B	BMS to BE (Black)	500mm	1x	Included with ST10000
C	BATTERY 1 B+		1x	Pre-fitted to BE14000-HV
D	LAST BATTERY B-		1x	Pre-fitted to BE14000-HV
E	POWER1	900mm	2x	Supplied with BE14000-HV
F	POWER2	900mm	1x	Supplied with BE14000-HV
G	BE to BE	1200mm	1x	Included with Connection Kit
H	BMS to BE	1200mm	1x	Included with Connection Kit

5. Power ON procedure



Double check all the power cables and communication cables.

Turn breaker in each cabinet ON.

Using start button (press 5 seconds or more) or by providing 5–12V signal to start the BMS

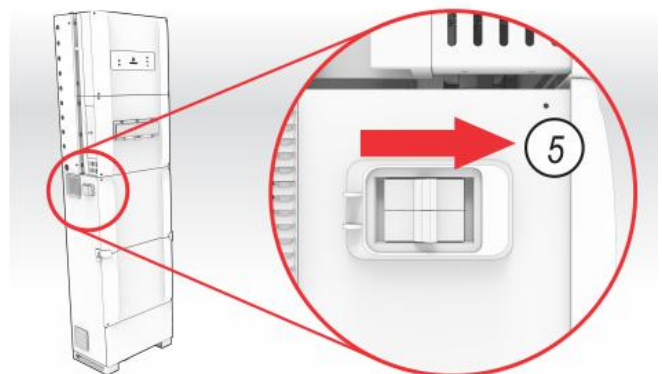
#	Procedure	Illustration
1.	Behind the BoS, locate the BMS module ON/OFF switch and press ONCE.	
2.	In the battery cabinets, observe the Status LED on each battery. Within 10 seconds they will stabilise to green. The batteries are now initialised.	

6. Shutdown procedure



Switch the BATTERY SYSTEM DC isolator OFF (down)

Turn all Battery Enclosure Isolators OFF (to right).



7. System Debug

This system debug is for BESS system (Battery Energy Storage System). BESS system can't do the debug itself. It must operation with configured UPS, PCS and EMS system together.

Debug Step	Content
Prepare of debug.	Turn on the BESS system, refer to chapter 3. Before turn on the whole BESS system turn on the load is not allowed! Remark: Except the BESS, if other equipment have its own system turn on step, must follow its own system operation manual.
Monitor function test. (If configured.)	Check whether the data of the BESS system is showing on the monitor system normally.
Trial operation test.	After the system debugged, run the system a period as test (testing with low load), to test the high voltage DC system is fit for the contract.

8. Maintenance

8.1 Trouble Shooting:



Danger: The PowerCube-H1/H2 is a high voltage DC system, operated by qualified and authorized person only.

Danger: Before check the failure, must check all the cables connection and setting of ADD Switches are right or not (refer to chapter 3), and the BESS system can turn on normally or not.

No	Problem	Possible Reason	Solution
1	Turn on the BMS. All battery modules' status LED is not working.	● The DC/DC power board or control board is failure. ● The communication cable from BMS to the first battery module is broken ● Power cable is broken;	● Change the control module (BMS module).. ● Change the broken communication cable; ● Check all the power cables and connections are fine or not;

2	Turn on the BMS. The one and the following of the battery module's Status LED lighting red or not lighting.	● This battery module has failure; ● Its communication cable failure; ● Its Address Distribution failure.	● Change this battery module; ● Check the communication cable; ● Check by professional stuff.
3	Single Cell is over voltage/ low voltage. (Check through the monitor or maintenance software.)	● Cell voltage sampling failure. ● Cell failure;	● Check the wires of cell sampling module; ● Change this battery module.
4	Battery module shows the temperature is -40°C . (Check through the monitor or maintenance software.)	The wires of temperature sampling failure.	Check the wires of temperature sampling module. Or change this battery module.
5	Another failure	Cell failure or electrical board failure.	Can't find out failure point or can't check. Please contact with distributor or Pylontech.



5.3 Battery Maintenance

Danger: The maintenance of battery must done by qualified and authorized personnel only.

Danger: Some maintenance items must turn off at first.

5.3.1 Voltage Inspection:

[Periodical Maintenance] Check the voltage of battery system through the monitor system. Check the system abnormal voltage or not. For example: Single cell's voltage is abnormal high or low.

5.3.2 SOC Inspection:

[Periodical Maintenance] Check the SOC of battery system through the monitor system. Check the battery string abnormal SOC or not.

5.3.3 Cables Inspection:

[Periodical Maintenance] Visual inspect all the cables of battery system. Check the cables has

broken, aging, getting loose or not.

5.3.4 Balancing:

[Periodical Maintenance] The battery strings will become unbalance if long time not be full charged. Solution: every 3 month should do the balancing maintenance (charge to full), normally it will been done automatically by the communication between system and external device.

5.3.5 Output Relay Inspection:

[Periodical Maintenance] Under low load condition (low current), control the output relay OFF and ON to hear the relay has click voice, that's mean this relay can off and on normally.

5.3.6 History Inspection:

[Periodical Maintenance] Analysis the history record to check has accident (alarm and protection) or not, and analysis its reason.

5.3.7 Shutdown and Maintenance:

[Periodical Maintenance]

Some system function must be maintenance during the EMS restart, it is recommended to maintenance the system every 6 months.

9. Storage Recommendations

For long-term storage (more than 3 months), the battery cells should be stored in the temperature range of 5~45°C, relative humidity <65% and contains no corrosive gas environment.

The battery module should be shelved in range of 5~45°C, dry, clean and well ventilated environment. Before storage the battery should be charged to 50~55% SoC;

It is recommended to active the chemical (discharge and charge) of the battery every 3 months, and the longest discharge and charge interval shall not exceed 6 months.



Caution: If not follow the above instructions for long term store the battery, The cycle life will have relative heavily reduction.

10. Shipment

Battery module will pre-charged to 50%SOC or according to customer requirement before shipment. The remaining capacity of battery cell, after shipment and before charge, is determined by the storage time and condition.

1. The battery modules meet the UN38.3 certificate standard.
2. In particular, special rules for the carriage of goods on the road and the current dangerous goods law, specifically ADR (European Convention on the International Carriage of Dangerous Goods by Road), as amended, must be observed.



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