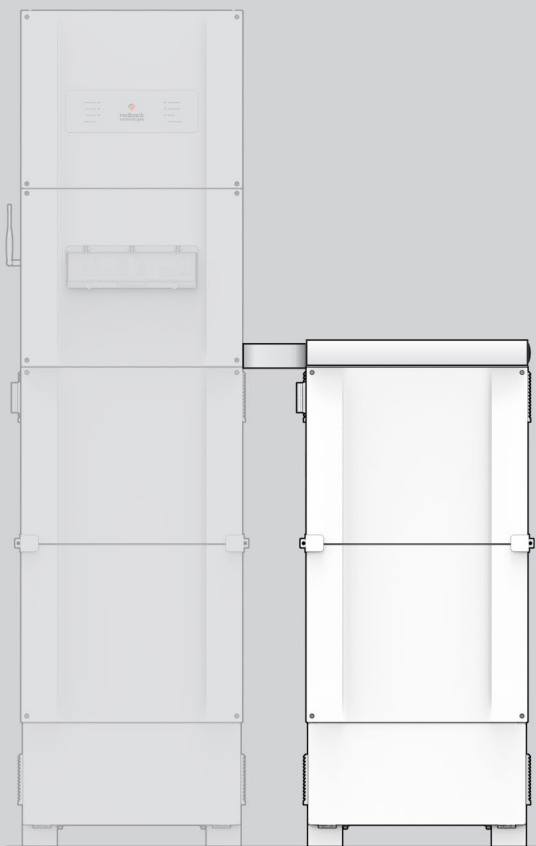


Installation Manual

Redback Smart Hybrid System

BE14000 Connection Kit and Secondary Enclosure

v1.3



History

VERSION	ISSUED	COMMENTS
1.0	23-Mar-22	First edition
1.1	NA	Not issued
1.2	20-Feb-23	P9,15,16,20 Increase cooling zones to 150mm. P26,28 Add Cable A to diagrams. P28 Add DIP switch settings for primary enclosure. P32 Add requirement for, when adding or replacing batteries, all batteries must be balance charged and firmware updated. P39 Add "Maximum PV Input Power" and footnote; Add I _{sc} Max footnote; Correct "Back Feed" (was Feedback); Correct Battery Port> Max. Power (discharge) (was "charge") P41 Qualify Inverter Noise Emissions; Add BE Noise Emissions; Add footnotes; System weights calculator reviewed. P41 Review applicable standards; P43 Move Close-up and handover to inside rear cover.
1.3	09-May-23	DONE P21 Update Single Line diagram r4 (was r3).

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Start here...

This manual describes the addition and commissioning of a 2nd Redback BE14000 Battery Enclosure to an existing SH5000 + BE14000 installation.

The time needed to complete a typical installation is 3-4 hours.

In this document the SH5000 Smart Hybrid Inverter is known as the “SH5000” or the “inverter”. The BE14000 (hereafter called the BE14000 or Enclosure or Enclosure #1) found directly below the SH5000 is the Primary Enclosure. The Secondary Enclosure (also called Enclosure #2) may be installed to the left or right of the existing installation. The hardware purchased from Redback to complete a standard Secondary Enclosure installation is called the Connection Kit.

This manual is for use by Installers and Installer Companies.

Before you go to site...

1. Read this manual.

The installation manual has all the information you will need for most installation scenarios.

2. Book a support call

If you think you will require assistance, book Redback Technical Support 2 days before going to site. This ensures that technical support is reserved for you if you are on-site and need assistance. Redback support is in Brisbane, Australia and is available 8am-4pm (Brisbane time) Monday to Friday. There are three ways to book a support call:

Web: redback.link/support

SMS: +61 417 632 065

Call from Australia: 1300 240 182

Call from New Zealand: +61 7 3180 2325

3. Register the installation

Registration is required if the installation includes a new inverter. Early registration makes it possible to do a functional, testable installation even if some information is not available e.g., installation in a spec home where the owner's information is not available. You can also pre-assign the installation inspector.

Register the installation at redback.link/register (+Add device).

Need something else?

1. Visit the Redback Document Library

Installer and Owner documentation is available for our current products. Go to redback.link/docs

2. Contact the Redback Customer Support Team (Monday to Friday, 8am-4pm AEST)

In Australia: 1300 240 182

In New Zealand: +61 7 3180 2325

Email: customersupport@redbacktech.com

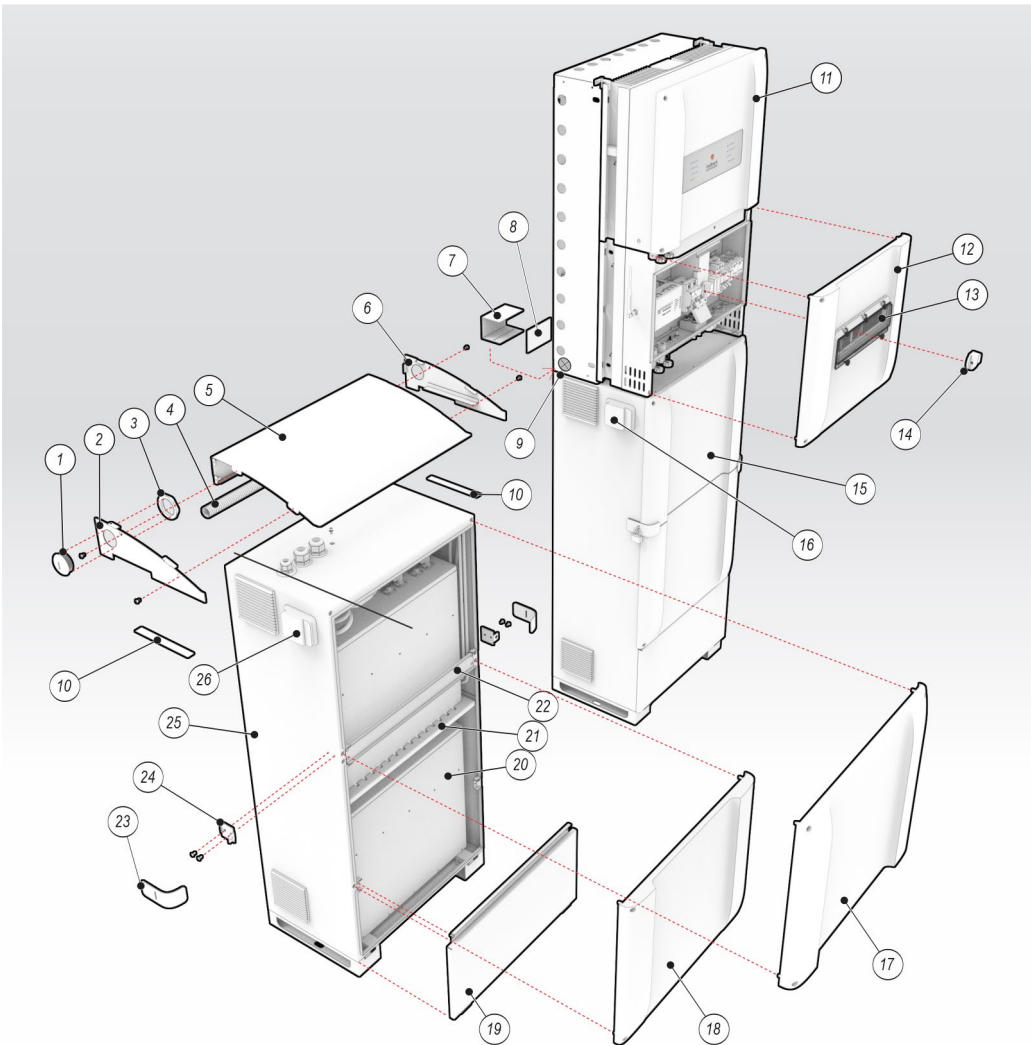
1. Introduction

This manual describes the procedure to add a second BE14000 Battery Enclosure to an existing Redback SH5000 + BE14000 Smart 3-phase Hybrid system, using the Redback BE14000 Connection Kit.

This is the only approved method to expand a SH5000 system. This procedure does not apply to any other Redback product.

1.1 Know your product

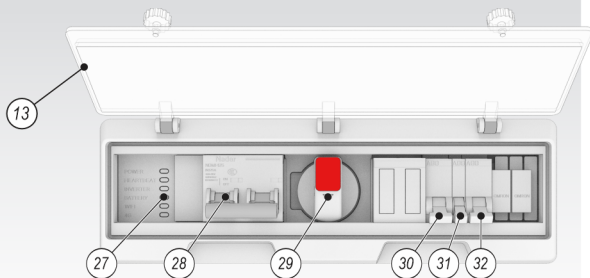
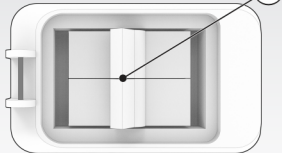
1.1.1 MAJOR COMPONENTS



Part name

1	40mm cover	15	Battery Enclosure (BE)	29	PV Array DC Isolator
2	Connection Kit LHS cover	16	BE Isolator cover	30	Backup AC Isolator
3	40mm nut	17	BE upper front cover	31	Bypass Switch
4	BMS Cable Conduit	18	BE lower front cover	32	Utility Grid AC Isolator
5	Connection Kit top cover	19	BE kick panel	33	Battery earth point
6	Connection Kit RHS cover	20	Batteries	34	Battery power switch
7	Cable duct 500mm*	21	Battery shelf slotted	35	Battery reset switch
8	Cable cover 500mm*	22	BE cross brace	36	Battery status LEDs
9	40mm pass-thru	23	Security clamp	37	Battery RS485 Port
10	Double-sided adhesive tape	24	Padlock hoop	38	Battery Port 0
11	Inverter status panel	25	Battery Enclosure #2	39	Battery Port 1
12	BoS front cover	26	Battery DC Isolator	40	Battery DC- Connector
13	BoS switch panel cover	27	EMS Status LEDs	41	Battery DC+ Connector
14	PV Isolator Knob	28	Battery System DC isolator		

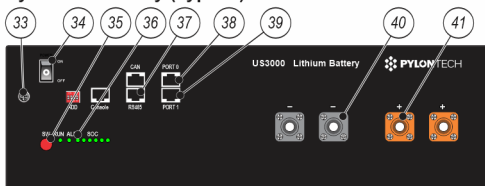
Battery Enclosure Isolator
(Cover not shown)



Inverter Status Panel 2021-



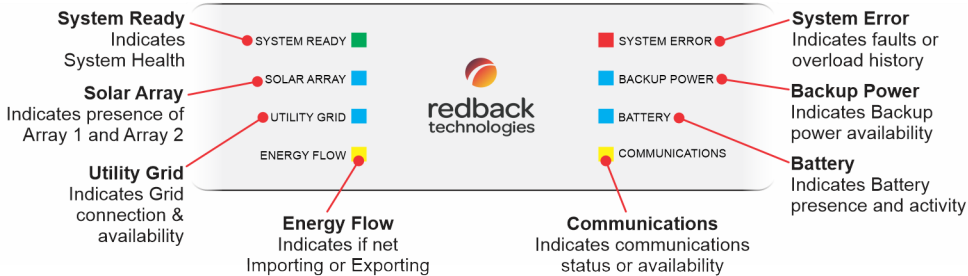
Pylontech Battery (Typical)



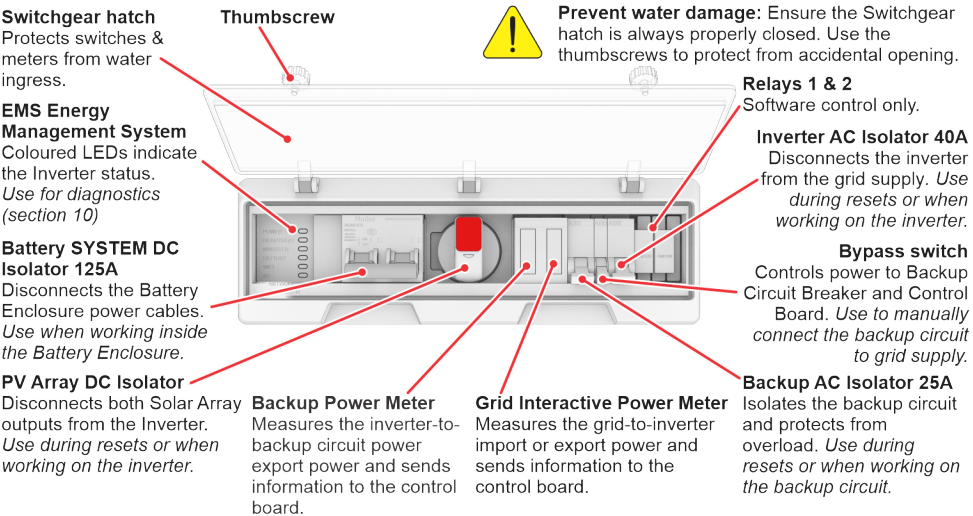
Inverter Status Panel 2017-2021



1.1.2 STATUS PANEL LEDS

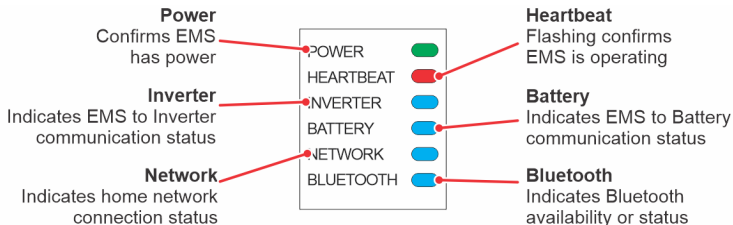


1.1.3 BOS SWITCHGEAR



1.1.4 EMS LEDS

The Redback Energy Management System (EMS) is the inverter's internal control system. LEDs provide a guide to its state and activity.



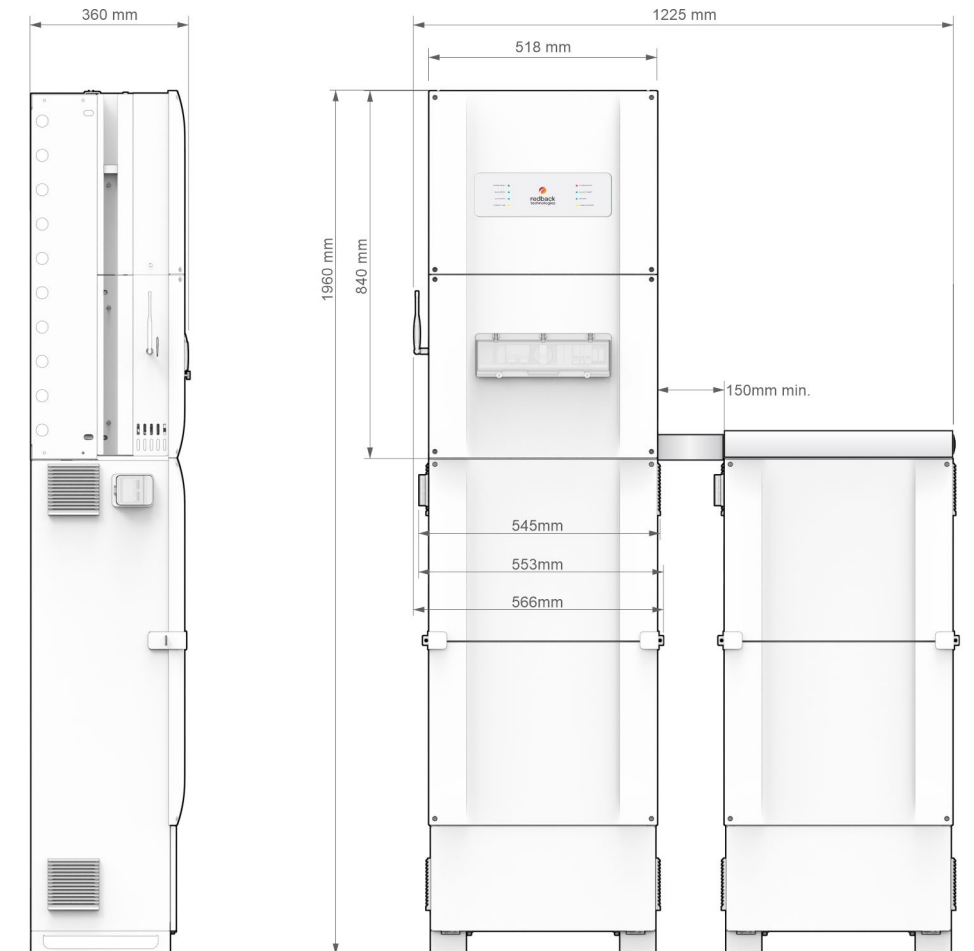
1.1.5 DIMENSIONS, WEIGHTS & CONFIGURATIONS

Item	Capacity (Nominal)	Width (mm)	Height (mm)	Depth (mm)	Shipping Mass (KG, EA)✧	Component Mass (KG, EA)✧
Battery Enclosure	14.2kWh	518	1125 min	352	46.5	36.5●
Connection Kit	-	520	85	315	4.5	3
Combined (2 Enclosures♦)	28.4kWh	1225■♦	1960 typ♦	352	-	-

Pylontech Batteries

US2000	2.4kWh	442	410	89	-	24.0
US3000	3.55kWh	442	420	132	-	32.0

✧ For guidance only- weights may vary slightly. ● Excluding batteries. ■ Includes Wi-Fi antenna and padlock hoops and minimum 150mm clearance between enclosures. ♦ May vary slightly due to installation variation ♦ 2nd enclosure may be installed to left or right of existing installation.



1.2 Compatibility and limitations

The Redback BE14000 and Connection Kit add extra storage capacity to an existing SH5000 and BE14000 system. These upgrades are not permitted:

- Using batteries other than those approved by Redback.
- Installing more than two BE14000 Battery Enclosures in one system.
- If the modified system will be unable to comply with the requirements of AS5139:2019.
- In off-grid installations, where there is not normally a grid connection.
- In locations without internet access: it may not be possible to update the system configuration.
- Exposed locations where wind driven rain may penetrate the enclosure.
- For use with generators.

WARNING. Installation in violation of these limitations may void the warranty (refer to the Warranty document).

2. Installation

Important safety instructions – please read

This document has important safety instructions for products produced by Redback Technologies. Please read all the instructions and cautionary markings on the product and on any accessories or other equipment included in the installation. Failure to follow these instructions could result in severe shock or possible electrocution. Always use extreme caution to prevent accidents.

Audience

Installation, maintenance, and connection of Inverters must be performed by qualified personnel, in compliance with local electrical standards, wiring rules and the requirements of local power authorities and/or companies (for example AS4777 and AS/NZS 3000 in Australia). The Redback Smart Hybrid strictly conforms to all related safety rules in design and test.

Safety regulations relevant to the location should be followed during installation, operation, and maintenance. Improper operation may cause electric shock, or damage property, inverter, or equipment.

These instructions are for use by skilled, qualified personnel who:

- Meet all local and governmental code requirements for licensing and training for the installation of electrical power systems with AC and DC voltage up to 600 volts
- Have CEC accreditation for installing grid-connected PV systems and energy storage systems
- Have knowledge of the functional principles and operation of grid-connected systems and knowledge of the installation of electrical devices
- Understand the risk associated with installing and using electrical devices and can implement proper risk management strategies
- During the preceding 12 months, have completed Redback approved training on the installation of the Redback SH5000 Smart Hybrid Inverter and BE14000 Battery Enclosure.

Symbols used

SYMBOL	DEFINITION	SYMBOL	DEFINITION
	LETHAL DANGER. Risk of electrocution.		CAUTION! Hazard to equipment
	DANGER. Risk of electrical shock.		WARNING! Burn hazard
	WARNING! Hazard to human life		HEAVY LIFT Seek help.
	TIPPING HAZARD Do not leave unattended.		DELAY. Wait specified time.



Information. This symbol indicates the information supplied is important for the correct installation, operation and or maintenance of the equipment. Failure to follow the recommendations could result in annulment of the equipment warranty.

General safety

SYMBOL	DEFINITION
	WARNING: LIMITATIONS ON USE This equipment is NOT intended for use with life support equipment or other medical equipment or devices.
	CAUTION: EQUIPMENT DAMAGE Only use components or accessories recommended or sold by Redback Technologies or its authorised agents.
	IMPORTANT Do not attempt to install this equipment if it appears to be damaged in any way. See the Warranty document for instructions on returning the equipment.

Personal safety

SYMBOL	DEFINITION
	WARNING: PERSONAL INJURY
	• Use safe lifting techniques when handling this equipment. For guidance visit safeworkaustralia.gov.au or contact your local WHS authority.
	• Use standard safety equipment when working on this equipment such as safety glasses, ear protection, steel-toed safety boots, safety hard hats, etc.
	• Use standard safety practices when working with electrical equipment e.g., remove all jewellery, use insulated tools, wear cotton clothing etc.
	• Never work alone when installing or servicing this equipment. Have someone nearby that can help if necessary. • Do not touch the inverter during operation. The temperature of some parts may exceed 60°C during operation. After shutdown, allow the inverter to cool for at least 5 minutes before touching. • Ensure that children, pets, and other animals are kept away from the inverter, solar arrays, battery bank and utility grid components. • If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Battery safety

SYMBOL	DEFINITION
	IMPORTANT • Use the battery types recommended by Redback Technologies. Follow the battery manufacturer's recommendations for installation and maintenance. • Insulate batteries appropriately against freezing temperatures. A discharged battery will freeze more easily than a charged one. • Remote or automatic generator control systems: disable the starting circuit and/or disconnect the generator from its starting battery while performing maintenance.

Equipment safety

SYMBOL	DEFINITION
	WARNING: LETHAL VOLTAGE - Review the system to identify all possible sources of energy. Ensure all sources of power are disconnected before performing any installation or maintenance on this equipment. Confirm that the terminals are de-energised using a validated voltmeter (rated for a minimum 1000 VAC and 1000 VDC) to verify the de-energised condition. - Do not perform any servicing other than that specified in the installation instructions unless qualified to do so or have been instructed to do so by Redback Technologies technical support personnel. - Solar arrays may be energised even in low ambient light. Install a high voltage DC rated disconnect, circuit breaker, or accessible fuse box to ensure a safe disconnect from the system (depending on local code requirements). - To avoid electric shock, disconnect the DC input and AC input of the Inverter at least 5 minutes before performing any installation or maintenance. - Completely disconnect all sources of power before proceeding with any maintenance. Do not remove the Inverter Upper Front Cover. - Do not tighten the AC and DC terminals or pull on the AC and DC wiring when the Inverter is running.
	WARNING: BURN HAZARD External and internal parts may be hot. Do not remove the cover during operation or touch any internal parts. Be sure to allow enough time for internal parts to cool down before performing any maintenance.
	WARNING: FIRE HAZARD - Do not keep combustible or flammable materials in the same room as the equipment. The Redback Smart Hybrid has relays and switches which are not ignition protected. - Ensure AC, DC and ground cable sizes conform to local codes and are fit for purpose. See product manuals for minimum size requirements. Ensure all conductors are in good condition. Do not operate the unit with damaged or substandard cabling.
   	CAUTION: EQUIPMENT DAMAGE - When connecting cables from the Inverter to the battery terminals, ensure the proper polarity is observed. Connecting the cables incorrectly can damage or destroy the equipment and void the product warranty. - Thoroughly inspect the equipment prior to energising. Verify that no tools or equipment have been inadvertently left behind. - Ensure clearance requirements are strictly enforced. Keep all vents clear of obstructions that can prevent proper air flow around, or through, the unit. - Do not open the inverter Upper Front Cover. Apart from performing work at the wiring terminals (as instructed in this manual), touching or changing components without authorisation may cause injury to people, damage to the Inverter and annulment of the warranty. - Static electricity may damage electronic components. Take proper steps to prevent such damage to the Inverter otherwise the warranty may be annulled. - Ensure the output voltage of the proposed solar array is lower than the maximum rated input voltage of the Inverter; otherwise the inverter may be damaged, and the warranty annulled. - Solar modules should have an IEC61730 Class A rating.
	CAUTION: LIGHTNING PROTECTION The PV arrays in this system must be protected by a Lightning Protection System compliant with AS/NZS5033:2014.

2.1 Installation overview



Installation by non-approved installers may void the product warranty.

You are approved to install Redback products if you:

- Are a Redback registered and qualified installer, and
- Hold the required qualifications for installing grid-connected inverters, and
- Have a Redback Installer login.



Not sure?

Contact Redback on 1300 240 182 if you are unsure of your approval status.

2.1.1 BEFORE GOING TO SITE:

Gather the following information for use during registration, installation, onboarding, and commissioning.

SH5000 serial number:			
Your Redback Installer Login:		Apply at redback.link/apply	
Homeowner details (required)	Full name:		
	Installation address:		
	Email:		
	Mobile:		
Homeowner Wi-Fi details	Wi-Fi Name:		
	Wi-Fi Password:		
Installation configuration			
Regional Safety Zone			
Soft Export Limit			
Hard Export Limit			
Soft Generation Limit			
Hard Generation Limit			
Compliance Inspector			
Relay Assignments	Relay 1:	Relay 3:	
	Relay 2:	Relay 4:	

Arrange access to the enclosure keys (if padlocked).

Gather the required tools required

- Normal electrician's tools including crimping kit and Cat 5 cable tools
- Electric drill/driver with 4mm Hex bit; Phillips head screwdriver bit; drill bits suitable for drilling walls
- Tape measure and spirit level
- Internet connected device with RedbackINSTALL app

2.1.2 AT SITE:

- Ensure that the proposed upgrade will comply with AS5139:2019. You may need to change the proposed installation or upgrade the installation's fire protection.
- Collect any enclosure padlock keys from the owner.



Note: The entire system must become compliant not just the added components.

Hardware

- Upgrade the fire protection measures as needed.
- Install Cabinet #2 and Connection Kit (up to 500mm from existing cabinet)
- Modify cabinet #1, using cabinet #2 as a reference
- Modify Cabinet #2 using Cabinet #1 as a reference

Electrical

- Install batteries and associated cables.

Commissioning

- Update the system configuration using RedbackINSTALL.
- Document the installation and handover to homeowner.

2.2 Guide to AS5139 installation requirements for a secondary BE14000

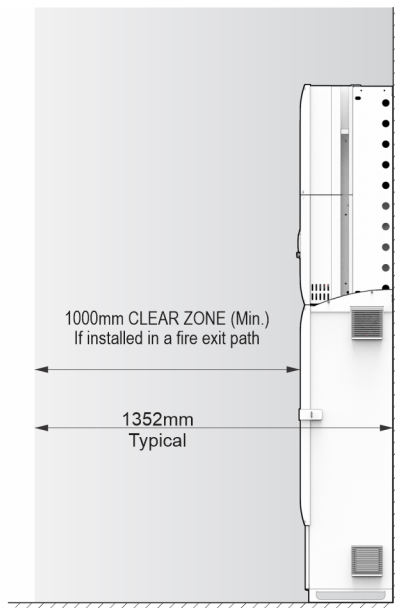
For AS5139:2019 compliance, the BE14000 is defined as a pre-assembled battery system. AS5139 prescribes allowable battery system locations and fire-proofing requirements. AS5139 is referenced in AS4777.1, AS3000 and the BCA, and all new or modified battery system installations must comply.

The installer is responsible for completing installation in accordance with all relevant standards and regulations noting that existing installations, when modified, must also comply. The key AS5139 requirements for secondary BE14000 installation are:

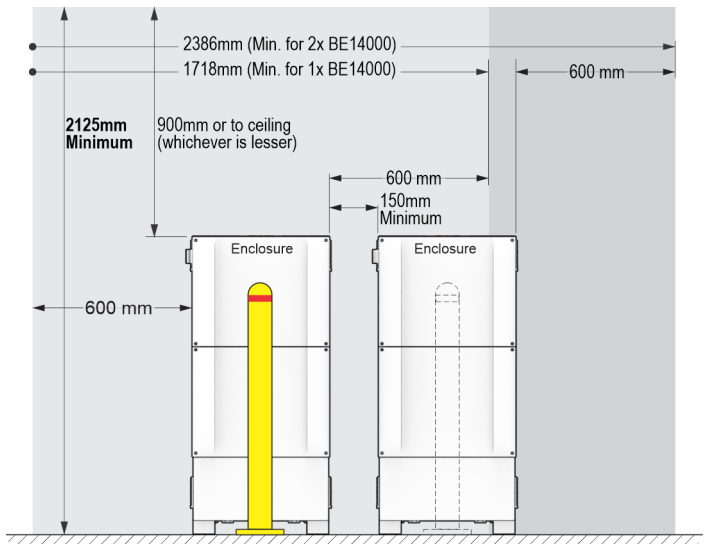
- Install the BE14000 against a wall in a clear zone having no windows, doors, exits, vents, or appliances other than the SH5000 inverter. The clear-zone extends 600mm from the sides and 900mm above the BE14000.
- Fireproof any combustible wall in the zone if a habitable room exists on the opposite side of that wall. Fire-proofing materials must comply with AS1530.1.
- Fireproof any structure e.g., ceiling or eave less than 900mm above the BE14000 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 BE14000 if it is located on a fire exit path.
- Protect the BE14000 from vehicle impact if this is a likely occurrence- use a bollard or similar device.

The most likely installation scenarios are illustrated below: any clear zone may need to be fireproofed.

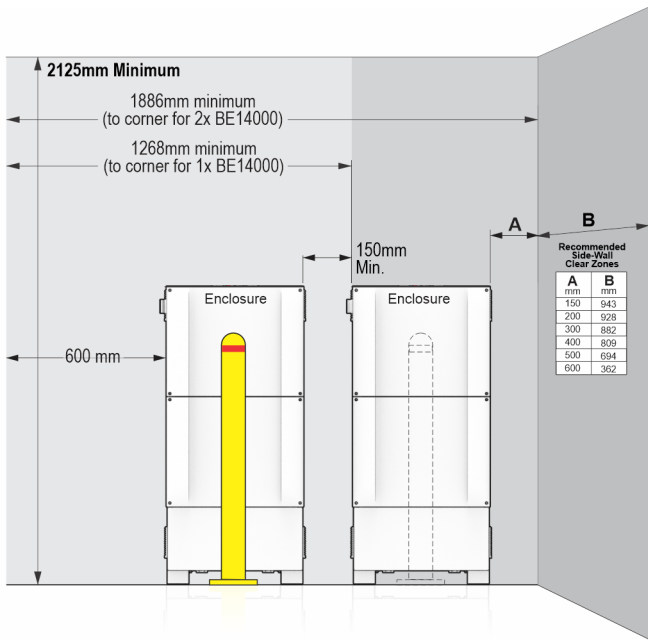
2.2.1 INSTALLATION ON AN EXIT PATH



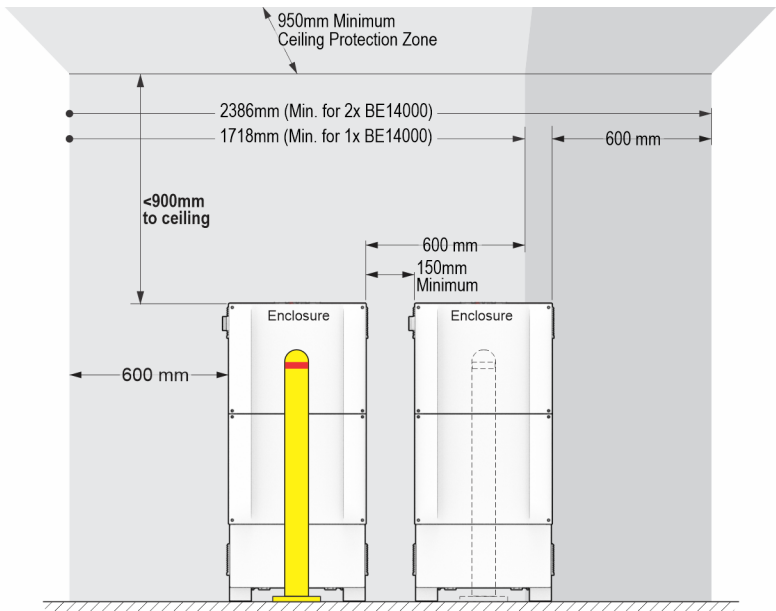
2.2.2 INSTALLATION ON A BLANK WALL



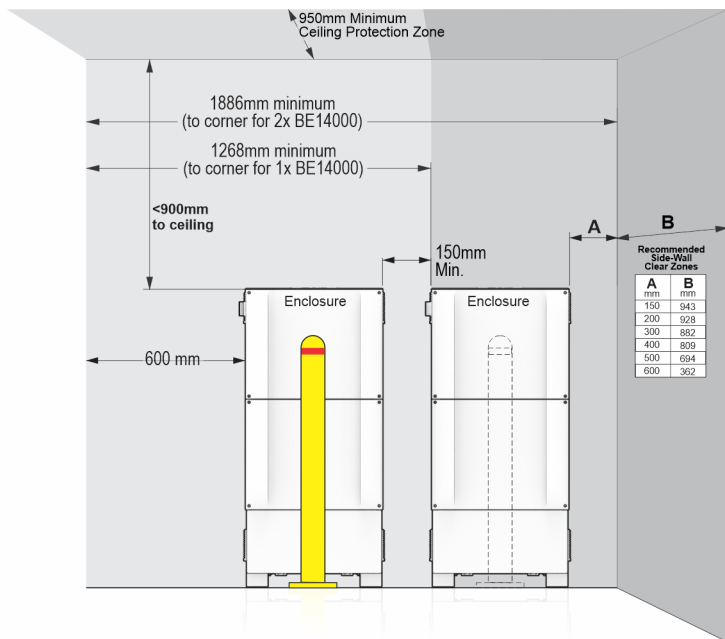
2.2.3 INSTALLATION NEAR A CORNER



2.2.4 INSTALLATION WITH A LOW CEILING

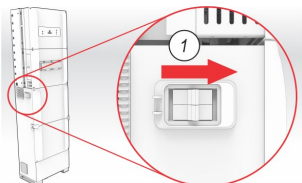
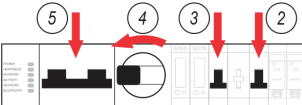
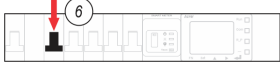


2.2.5 INSTALLATION NEAR A CORNER, WITH LOW CEILING



2.3 Shutdown the system

Shut down the inverter before beginning work.

STEP	PROCEDURE	COMMENT/ILLUSTRATION
1.	At the primary battery enclosure, switch the Enclosure Isolator OFF (right)	
2.	Open the BoS switchgear hatch. Switch the INVERTER AC isolator OFF (down).	
3.	Switch the BACKUP AC isolator OFF (down).	
4.	Turn the PV ARRAY DC isolator OFF (anti-clockwise).	 WARNING: PV, battery and grid supplies remain energised to the isolators.
5.	Switch the BATTERY SYSTEM DC isolator OFF (down)	
6.	At the switchboard, turn the SOLAR SUPPLY MAIN SWITCH OFF. The system is now shutdown, noting that the PV Isolator remains energised.	

2.4 Remove the Inverter and prepare the BoS

Lifting the BoS to the service position improves access to the top of the Primary Battery Enclosure. The Inverter must be removed before the BoS can be raised.

Remove the BoS Front Cover

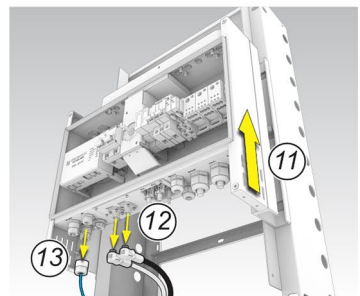
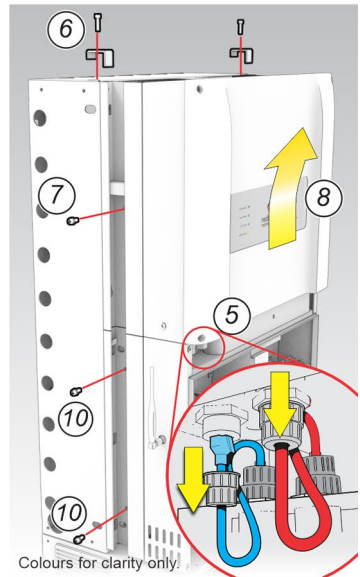
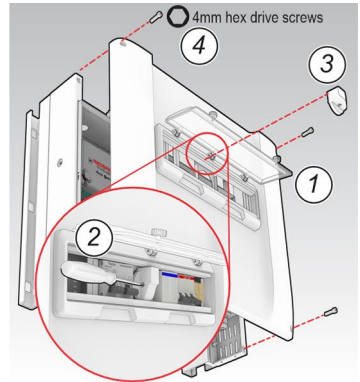
1. At the BoS Front Cover, open the Switch Panel Cover
2. Remove the PV knob grub screw
3. Remove the knob
4. Remove the four retainer screws and carefully lift away the BoS Front Cover.

Remove the inverter

5. Locate the two comms cables found left of the large connector. Loosen the glands and disconnect the RJ45 plugs.
6. At the top of the inverter, remove the two earthing yokes and retainer screws.
7. At each side of the inverter, remove the inverter-to-mounting frame retainer screws (2).
8. With an assistant, carefully lift the invert vertically 100mm (ensuring there are no snags), then away from the mounting frame.
9. Place the inverter on its back, on a suitable surface.

Prepare the BoS

10. At each side of the BoS, remove the BoS-to-mounting frame retainer screws (4).
11. With an assistant, carefully lift the BoS vertically about 170mm and hang on the next set of holes. If there is any resistance, stop and check for snags or tangles underneath.
12. At the underside of the BoS, unplug the DC+ and DC- cables.
13. Loosen the gland and unplug the cable from the BMS socket.



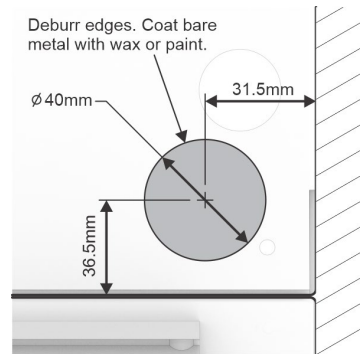
2.5 Wall mounting frame cable pass-thru

Later SH5000 include 40mm holes on each side of the Wall Mounting Frame. These are needed to pass the connection kit cables out of the inverter assembly toward the secondary enclosure.

Early SH5000 inverters do not have this feature, and it must be created.

1. Cut a 40mm hole on the appropriate side of the Wall Mounting Frame, at the location shown.
2. Deburr the cut edges and coat with black silicone sealant.

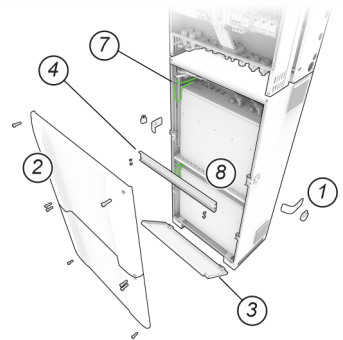
Hole cutters or punches are preferred—hole saws are not recommended: they are messy and there is a greater chance of damage to cables or cabinets.



2.6 Prepare primary enclosure

Hint: Take photos of all internal DC and BMS connection, and all zip-tie positions. This will enable the correct reinstatement of parts.

1. Remove Padlocks and Security Clamps if fitted.
2. Remove the upper and lower front covers and set aside. Take care not to damage the internal seal.
3. 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.
4. Remove the enclosure brace (to improve internal access)
5. Identify and note the Master Battery (this is connected to the FAN Controller “TO BATTERY” port, and usually on the top shelf). Note: Skip this step if newer model batteries are to be installed.
6. Disconnect DC and BMS cables from all batteries.
7. At the enclosure earth posts, disconnect the battery earth cables from all batteries.
8. Remove all batteries.
9. Remove the Battery Shelf.



2.7 Installing the secondary enclosure

2.7.1 INSTALLATION NOTES

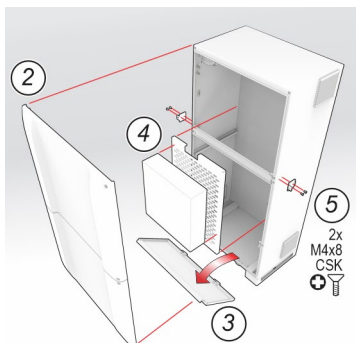
The BE14000 Battery Enclosure is designed for Redback SH5000 version 0222 or newer Smart Hybrid Inverters. It is not suitable for other inverters.

- The BE14000 Connection Kit includes parts to complete the installation of a second battery cabinet from 150mm up to 500mm either side of primary cabinet.
- For cabinets more than 500mm apart, installers will need to fabricate all cables and supply a 60x60mm cable duct.
- Ensure there is at least 150mm clear space either side of the enclosure. This is needed for cooling and to provide reasonable access to the fan filters and the DC Isolator.
- The enclosure features fan-assisted cooling. Do not block the cooling intakes or exhaust vents.
- Stand the enclosure on a stable, level surface. Use packers under feet if needed.
- Fasten the enclosure to a flat, structurally sound wall. Waterproofing will be affected if the enclosure is twisted or damaged. Use spacers if needed.
- Installer to supply suitable wall fasteners, up to $\phi 7\text{mm}$.



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.

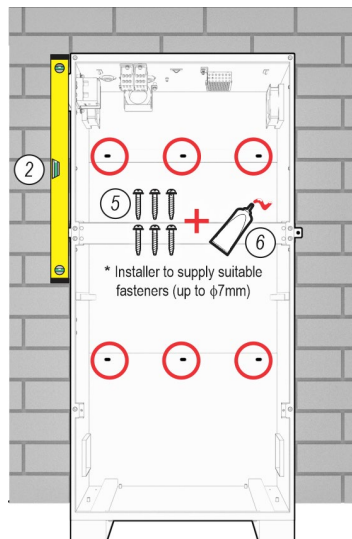


2.7.2 PRE-ASSEMBLY

1. Remove the cabinet from the transport carton. Place on a protective surface, front-side up.
2. Remove the upper and lower front covers and set aside. Take care not to damage the internal seal.
3. 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.
4. Cut the zip ties and remove the Battery Shelf and Accessories Box. Retrieve the Packing List from the accessories box and verify all parts are supplied.
5. Attach the two padlock hoops using M4x8 countersunk screws.

2.7.3 BATTERY ENCLOSURE INSTALLATION

1. Place the enclosure in the required location: on the floor; against the wall; 150mm clear space both sides.
2. Set the enclosure level. Use a spirit level as required. Add packers under feet if necessary.
3. Check that the wall is flat. Use spacers as required to ensure the enclosure does not distort when fastened to the wall.
4. Six mounting points are provided, as shown at right.
5. Fix the enclosure to the wall using suitable fasteners.
6. Seal around the fasteners using the supplied sealant.

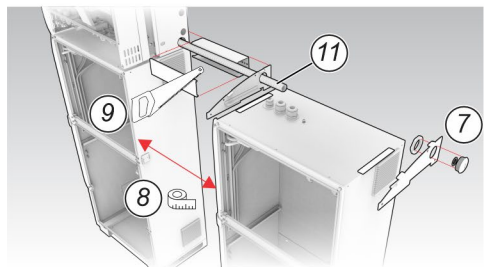
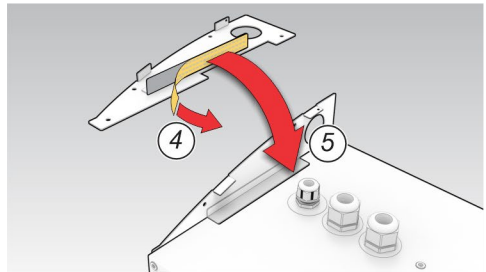
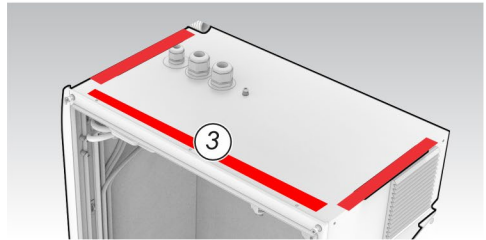
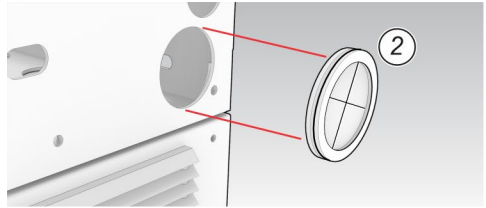


2.8 Connection Kit Cabinet-ware installation

2.8.1 CABLE DUCT AND TOP COVER

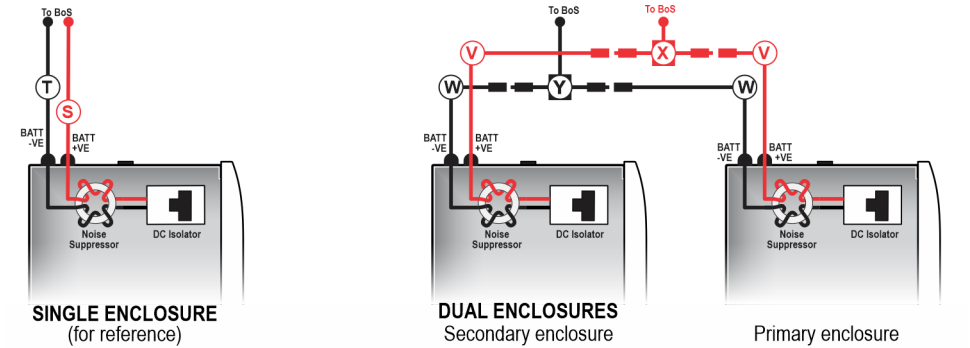
Note: your installation may be to the left of the existing cabinet in which case the illustration is flipped.

1. Open the Connection Kit and find the Packing List. Verify all parts are supplied.
2. Fit the cable pass-thru grommet to the appropriate hole in the Wall Mounting Bracket.
3. Clean the top and front edges of the enclosure using an alcohol swab. This promotes adhesion.
4. Select the left-hand side cover and expose the adhesive on the internal elbow.
5. Immediately fit the side cover elbow to the left-hand top of the enclosure
 - Align the cover flush to the enclosure side.
 - Use the Fan Cover as front-rear guide.
 - Move the elbow down toward the enclosure top.
 - If correctly aligned, apply light pressure to the top of the elbow to ensure full contact.
6. Repeat for the right cover.
7. Fit the Blind Grommet outboard as shown.
8. Measure the distance between the Wall Mounting Frame and the nearest side cover.
9. Cut the Extension Kit Cable Duct and Cover to the required length (1-2mm less than measured distance).
10. Align the cable duct channel to the 40mm holes in the Side Cover and Wall Mounting Frame and fasten to the wall.
11. Cut the corrugated duct to 100mm longer than the Square Duct.



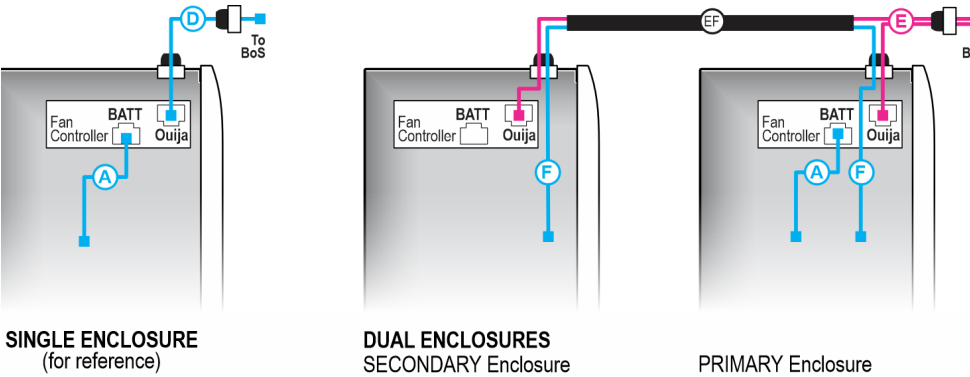
2.9 Inter-enclosure DC cable schematics

The factory-fitted DC Cables must be partly replaced, as described in the following sections.



2.10 Inter-enclosure BMS cable schematics

The factory fitted BMS cables must be completely replaced, as described in the following sections.



2.11 De-cable the primary enclosure

To ensure proper charging, equal length cable runs to each enclosure are required. The DC cables will be replaced by longer, equal length cables to each cabinet. This results in "spare" cable at the primary enclosure.

Prepare the enclosure for re-cabling as described below.

Note: All discarded cables should go recycling or e-waste.

Hint: Take photos of all internal DC and BMS connection, and all cable tie positions. This will assist the correct installation of new cables.

2.11.1 REMOVE DC CABLES

Inside the enclosure:

1. Remove the two screws and release the DC Isolator from the enclosure.
2. Note the isolator terminals to which the DC cables are attached.
3. Release the DC cables from the Isolator (2 screws).
4. Cut the cable ties and uncoil the DC cables from the Ferrite Core.

On top of the enclosure:

5. Loosen the DC cable glands.
6. Carefully withdraw the DC cables and discard.

2.11.2 REMOVE BMS CABLE

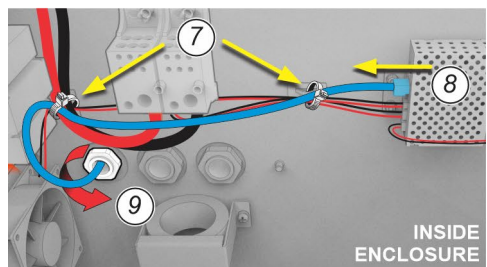
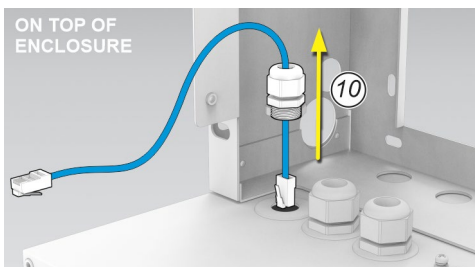
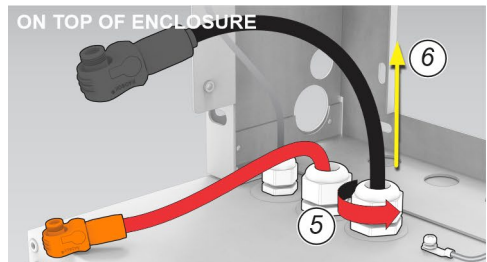
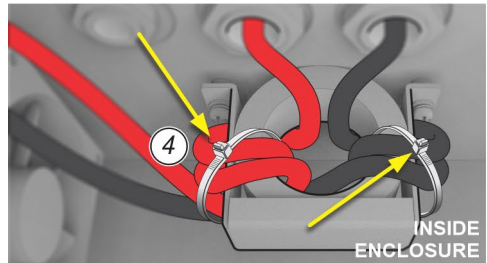
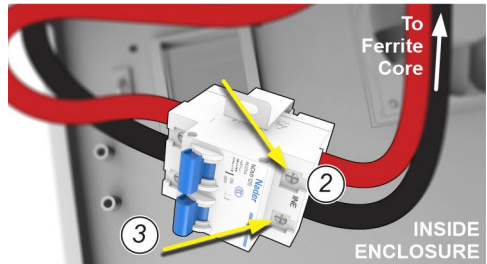
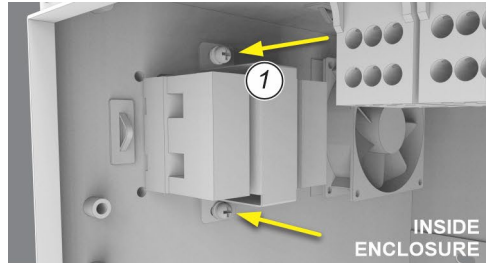
The BMS cable will be replaced by a new cable assembly, which enables control of the batteries and fan in the Secondary Enclosure.

Inside the Primary Enclosure:

7. Identify the existing BoS to Fan Controller BMS cable: cut and remove any retaining cable ties.
8. Unplug the cable from the Fan Controller OUIJA port.
9. Remove the 27mm Retainer Nut from the BMS Cable Gland.

On top of the enclosure:

10. Remove the BMS cable and gland assembly.



2.12 Re-cable the Primary Enclosure

2.12.1 INSTALL NEW BMS CABLES

Cables E & F are supplied as a sheathed assembly with cable glands correctly positioned on the cables. Cable-EF refers to the sheathed assembly.



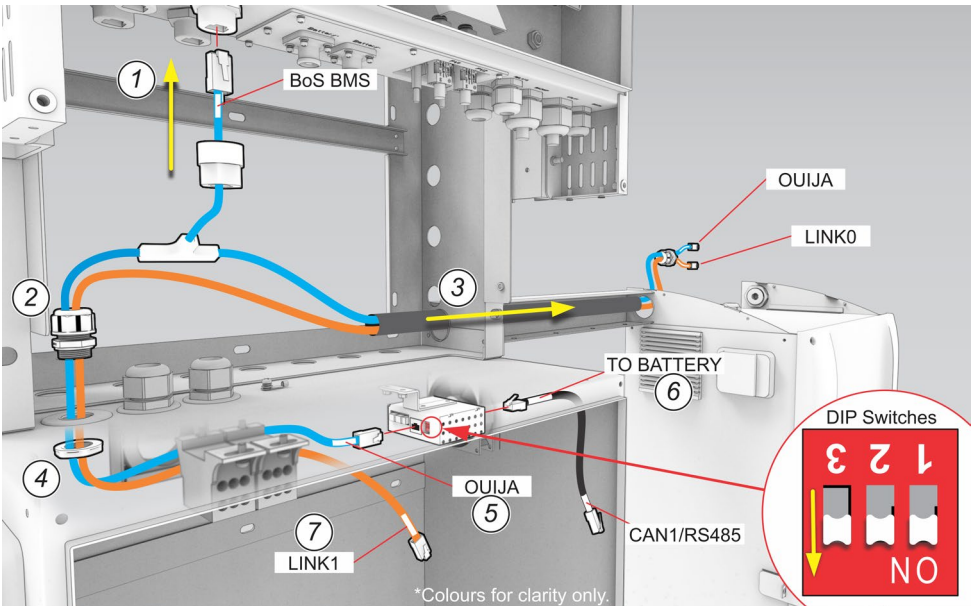
Hint: To aid correct installation, refer to the Secondary Enclosure and or your reference photos.

On top of the primary enclosure

1. Cable-EF: Insert “BoS BMS” plug into the BoS “BMS” port and tighten the gland.
2. At the same end, pass plugs “Ouija” and “Link 0” through the enclosure “BMS” hole.
3. Feed the other end of the cable assembly through the 40mm hole (in Wall Mounting Frame), square duct and side panel to the top of the secondary enclosure.

Inside the primary enclosure

4. Fit the 27mm cable gland securing nut. Tighten.
5. Fit “Ouija” plug into the Fan Controller “OUIJA” port.
6. Fit Cable-A “TO BATTERY PORT” plug into the Fan Controller “TO BATTERY” port. Leave Cable-A hanging free.
7. Leave Cable-F BMS CAB to CAB hanging free.
8. Ensure all Fan Controller Dip Switches are ON, as shown.

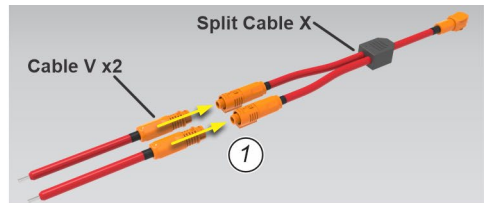


2.12.2 INSTALL THE NEW DC CABLES

The DC cables are split to electrically parallel the two battery enclosures. Y-cables connect the BoS DC terminals to the DC cables from each enclosure.

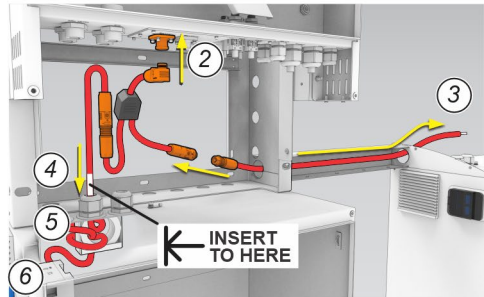
At the BoS

1. Connect the two red Cables "V. SPLIT to ENC" to the red split cable X.
2. Connect split-cables X right angle connector to the BoS BATTERY+.



On top of the primary enclosure:

3. Pass one red through the 40mm hole (in Wall Mounting Frame), square duct and side panel to the top of the secondary enclosure.
4. Thread one red Cable-V through the BATTERY+ gland to the indicator on the cable and tighten the gland.



Inside the primary enclosure:

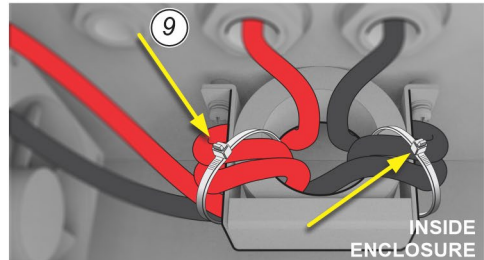
5. Wind the red Cable-V through the Ferrite Core twice, ensuring winding direction is the same as original (refer to your photos and or the secondary enclosure).
6. Insert the crimped end into the upper terminal of the DC Isolator and fasten in place.

Repeat process for negative DC cables

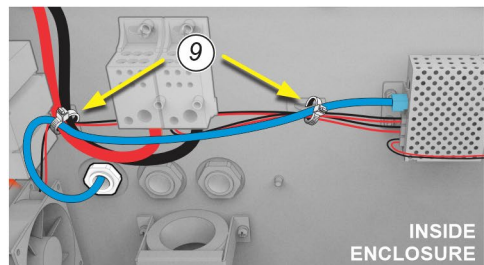
7. Repeat steps 1-6 for the black Split cable Y and black cables W. Pay special attention to winding the Ferrite Core. Refer to the secondary enclosure #2.

Tidy up the cable installation

8. Refit the DC isolator to the Battery Enclosure (two screws).
9. Zip-tie all DC and BMS cables back in their original position (four places) except leave Cable-F BMS CAB to CAB hanging free.
10. Tighten all glands.



Re-cabling of the primary enclosure is now complete.



2.13 De-cable the Secondary Enclosure

De-cabling the secondary enclosure is identical to the primary enclosure. Repeat the procedure described in Section 2.11.

2.14 Re-cabling the Secondary Enclosure

To assist correct installation, refer to the Primary Enclosure and or your reference photos.

2.14.1 INSTALL NEW BMS CABLES

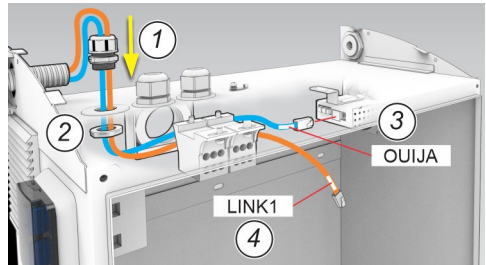
Installation of the BMS cables is similar to the primary enclosure.

Starting on top of the secondary enclosure:

1. Pass the cable EF through the “BMS” hole until the Gland is seated.

Inside the enclosure:

2. Fit the 27mm cable gland securing nut and tighten.
3. Insert “Ouija” plug into the Fan Controller “Ouija” port.
4. Leave Cable F “BMS CAB to CAB” hanging free.



2.14.2 INSTALL THE NEW DC CABLES

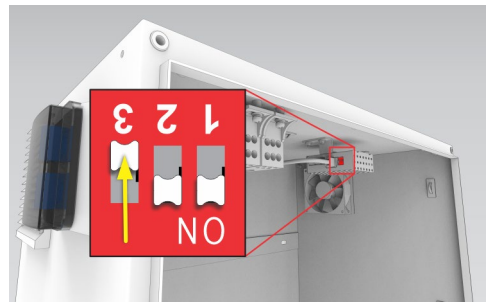
Installation of the DC cables is the same as the primary enclosure. And the DC cables should already be run to the secondary enclosure. Repeat section 2.12.2, steps 4-10.

2.14.3 CHANGE THE DIP SWITCH SETTINGS

Inside the secondary cabinet, at the Fan Controller:

1. Change the Fan Controller identity: change the DIP switch to DOWN, UP, UP as shown. This ensures the temperature in each enclosure can be reported independently and the fans actuated accordingly.

Re-cabling of the secondary enclosure is now complete.



2.14.4 FIT THE SECONDARY ENCLOSURE EARTH CABLE

The Earth Cables listed below will be removed or installed as described below.

From the connection kit box:

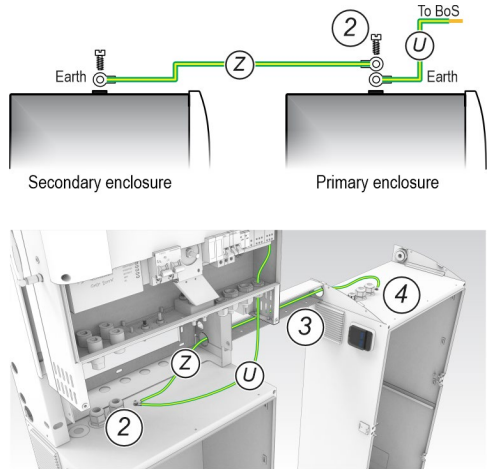
1. Retrieve cable “Z: ENC to ENC” from the Connection Kit.

On top of the primary enclosure:

2. Connect the earth cable using the existing screw and retaining the existing cable (goes to BoS).
3. Feed the free end of the earth through the 40mm hole, square duct, and side panel to the top of the Secondary Enclosure.

On top of the secondary enclosure:

4. Attach the earth cable using one M5x10 screw.



3. Battery installation

3.1 Overview

The Redback system has a storage capacity of up to 28.4kWh using one or two BE14000 enclosures and 4-8 batteries. Each enclosure holds up to four batteries and a second enclosure is always required for five or more batteries. Batteries are connected in parallel.

Any combination of Pylontech US2000, US2000 Plus or US3000 is allowed, provided the newest-model-is-master rule is applied.



NOTE: US3000C or US5000 batteries are not supported, and future support is not planned.



WARNING: SHOCK HAZARD. New batteries have some charge. Turn the BoS Battery System DC isolator OFF during installation. Also turn the individual battery enclosure isolators OFF. Do not activate batteries during installation.



INFORMATION FOR FUTURE USE. When replacing or adding batteries, all batteries must be charge balanced and firmware must be updated, otherwise performance will be affected.

3.2 Allowable battery combinations and storage capacities (kWh)

		Number of US3000 ^x batteries @3.55kWh each●								
		0	1	2	3	4	5	6	7	8
Number of US2000 ^y batteries @ 2.4kWh each●	0	0	■	7.10	10.65	14.20	17.75	21.30	24.85	28.40
	1	■	5.95	9.50	13.05	16.60	20.15	23.70	27.25	◆
	2	4.80	8.35	11.90	15.45	19.00	22.55	26.10	◆	◆
	3	7.20	10.75	14.30	17.85	21.40	24.95	◆	◆	◆
	4	9.60	13.15	16.70	20.25	23.80	◆	◆	◆	◆
	5	12.00	15.55	19.10	22.65	◆	◆	◆	◆	◆
	6	14.40	17.95	21.50	◆	◆	◆	◆	◆	◆
	7	16.80	20.35	◆	◆	◆	◆	◆	◆	◆
	8	19.20	◆	◆	◆	◆	◆	◆	◆	◆

● Usable capacity is typically 90% of total capacity ■ Battery installations must include a minimum of two batteries per cabinet of any listed model
◆ Insufficient space in enclosure for this combination. ^xPylontech US3000. ^yPylontech US2000 or US2000 Plus.

Pylontech batteries use an integrated Battery Management System (BMS) to manage ultimate charge and discharge rates (protecting the batteries from heat damage) and to inform the Smart Hybrid System of status. The BMS also protects the batteries from total discharge, aiding system reliability and longevity.

Batteries are identified as Master, 2, 3, 4 etc up to 8. This refers to the position of individual batteries in the BMS chain of command, where the first connected battery is the Master.

The battery identity may also indicate the physical position of the battery within the enclosure, as indicated in section 2.15.4 but this is installer's choice.

3.3 Battery installation notes

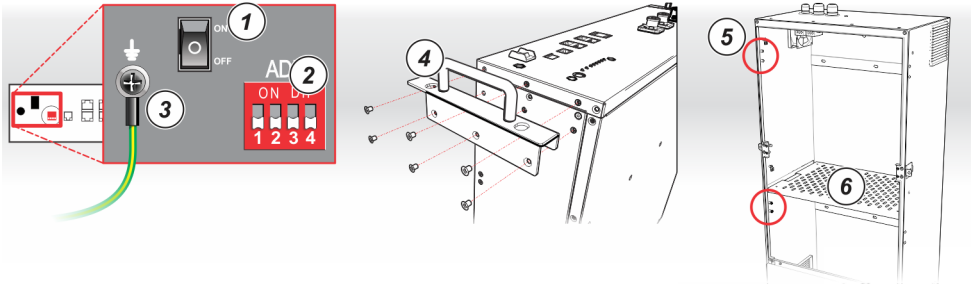
- The Master battery is always the newest model in the combination, in the 1st enclosure (Newest-is-Master rule)
- The Newest-is-Master rule always applies.
- To ensure even cooling, batteries must be installed in the approximate positions shown. They must not touch the rear or sides of the enclosure, or each other.
- Batteries are unrestrained on the enclosure shelves, held in place by their own mass.
- Batteries must be independently earthed to the enclosure as shown in sections [3.4.3](#).

3.4 Installing US2000 and or US3000 batteries

3.4.1 PREPARING BATTERIES FOR INSTALLATION

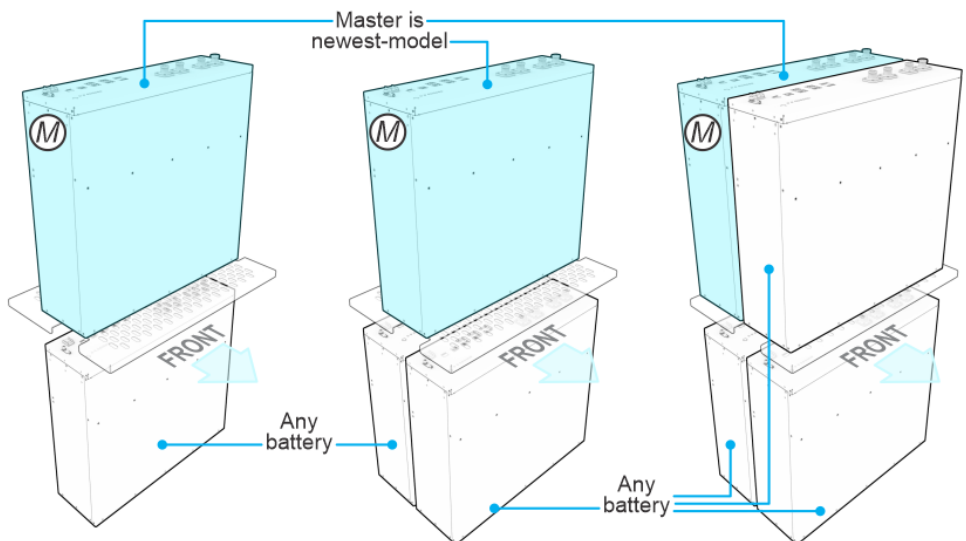
BMS cables connect the Fan Controller to the first battery, and between subsequent batteries. Each battery must be earthed to the enclosure cabinet.

1. Turn all batteries OFF.
2. Set all battery DIP switches down, as shown, to ensure correct communication.
3. Connect a 350mm Earth Cable to the Earth terminal of each battery.
4. Optional: Remove all battery handles, as shown.
5. Note the location of enclosure battery earth studs.



3.4.2 POSITION BATTERIES IN THE ENCLOSURES

1. Turn the enclosure DC Isolators OFF position (right).
2. Position batteries in each cabinet as shown below, to provide optimal cooling and cabinet stability. Newest-model is always the master, and all terminals and sockets face toward top of cabinet.
3. Connect the earth cable from each battery to a nearby earth post (M5x10) (see next page).
4. For convenience, populate the bottom shelf first; connect earth cables; then refit the battery shelf.



3.4.3 BMS CABLE CONNECTIONS

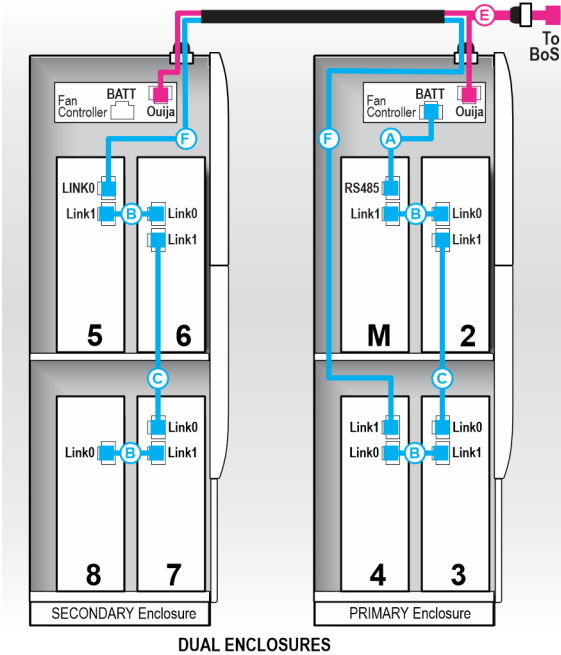
BMS cables connect the Fan Controller to the Master battery, then daisy-chain to other batteries and enclosures. Cables E & F are part of the harness fitted at sections 2.12 and 2.14.

Inside the Primary enclosure:

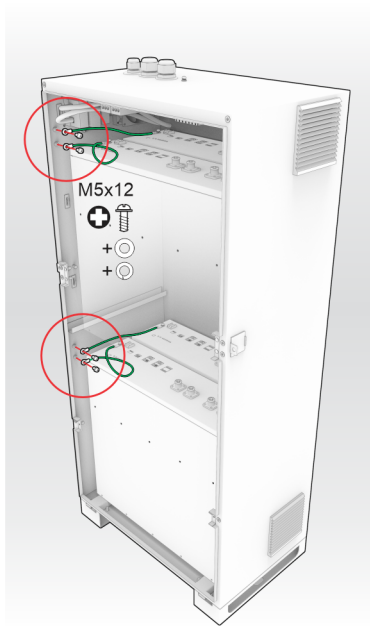
- 1. Connect supplied cables A, B, and C as needed.
- 2. Connect cable F to the last battery LINK1 port, as shown.
- 3. Push any excess cable F back out of the enclosure (through the gland).
- 4. Connect the cattery earth cables to a nearby earth studs.
- 5. Tighten the BMS cable gland.

At the Secondary enclosure:

- 6. Connect cables F, B, and C as needed (if necessary, pull in more cable F).
- 7. Connect the cattery earth cables to a nearby earth studs.
- 8. Tighten the BMS cable gland.
- 9. Store any unused cables in the enclosure.



DUAL ENCLOSURES



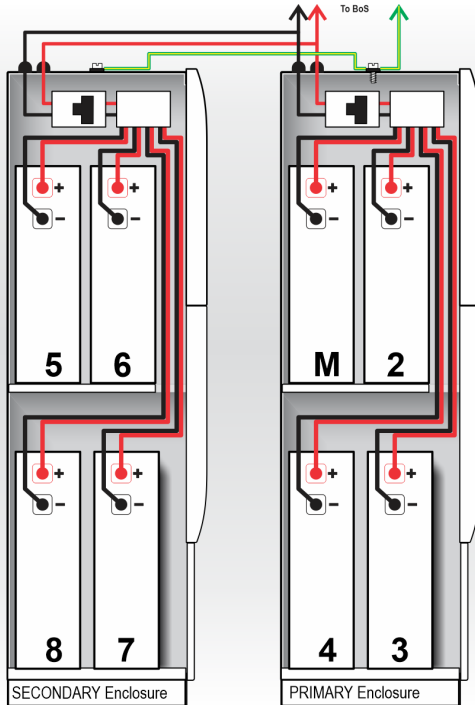
BATTERY EARTH CONNECTIONS

CABLE LEGEND				
A	Cabinet to Battery	400mm	1x	Included with BE14000
B	LINK (Battery to Battery)	300mm	4x	1x included with Battery
C	LINK (Battery to Battery)	1000mm	1x	Included with BE14000
E	BOS to FAN LINK	2600mm	1x	Included in Connection Kit
F	CAB-CAB (Cabinet to cabinet)	shared	1x	Included in Connection Kit
M,2,3 etc	Battery number (in BMS sequence)			

3.4.4 BATTERY DC POWER CONNECTIONS

Connect one red and one black battery cable to each battery. Observe polarity and labelling.

- The batteries are connected in parallel. DC cables connect to a junction box just after the Battery DC Isolator.
- The battery leads are coiled and zip-tied in place for transport. Use end cutters to release the required cables.
- Each battery has two positive and two negative terminals. Each pair (positive or negative) is linked internally.
- Route cables to the lower shelf via the portals at sides of the upper shelf.
- Do not pinch cables.



4. Commissioning

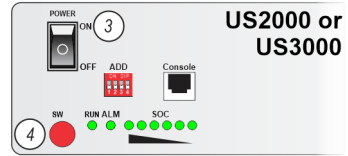
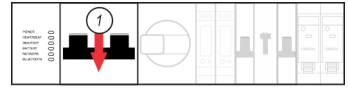
4.1 Overview

The system re-commissioning process is:

- Commission the batteries.
- Start the inverter.
- Update battery settings in the RedbackINSTALL app.

4.2 Commission Pylontech batteries

1. At the BoS, ensure the BATTERY SYSTEM DC isolator is OFF (down).
2. At each enclosure, ensure the Battery Isolator is OFF (to right).
3. All batteries in all enclosures: toggle the Power switch ON.
4. On the Master battery, press and hold the red SW button until the SoC LEDs flash, in sequence, on all connected batteries i.e., M, 2, 3, 4, 5 etc. All connected batteries are now active.



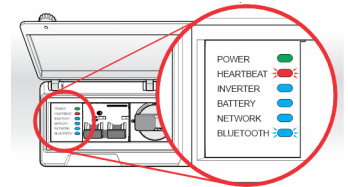
4.3 Restart the inverter

Start-up notes

Ethernet connected systems will automatically connect to the internet, if available, indicated by the NETWORK LED being continuously ON.

The flashing EMS BLUETOOTH icon indicates the inverter is advertising.

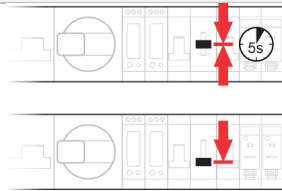
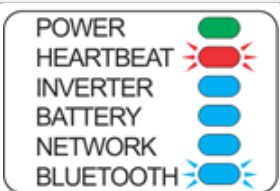
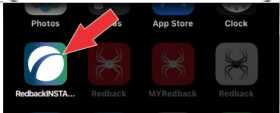
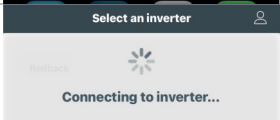
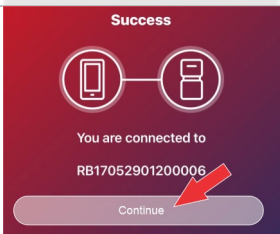
Do not turn power OFF during start-up: start-up time will increase, and the EMS may crash.



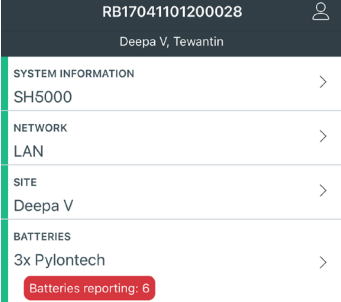
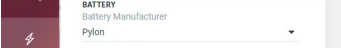
#	PROCEDURE	ILLUSTRATION
1.	At the main switchboard, turn the SOLAR SUPPLY MAIN SWITCH ON	1. MAIN SWITCH BOARD
2.	At both enclosures, turn the Battery Isolator ON (to left)	2.
3.	At the inverter, switch the BATTERY SYSTEM DC isolator ON (up)	3.
4.	Temporarily refit the PV ARRAY DC isolator knob and turn ON (clockwise to 12 o'clock).	4.
5.	Switch the BACKUP AC isolator ON (up)	5.
6.	Switch the BYPASS switch to Backup (down)	6.
7.	Switch the INVERTER AC isolators ON (up)	7.
8.	Wait 2 minutes for the Inverter to boot-up and advertise Bluetooth (EMS BLUETOOTH icon is flashing).	

4.3.1 CONNECT REDBACKINSTALL TO THE INVERTER

The RedbackINSTALL app is user friendly... it barely requires any guidance: there is in-app information available.

#	PROCEDURE	ILLUSTRATION
1.	Ensure the EMS Bluetooth LED is flashing, indicating that Bluetooth is available. <i>If not flashing, restart the EMS by moving the BYPASS switch to the MIDDLE position for 5 seconds, then return it to the DOWN position.</i>	 
2.	Open RedbackINSTALL and login. RedbackINSTALL will scan for products advertising Bluetooth and display a list of nearby Redback products that are advertising. Select the required Redback product from the list. Settings page will open.	
3.	Wait up to two minutes.	
4.	A success message will appear. Tap Continue to go to settings.	

4.3.2 UPDATE THE BATTERY SETTINGS

#	PROCEDURE	ILLUSTRATION
1.	Navigate to the Batteries section of RedbackINSTALL. The most recently detected battery quantity is displayed.	
2.	If the new quantity is correct: - Touch the arrow - Follow the prompts to complete the system settings update.	
3.	If the new quantity is not correct: - Check all batteries are ON and BMS cables are plugged in correctly. Begin your check at the last detected battery: number 7 in this example. - Restart the system and app, and check again.	
4.	Confirm battery quantity outside the app - Go to portal.redbacktech.com - Search for the inverter (by serial number or address) - View battery information on the Dashboard>Settings tab.	     

5. Maintenance



WARNING: ELECTROCUTION HAZARD. Lethal voltages may be present. Isolate all sources of power and test before removing covers.

The Redback BE14000 is a low maintenance product. Annual maintenance is required.

Note: Filters and fans may require more frequent cleaning in dusty conditions.

ITEM	NAME	REASON	PROCEDURE	BY SERVICE PERSON	BY OWNER
1.	Battery Enclosure vents and filter	Airflow is reduced when dust accumulates on the vents, or the filter is clogged. The lower intake vents are more likely to be affected.	Use a small pry tool to release the vent covers - gently pry next to the notches at top or bottom of cover. Blow or brush the vents clean. Wash the filter pads in soapy water and squeeze dry. Refit all parts ensuring the vents face downward.	✓	✓
2.	Battery Enclosure Fan blades	Fan efficiency is reduced when dust accumulates on the fan blades.	Remove the Upper Vent Cover and filter pad. Gently blow, brush, or wipe off fan blades. Do not overspeed the fan. Replace all parts.	✓	✓
3.	Cabinet	Cabinet may become soiled	Wipe down outside of cabinet with a just-damp cloth. Immediately wipe dry with a microfibre cloth. Do not use cleaning agents as they may damage the finish.	✓	✓
5.	Battery connections	Battery efficiency may reduce if connections or terminals become dirty or corroded.	Unplug and inspect battery cable connections. Remove corrosion or debris. Spray with contact cleaner.	✓	✗
6.	Cabinet seals	Concealed seals ensure cabinet water resistance	Remove front covers and inspect seals for hardening, tears, or other damage. Look for signs of water in cabinets.	✓	✗
7.	Cable seals and caps	Seals and caps prevent water and insects entering the battery enclosure or connections.	Remove BoS front cover and Connection Kit top cover. Tighten all cable glands and waterproof caps.	✓	✗

6. System Specifications

PV PORT	VERSION 022x	VERSION 024x
Number of MPPTs	2	2
Strings per MPPT Input	1/1	1/1
MPPT Operating Voltage (range)	DC 125 - 550V	DC 125 - 550V
MPPT Full Load (range)	DC 215 – 500V	DC 190 - 500V
Maximum Input Voltage (Vmax)	DC 580V	DC 580V
Maximum Current (Imp)	DC 11/11A	DC 14/14A
Maximum PV Input Power ¹	8000Wp	10000Wp
Short Circuit Current (Isc) ²	DC 18/18A	DC 18/18A
Maximum Back Feed Current	0A	0A
Decisive Voltage Class (DVC)	DVC-C	DVC-C
¹ Over-panelling benefits vary by location ² Manufacturer's declared and tested Max Short Circuit Current (ISC Max)		
GRID INTERACTIVE PORT	ALL VERSIONS	
Nominal Output Voltage	AC 230V	
Nominal Output Frequency	50 Hz	
Rated Output Current	AC 21.7A	
Max. Output Current	AC 24.5A	
Rated Output Active Power	AC 5000W	
Rated Output Apparent Power	5000VA	
Rated Input Current	AC 40A	
Rated Input Apparent Power	9200VA	
Power Factor (range)	0.8 lagging to 0.8 leading	
Output Voltage THD	<4.5%	
Inrush Current	60A, 3 μs	
Maximum Output Fault Current	43A, 0.2s	
Maximum Output Overcurrent Protection	60A, 3 μs	
Decisive Voltage Class (DVC)	DVC-C	
BACKUP PORT		
Nominal Output Voltage	AC 230V	
Nominal Output Frequency	50 Hz	
Rated Current	AC 20A	
Rated Active Power	AC 4600W	
Rated Apparent Power	4600VA	
Peak Apparent Power	6900VA (10 sec max)	
Power Factor (range)	0.8 lagging to 0.8 leading	
Output Voltage THD	<4.5%	
Inrush Current	55A, 2μs	
Maximum Output Fault Current	43A, 10s	
Maximum Output Overcurrent Protection	30A	
Decisive Voltage Class (DVC)	DVC-C	
BATTERY PORT		
Voltage (nominal)	DC 40 - 60V	
Max. Current (charge)	DC 90 A	
Max. Power (charge)	DC 4600W	
Max. Current (discharge)	DC 100A	
Max. Power (discharge)	DC 4600W	
Battery Type	Li-ion	
Battery Depth of Discharge	90%	
Short Circuit Current	1600A	
Decisive Voltage Class (DVC)	DVC-A	

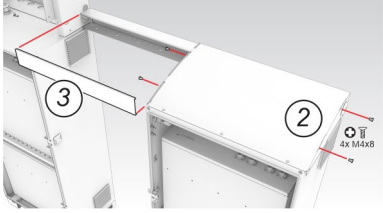
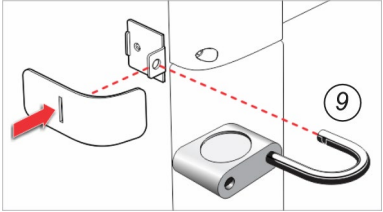
GENERAL INFORMATION		ALL VERSIONS
Operating Temperature Unconditioned without solar effects		-25°C to 60°C
Operating Temperature Derated Output		below 10°C and over 45°C
Operating Relative Humidity		0 - 95%
Operating Altitude		0 - 3000m
Protective Class		I
Ingress Protection Rating		IP65
AC Overvoltage Category		OVC III
DC Overvoltage Category		OVC II
Active Anti-islanding Method		Active Frequency Drift
Moisture Location Category		4K4H
External Environment Pollution Degree		Grade 1, 2 and 3
Inverter Topology		Non-isolated
Country of Origin		China
Demand Response Modes		DRM 0
Standby Self-Consumption		<13W
Noise Emissions		<30 dBA (Inverter only)
Warranty		10 Years
EFFICIENCY		
Maximum Efficiency		97.60%
Maximum Battery to Load Efficiency		94%
European Efficiency		97%
PHYSICAL DATA		
System Weights	SH5000 and BoS, installed	47kg
	For each enclosure	Add 37kg
	For Connection Kit	Add 3.0kg
	For each US2000 pair	Add 48kg (up to two pairs per cabinet)
	For each US3000 pair	Add 64kg (one pair per cabinet)
Installed Dimensions	SH5000 + 1x BE14000	566 x 360 x 1960mm
	SH5000 + 2x BE14000	1175(min) x 360 x 1960mm
Material		Aluminium
Finish		Sealed and powder coated
BE14000 SMART HYBRID BATTERY ENCLOSURE DATA		US2000 AND OR US3000●
Number of Battery Units		2 to 4
Storage Capacity		4x 2.4kWh or 4x 3.55kWh
Maximum Capacity		14.2kWh
Nominal Voltage		DC 48V
Rated Current		DC 100A
Fan Specification		DC 48V / 0.13A x2
Protective Class		I
Ingress Protection Rating		IP54
Noise Emissions		<42dBA◆
Dimensions (W x D x H)		545x348x1125 mm
Material		Steel
Finish		Sealed and powder coated
●US2000 and US3000 can be mixed provided that a US3000 is configured as the Master Battery. ◆Measured in Redback laboratory at 1m in front of Battery Enclosure.		

ISOLATORS (ALL VERSIONS)		PV PORT	GRID INTERACTIVE PORT	BACKUP PORT	BATTERY PORT	BATTERY CABINET
Manufacturer Part Number		XBE+3410/2	S201M-C40	S201-C25	NDB1-125	NDB1-125
Rated Insulation Voltage		1100V	440V	440V	500V	500V
Rated Impulse Withstand Voltage		8kV	4kV	4kV	4kV	4kV
Suitability for Isolation		C	C	C	C	C
Rated Operational Current		16A	32A	25A	125A	125A
Utilisation Category		DC-PV2	A	A	A	A
Rated Short-time Withstand Current (Icw)		700A	NA	NA	NA	NA
Rated Short-circuit Making Capacity (Icm)		1000A	NA	NA	NA	NA
Rated Breaking Capacity (Isc)		5kA	15kA	10kA	10kA	10kA
COMMUNICATIONS PORTS		ALL VERSIONS				
Ethernet	RJ45; Straight-thru					
DRED	RJ45; DRED					
Relays	RJ45; 4x Digital I/O; +DC5V & GND					
kWh Meter	RJ45; RS485 MODBUS					
RS485	RJ45; Factory Use Only					
Wi-Fi	802.11b/g/n/ac; 2.4GHz					
LTE	NA					
Interlock	NA					
USER INTERFACE						
Front Panel Display	Coded, coloured LEDs					
Communications	Bluetooth for commissioning; Wi-Fi or ethernet for remote access					
Remote access	Web Portal or MYRedback app (Android or iOS)					
Remote Firmware Updates	Supported					
Power/energy monitoring	Includes 1 x utility grade energy meter (class 1)					
CERTIFICATIONS, STANDARDS AND APPROVALS						
AS/NZS 4777.2:2020	IEC 62116:2014	IEC 60529	RCM			
IEC 62109-1:2010	EC 62040-1:2017	EN 61000	CE Mark (LVD, EMC, RoHS directives)			
IEC62109-2:2011	IEC 62477-1:2012					
DESIGNED WITH INSTALLATION STANDARDS CONSIDERED						
AS/NZS 3000:2018	AS/NZS 5139:2019	AS/NZS 5033:2021				

DOCUMENT	COMMENT	LINK
Redback Customer Support Team	Available Mon-Fri 8am-4pm AEST Location: Brisbane, Australia Time zone: UTC +10:00	1300 240 182 (Australia) +61 7 3180 2325 (International) customersupport@redbacktech.com
Installation Manual SH5000 + BE14000	Comprehensive manual including troubleshooting.	redback.link/shim
BE14000 Secondary Enclosure Installation Manual	Latest version of this document in PDF	redback.link/shck
Single Line Diagram	Handy document template	redback.link/shsld
SH5000 Owner's Guide	Day-to-day usage of the inverter, MyRedback app and Redback Portal.	redback.link/shog
Application form	Apply for Redback Authorised Installer Status	redback.link/apply
Redback Document Library	Password required	redback.link/docs
Pylontech	Battery manufacturer website	pylontech.com.cn
SafeWork Australia	Safe work procedures	safeworkaustralia.gov.au

8. Final close-up and handover

Complete these items after the system settings are updated and the system has returned online. Ensure the owner is available, to get them started with their new or updated system.

Item	Description	Completed
1.	Tighten all glands.	
2.	Fasten the Connector Kit Cap at top and sides using four M4x8 CSK screws.	
3.	Snap on the connector duct cover.	
4.	Replace all front covers.	
5.	Replace the PV Array DC Isolator knob.	
6.	Close switchgear cover and tighten thumbscrews.	
7.	Clean worksite and dispose of rubbish appropriately.	
With the owner:		
8.	Walk through the installation, ensuring the homeowner understands what has been installed (and where).	
9.	If possible, have the owner fit any padlocks to the enclosures, ensuring they retain the keys. If padlocks are not fitted, hand-over the security clamps and explain how to fit later, if needed.	
10.	Recap the limitations of the system, even when the grid is connected. Referring to the owner's copy of the Owner's Manual is best, and this also presents an opportunity to update the system information recorded therein.	
11.	Demonstrate how to shut down and restart the inverter and enclosures, as shown in the Owner's Guide.	
12.	With the owner, open the MyRedback app, and show that the additional batteries have been installed.	
13.	Help owner to log on to the portal and demonstrate, including how to: - Download Owner's Guide - Review performance - Raise an on-line support request	
14.	If possible, update the system information in the SH5000 Homeowner's Guide, originally supplied with the new system.	
15.	Handover new documentation to the homeowner, including: - Warranty Booklet - Installation Manual (optional)	

INSTALLATION DETAILS

ADDRESS

INVERTER

RB

INSTALLATION DATE

2 0 2

BATTERY ENCLOSURE 1 (OPTIONAL)

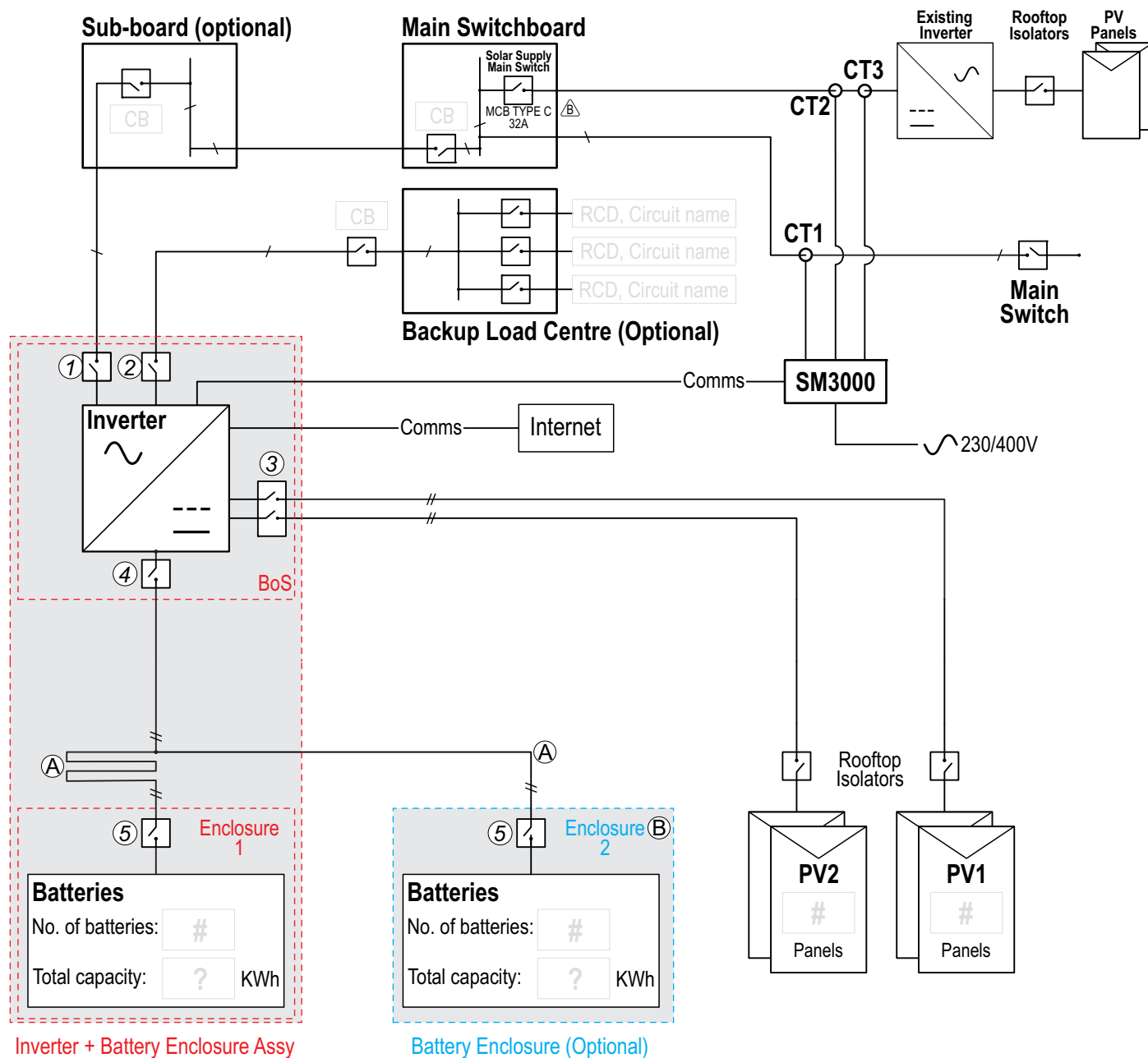
RB

BATTERY ENCLOSURE 2 (OPTIONAL)

RB

SH5000 SINGLE LINE DIAGRAM - AC-COUPLED INSTALLATION

Installer: Complete and retain for your site documentation



SH5000/BE14000 Integrated Isolators

- ① Inverter AC Isolator 40A
- ② Backup AC Isolator 25A
- ③ PV Array DC Isolator 6P 12.5A @800V
- ④ Battery System DC Isolator 2P 125A
- ⑤ Battery Enclosure DC Isolator 2P 125A

Other devices

Record details of installer selected devices (in grey boxes provided).

Notes:

- A. Dual DC Power cables must be equal length.
- B. 2nd enclosure requires Connection Kit
- C. This product is not warranted for off-grid installation which is defined to be an installation at a premises that is intentionally unable to receive energy from a low voltage distribution Network.

SCALE	NA		MATERIAL
DRAWN	AS	DATE	07MAR2023
CHKD	AK	DATE	07MAR2023
APPD		DATE	

DESCRIPTION	SH5000 SINGLE PHASE INVERTER SINGLE LINE DRAWING AC-COUPLED INSTALLATIONS
DRAWING NUMBER	File:SH5000 Single Line Diagram r4.des
PART NUMBER	340-00602-00
REVISION	4
SHEET	2 OF 2
A4	

B	SOLAR SUPPLY MAIN SWITCH added "MCB TYPE C 32A"	AS	AK	07MAR2023
A	Formatted to centrefold layout.	AS	AK	30APR2021
ITEM	CHANGE DETAILS	DRAWN BY	APPROVED	DATE
Building 1015, 80 Meiers Rd, Indooroopilly, QLD 4068 Australia 1300 240 182 www.redbacktech.com				

INSTALLATION DETAILS

ADDRESS

INVERTER

RB

INSTALLATION DATE

2 0 2

BATTERY ENCLOSURE 1 (OPTIONAL)

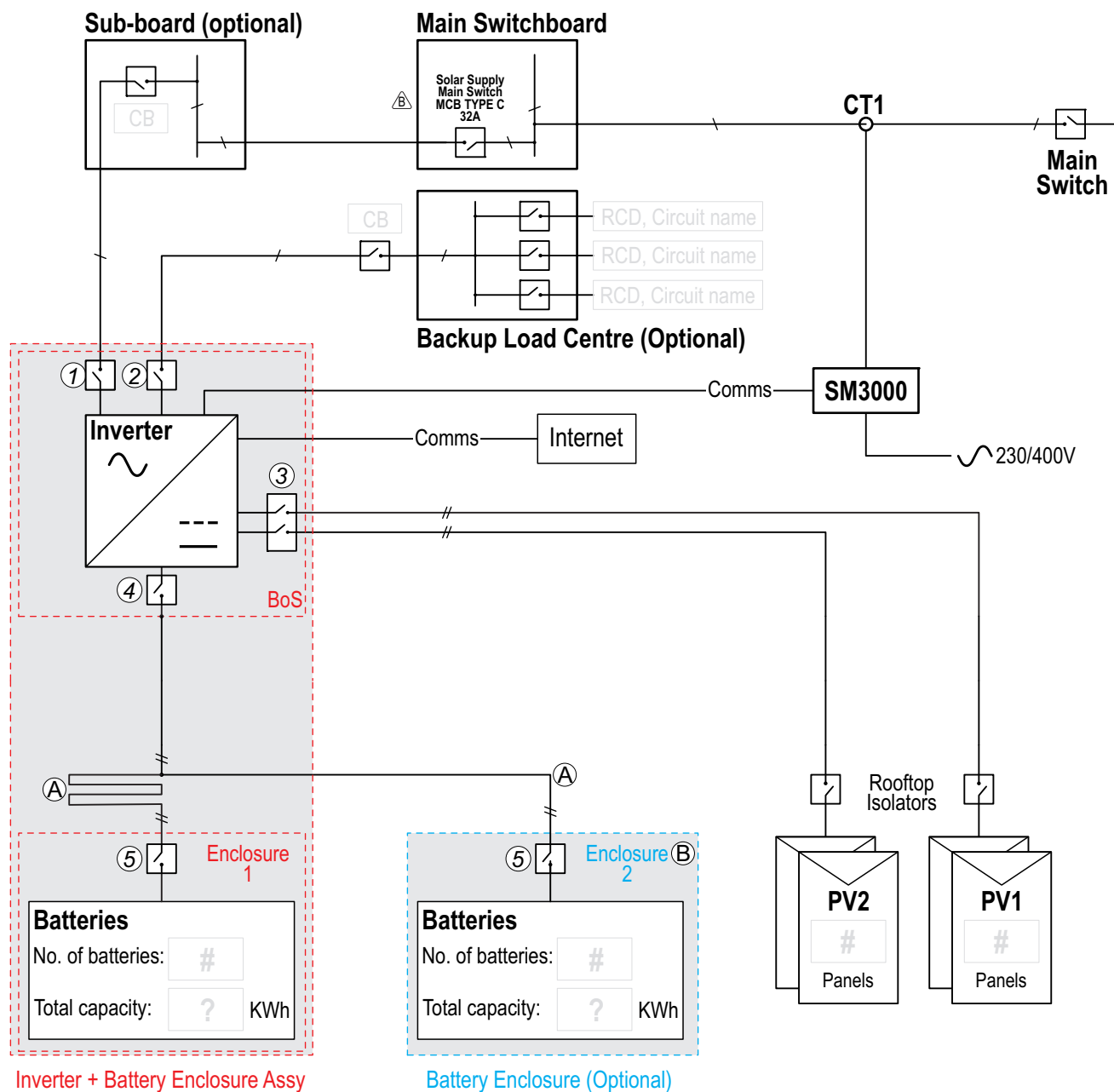
RB

BATTERY ENCLOSURE 2 (OPTIONAL)

RB

SH5000 SINGLE LINE DIAGRAM - INDEPENDENT INSTALLATION

Installer: Complete and retain for your site documentation



SH5000/BE14000 Integrated Isolators

- ① Inverter AC Isolator 40A
- ② Backup AC Isolator 25A
- ③ PV Array DC Isolator 6P 12.5A @800V
- ④ Battery System DC Isolator 2P 125A
- ⑤ Battery Enclosure DC Isolator 2P 125A

Notes:

- A. Dual DC Power cables must be equal length.
- B. 2nd enclosure requires Connection Kit
- C. This product is not warranted for off-grid installation which is defined to be an installation at a premises that is intentionally unable to receive energy from a low voltage distribution Network.

Other devices

Record details of installer selected devices (in grey boxes provided).

SCALE	NA		MATERIAL
DRAWN	AS	DATE	07MAR2023
CHKD	AK	DATE	07MAR2023
APPD		DATE	

DESCRIPTION	B	SOLAR SUPPLY MAIN SWITCH added "MCB TYPE C 32A"	AS	AK	07MAR2023
	A	Formatted to centrefold layout.	AS	AK	30APR2021
ITEM CHANGE DETAILS			DRAWN BY	APPROVED	DATE
DESCRIPTION					
DRAWING NUMBER					
File:SH5000 Single Line Diagram r4.des					
PART NUMBER					
340-00602-00					
REVISION					
4					
SHEET					
1 OF 2					
A4					



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