

Owner's Guide

Redback Smart Battery Systems

SB7200-SB9600-SB14200

V2.2



HISTORY

VERSION	ISSUED	COMMENTS
1.0	16-Sep-21	Unified document
1.1	15-Dec-21	Updated specification table
1.2	04-Mar-22	Wi-Fi compatibility update
1.21	04-Mar-22	Intended application added to specifications
1.22	31-Mar-22	Updated specification table
2.0	26-Jul-22	P1 Version number aligned to PN; P8,11 Clarify cooling clearance requirements; P10,11 Warning regarding warranty being affected by keeping the system offline; P10 Add requirement for, when adding or replacing batteries, all batteries must be balance charged and firmware updated; P23 Earth Fault information added; P28 Added "Recommended application: Household" to spec table; P28 Noise emissions and footnote added.
2.1	27-Apr-23	P5 Update contact information.
2.2	04-Jul-23	P11 Change to "You may also affect your warranty coverage if the system is offline".

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PRIVACY NOTICE

Redback will use the personal information provided to us only for warranty purposes. Without this information we will not be able to process your warranty claim. If you require further information about our privacy policy, please visit our website at redbacktech.com.

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1. Welcome

Congratulations on the purchase of your new Redback Smart Battery System. Our products are designed and manufactured to our high-quality standards and will provide years of service.

The system stores energy generated by your solar system; releases it for evening use; minimises energy consumed from the grid; and reduces your energy bill.

This manual describes the features, use and maintenance of your Redback system.

2. Introduction

Your Redback system coordinates battery storage, grid interaction, and your backup circuit.

In an AC-coupled installation, the system uses your existing solar system: the energy produced by the solar array is automatically directed to the battery, your home and/or the utility grid for the highest performance and best economic return.

The backup functionality enables you to have continued supply of electricity to the backup circuit during a grid power outage.

The MYRedback app and the Redback portal provide a comprehensive view of the energy consumed by your home, supplying the information required to fine-tune your system settings or optimise your energy usage patterns.

3. Getting help

Contact your installer first. You can usually find their contacts details on the inverter, inside the meter box, or inside the back cover of this booklet. If your installer is unable to assist, try one of the other resources below or open a case with our Customer Support Team at <https://portal.redbacktech.com/supportrequest>.

4. Other resources

SOURCE	COMMENT	LINK
Owner's guide	This document in pdf format	redback.link/sbog
Redback Document Library	Password required	redback.link/docs

5. Transfer of ownership

If a Redback system is already installed in your new home, welcome to the Redback family. To get the best from your Redback system, and to receive important notifications from your system, you need to setup an account using a valid email address. You can then access the system using the Redback app or portal, see how the system is working for you, and gain insights to help maximise your consumption of self-generated energy.

When we setup your account, we'll also arrange for remaining warranty to be transferred to your name and we can answer any questions you may have about your system.

To get started, initiate a case with the Redback Customer Support Team at <https://portal.redbacktech.com/supportrequest>. We'll get back to you as soon as possible. We'll need some proof of ownership too, so be ready for that.

Important safety instructions – please read

This document contains 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 additional 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.

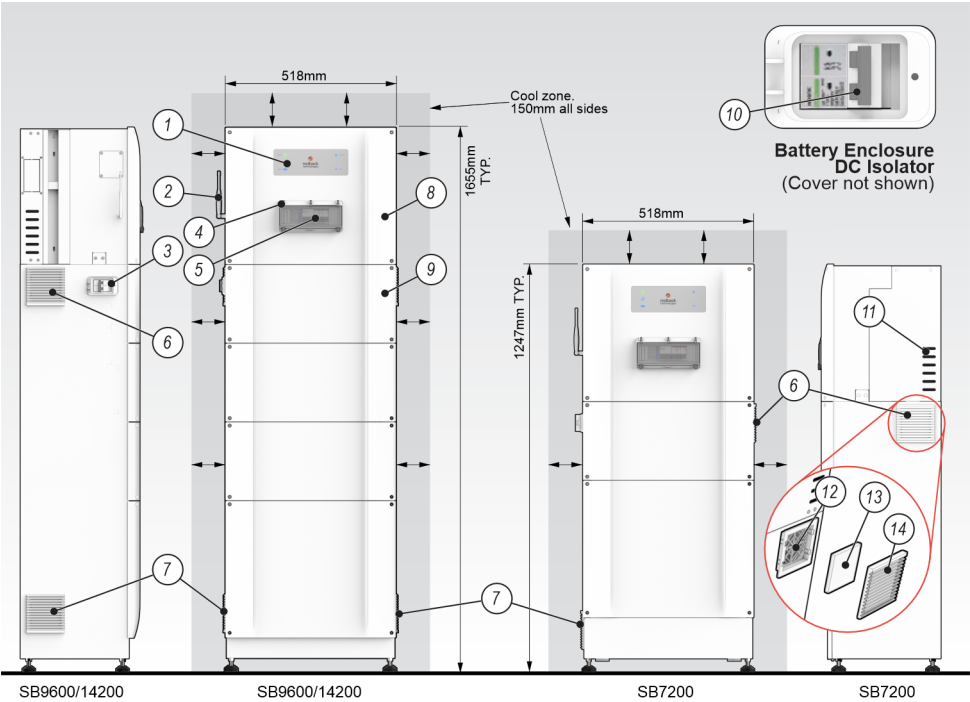
SYMBOL	DEFINITION
	WARNING: LETHAL VOLTAGE INSIDE Do not remove any system cover unless qualified to do so or have been instructed to do so by Redback Technologies technical support personnel. Do not perform any servicing other than that specified in the maintenance instructions.
	DANGER. Risk of electrical shock. Proceed with caution.
	WARNING: Burn Hazard. External and internal parts may be hot. Do not remove covers during operation or touch any internal parts.
	CAUTION: Hazard to Equipment Only use components or accessories recommended or sold by Redback Technologies or its authorised agents. Handle all parts with care and follow instructions provided.
	WARNING: Fire hazard Do not keep combustible or flammable materials in the same room as the equipment. The Redback Smart Battery System contains relays and switches that are not ignition protected. Do not allow storage of any item inside the system other than batteries. Ensure clearance requirements are strictly enforced. Keep all vents clear of obstructions that can prevent proper air flow around, or through, the unit.
	DELAY. Wait specified time e.g., 10 minutes.
	This symbol indicates the information is important for the correct operation and or maintenance of the equipment. Failure to follow the recommendations may result in annulment of the product warranty.
	IMPORTANT Only use the batteries specified 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.

6. Features and benefits of your Redback system

SYSTEM FEATURE	BENEFIT	REQUIREMENT
Internet connected	System monitoring and management using the MYRedback app or the Redback portal. Remote viewing of system status.	Permanent internet connection using your Wi-Fi or ethernet based home network.
MYRedback app and the Redback portal	Monitor your battery system performance in real time, using high quality, detailed charts. See your true usage patterns for ways to further reduce your electricity bill. Share system access with family, tenants etc.	
All-in-one design	Neat appearance; Easy to keep clean.	
Status Panel	Colour coded LEDs to aid diagnostics.	
EMS	The Redback Energy Management System (EMS) is the system's internal Control Board.	Internet connection for occasional software updates.
Switchgear panel	Convenient control of battery connections. Ability to bypass inverter backup without affecting house or backup circuit.	
Low maintenance	Owner can complete essential annual maintenance. Service person is not usually needed.	Basic mechanical skills and tools.
Backup functionality	Some devices stay available during a grid outage if batteries have charge.	Backup circuit needed and active; battery needed.
Relay controlled circuits	Control and schedule up to three circuits using optional relays.	Optional RK-1 relay kits.
Grid power quality monitoring	System can self-protect from poor quality grid power and recover when quality improves.	
Internal overload protection	The system will self-protect if it detects excessive heat or excessive internal currents.	
Battery Management System	Batteries self-monitor to manage heat and State of Charge (SoC) to extend battery life.	
Critical setting protection	Critical system settings may only be changed by electrically qualified personnel.	
Ground fault and insulation monitoring	Electrical safety for all parts of your system.	

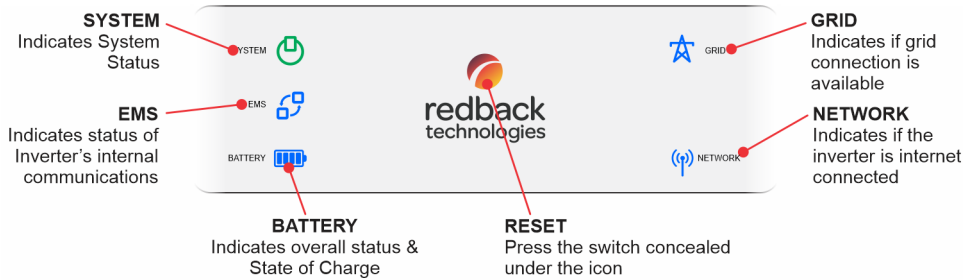
7. Know your product

7.1 Major components and dimensions

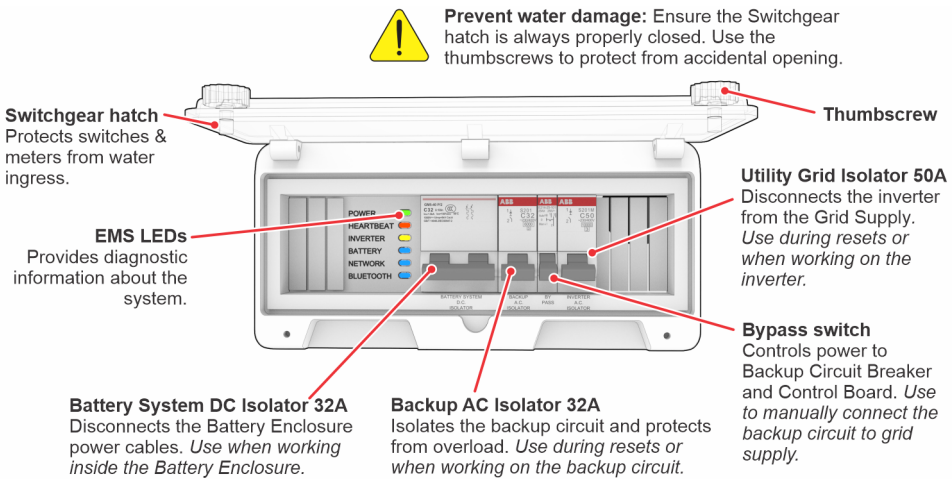


# PART NAME			
1 Inverter Status Panel	5 Switchgear	9 Battery enclosure	13 Washable filter pad
2 Wi-Fi antenna	6 Exhaust vent	10 Battery enclosure DC Isolator	14 Filter cover
3 DC Isolator cover	7 Inlet vent	11 Inverter cooling vents	
4 Switchgear cover	8 Inverter module	12 Vent filter basket	

7.2 Status Panel LEDs



7.3 BoS switchgear



7.4 Batteries

Your Redback system has a storage capacity of up to 14.2kWh, depending on the model. It is fitted with a Pylontech Battery Management System (BMS) to manage battery performance and protect the batteries from heat damage. The BMS protects the batteries from total discharge, helping system reliability and longevity. The BMS monitors the enclosure temperature and activates fans as needed.



INFORMATION FOR FUTURE USE.

When replacing or adding batteries, all batteries must be charge balanced and firmware must be updated, otherwise system performance will be affected. Your installer will manage this process for you.

7.5 Backup circuit (optional)

Your Redback system can directly control and power a backup circuit. This feature is used to extend the run time of a small number of low power or occasional use devices that you have prioritised for use during a power outage.

- During a grid outage, your inverter powers the backup circuit from batteries.
- If grid supply is available, the inverter chooses the power source from batteries or grid.

Adding a backup circuit to your home requires planning to maximise the benefits of your investment. A new, dedicated circuit will give a better result than re-purposing an existing circuit. Your installer can help you specify an affordable system that balances cost and performance, based on your expected usage patterns and your backup expectations i.e., what you expect to run, and for how long.

Loads on the backup circuit must be carefully selected to extend the backup power availability, noting:

- Battery storage capacity and availability.
- For SB7200, inverter backup power delivery limitation of up to 3.3kW continuous, *at any time, including when grid is connected.*
- For SB9600 or SB14200, inverter backup power delivery limitation of up to 4.5kW continuous, *at any time, including when grid is connected.*
- System behaviour during overload events.
- System behaviour during high temperature events.
 - Above 45°C ambient, power output is reduced.
 - Above 60°C, the system will shut down.

To ensure predictable backup, part of the battery storage can be reserved, powering the backup circuit until the battery reaches the minimum state of charge (SoC). The size of the reserve can be varied according to your needs e.g., more for backup means less for daily use. See Section 6.3.

8. System limitations

Your Redback system is not suitable for:

- Use with other than the supplied batteries.
- Off-Grid installations (where the grid is intentionally disconnected).
- Locations without internet access: the system can work off-line but is unable to send you fault notifications. You will be unable to review consumption or performance; make informed decisions about system settings or consumption patterns; change settings; or remote control the system. You may also affect your warranty coverage if the system is offline for extended periods.
- Prediction of your energy bills. The Redback meter is a Class 1 meter: it provides a good indication of energy consumption; however, readings may vary slightly from the Network meters used for billing.
- Use with generators.
- Use with 5Ghz Wi-Fi networks



WARNING! This equipment is NOT intended for use with life support equipment or other medical equipment or devices.

9. Getting the best from your system

Your Redback system is designed to work autonomously – the level of interaction is up to you.

A set-and-forget approach will work fine: occasional maintenance is all that is needed.

Alternatively, you can dive deep into your data and make informed decisions to optimise your system and lifestyle to maximise the return on your investment.

Either way, the first step is to look after your Redback.

9.1 Keep your system in good condition

Keeping your system in good condition maintains efficiency, increases longevity, and helps us help you, if the need arises. There are three key items requiring your attention.

Cooling

Your system uses fresh air to cool the inverter and batteries. If your system becomes too hot its efficiency decreases, and it may even shut down.

There must always be 150mm of clear space beside and above your system. Ensure no items are left near the base of the system or placed on top of the inverter, as vents will be obstructed.

The system must not be enclosed i.e., do not build a cabinet around it.

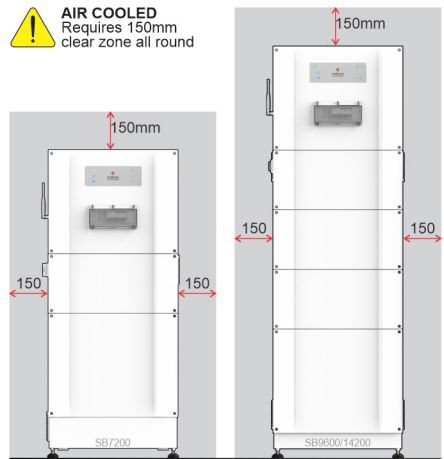
Maintenance

Complete the annual maintenance items in Section 10. In very dusty conditions you may need to clean the filters more often.

Internet connection

Data is needed to get the best out of your system. A permanent internet connection enables the system to send data to the Redback cloud, where the MYRedback app and Redback portal present helpful information, enabling you to see your system's performance. Your installer or Redback can also use the data to diagnose problems or suggest improvements to settings, based on your actual usage.

Note: Your inverter will continue to function without an internet connection, but you will be unable to receive any fault notifications, no data will exist for the period of disconnection, and remote support will be limited. You may also affect your warranty coverage if the system is offline.



9.2 Monitor performance

Redback offers two choices for checking the energy performance of your household.

9.2.1 MYREDBACK APP

MYRedback supplies a simple, up-to-date view of what's happening at your place – it's great for quickly checking the energy flow at home. MYRedback is available for Android 7 or higher and iOS 12.1 or higher. Use the app to:

- Check your home energy usage.
- Reconnect your system to the internet.
- Review your system settings- but you'll need to contact your installer if changes are required.



9.2.2 REDBACK PORTAL

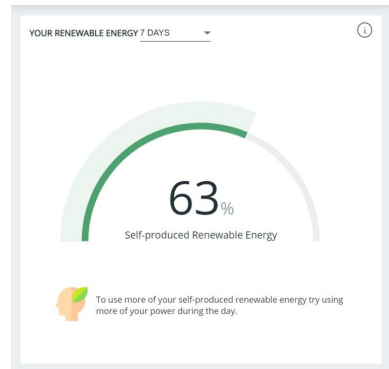
The Redback portal portal.redbacktech.com offers all the features of the MYRedback app plus a comprehensive history of your system's performance, much greater detail about your system, and direct access to support documents.

DASHBOARD

The dashboard view supplies an overview of your system:

- Energy consumption trends
- Power demand
- Power being bought or exported
- Power to/from batteries
- Stored energy

If nothing else, you should view the Renewable Energy Meter regularly; it shows the system's impact on your energy consumption during the past 7, 30 or 90 days. If it falls below 60%, it is worth reviewing your usage habits or your system size and settings.



9.3 Getting the best from your Smart Battery

Your system will do a great job of looking after itself, with no intervention required if it has the correct State-of-Charge (SoC) settings for your needs.

SETTING NAME	COMMENT
Minimum SoC %*	In day-to-day use, your batteries may discharge down to this % of total capacity.
Minimum SoC Offgrid %*	This is the deep discharge limit- it protects the battery from damage due to over-discharge during a backup event i.e., during a blackout.

*State of Charge: The battery manufacturer will specify the lowest acceptable value.



Frequent deep discharging will shorten the life of your battery. If you experience frequent blackouts in your area, ask your installer to set the Minimum SoC higher than usual. This extends your backup run-time and reduces the number of deep discharge events.

Backup Reserve

Your system configuration and backup requirements will guide your settings, which create the Battery Usage Plan, as shown right.

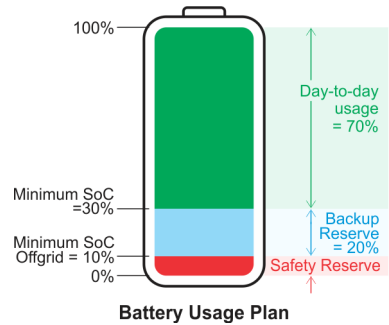
The Backup Reserve is the energy withheld for use by the backup circuit during a grid outage event.

$$\text{Backup Reserve} = (\text{Minimum SoC} - \text{Minimum SoC Offgrid}) \%$$

The Backup Reserve is a balancing act: A large reserve increases the backup run-time when needed but may decrease the everyday use of self-generated energy when AC-coupled.

Put another way, it's blackout security v. energy cost.

Think about your own needs, then ask your installer to adjust the Minimum SoC according to your priorities.

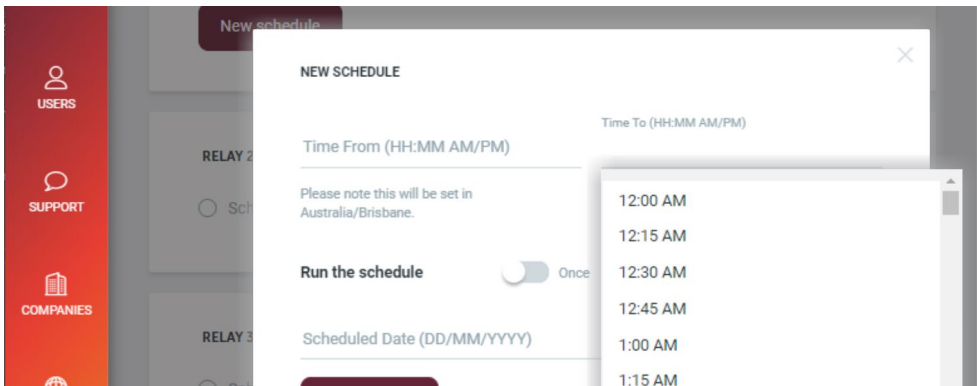


9.4 Getting the best from your relays

Your system can control up to three relays- usually used to turn specific equipment ON or OFF remotely, or ON and OFF according to a once-off or daily schedules. The aim is to move power usage into daylight hours, after batteries have charged, and when excess solar power is being exported or not used at all. Typical applications are pool water tank pumps, and hot water systems.

To use this feature, ask an electrician to install a dedicated, relay-controlled circuit for the equipment. A Redback RK-1 Relay Kit and other equipment is needed.

The schedules are created in the Redback portal, under the CONTROL tab. Multiple daily events are allowed excepting that they may not overlap and must start and finish on the same day. Manual control is also possible, using the ON and OFF controls



9.5 Getting the best from your backup circuit

Your Smart Battery includes a backup circuit that is activated during a grid outage and powered by the batteries. The system can supply power to the backup circuit if:

- Power is available from batteries, and
- Continuous backup power demand is less than 3.3kW (SB7200) or 4.5kW (SB9600 or SB14200).

Generally, you should connect and use the minimum number of devices at any one time.

Only essential or low consumption devices or appliances should be connected to the backup circuit. Devices that require high currents should not be connected as they may trip the system or rapidly discharge the batteries. The table below lists the suitability of common devices.

The inverter will reduce power output below -10°C or above 45°C ambient, and will shut down above 60°C.

**AVOID SYSTEM SHUTDOWNS!** The total power load matters: simultaneously running a kettle, toaster, microwave, large fridge, TV, and a few lights can easily exceed the allowable power delivery, and system shutdown will occur.

Solution: Minimise devices in use.

 SUITABLE	 NOT SUITABLE
Refrigerators and freezers	Critical Medical Devices
Fans	Air conditioners & heaters
Small, occasional use, plug-in appliances e.g., microwaves, kettles, toasters	Ovens & cooktops
TVs, radios, telephones	Home theatres and Projectors
Computers, tablets, routers	Hot water systems
Mobile phone or small-device chargers	Spas, saunas, pool pumps
Household tank water pumps	Battery chargers & corded Power tools
Low-energy LED or CCFL lighting	Incandescent or high-power lighting

10. Inverter operation

Your Redback Smart Battery has sophisticated software controls available in the Redback app or portal, however there are some physical controls or functions at the unit.

10.1 EMS restart

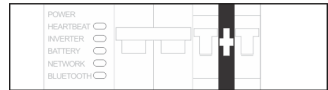
Occasionally, it may be necessary to restart the Energy Management System (EMS) without needing to restart the whole system.

To restart the system, press the switch concealed under the sun icon.



10.2 Inverter – Changing bypass modes

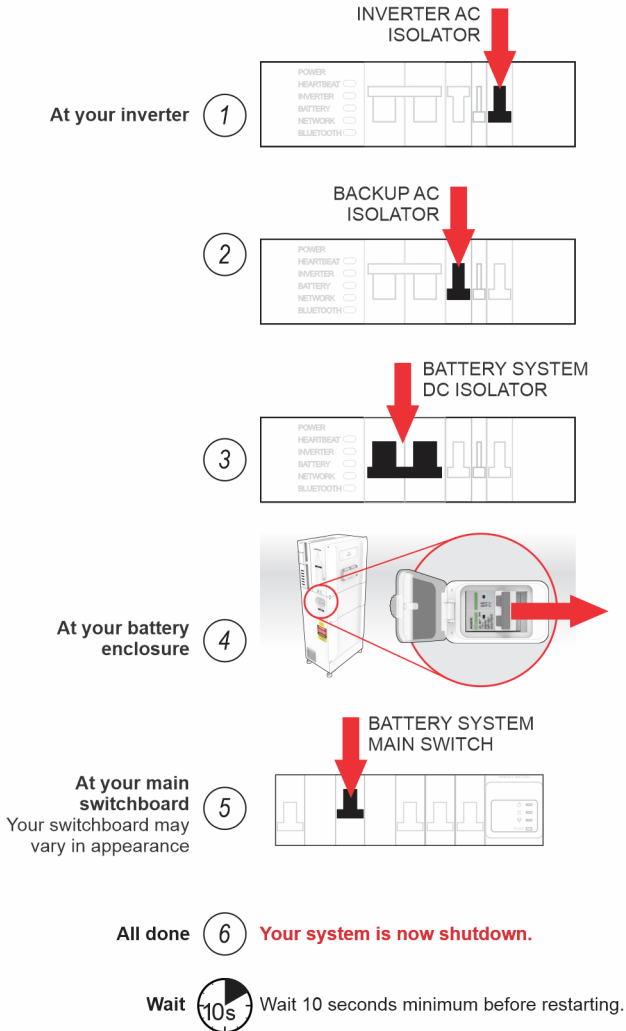
The BYPASS switch controls the power to the BACKUP AC isolator. Its primary use is to manually connect the backup circuit directly to grid supply, when needed.



POSITION		FUNCTION	COMMENTS
	Up	Power to the backup circuit is from the grid supply only. The Inverter no longer controls the backup circuit.	This mode ensures grid supply to the backup circuit if the system is not available; not working reliably; or if a large, temporary load must be placed on the backup circuit. In this position, if grid supply is lost, the system will not supply the backup circuit.
	Middle	Backup circuit is isolated (depowered).	No power is sent to the backup circuit, from any source.
	Down	Power to the backup circuit is supplied and managed by the Inverter, from any source.	This is the recommended Operational mode. If grid supply is lost the system will continue to supply the backup circuit from the batteries- the entire system will shut down when the batteries reach the minimum state of charge.

10.3 Shutdown procedure

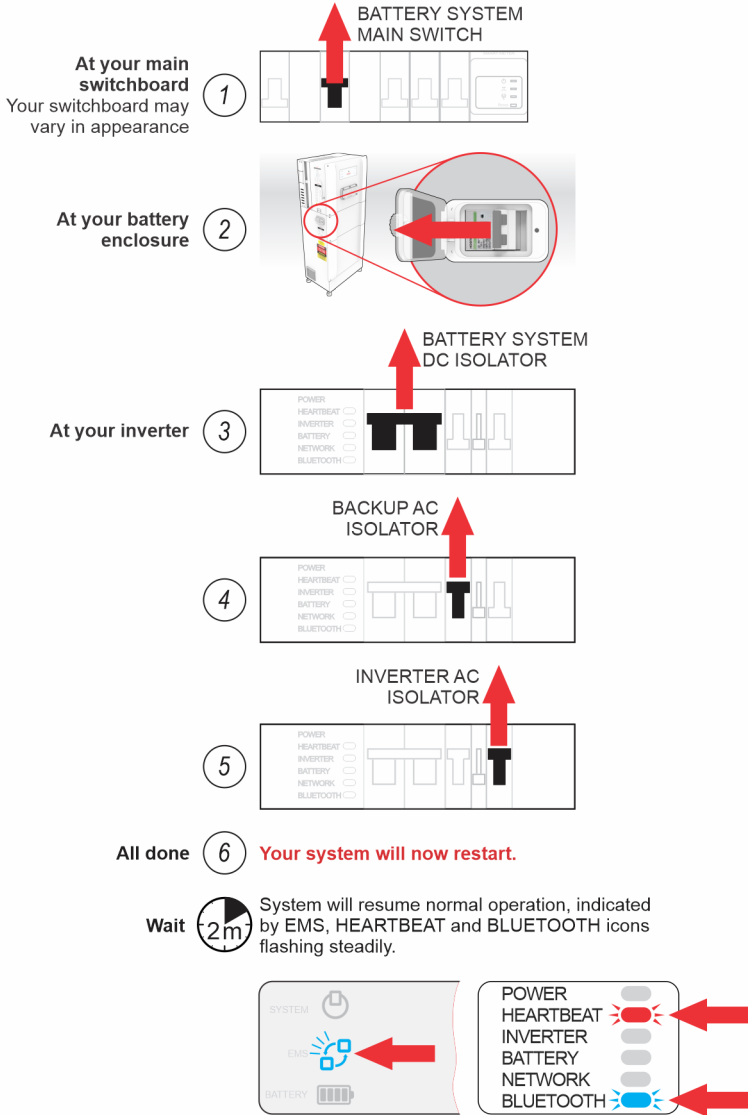
Occasionally, it may be necessary to shut down the inverter interrupting all inverter functions, noting that battery and grid supplies are still energised to the isolators. Shut down using the following procedure:



WARNING: Grid supplies remain energised to the switchgear INVERTER AC Isolator.

10.4 Start procedure

Start your inverter as shown below.



10.5 Inverter operating modes

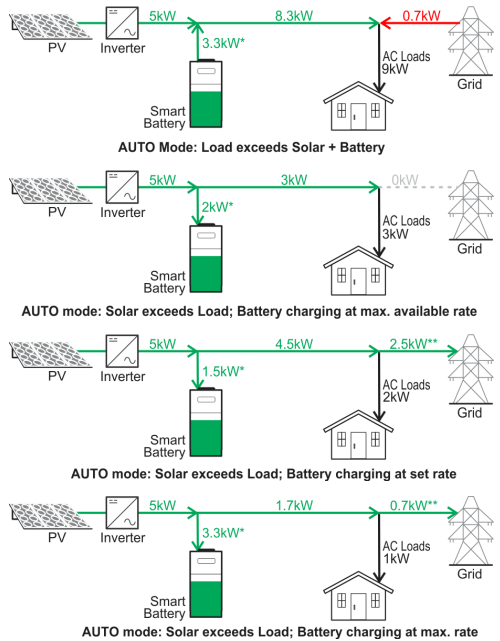
The inverter operating modes are summarised below. Select modes using the Redback app or portal.

10.5.1 AUTO MODE

AUTO is the default operating mode, maximising consumption of self-generated and stored energy.

Destinations for self-generated energy are prioritised as follows:

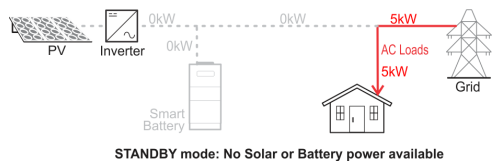
1. AC Loads
2. Battery (storage)
3. Grid



10.5.2 STANDBY MODE

STANDBY mode is invoked automatically when no solar or battery energy is available. The inverter directs grid power directly to the AC Loads thereby minimising energy losses in the inverter e.g., heat.

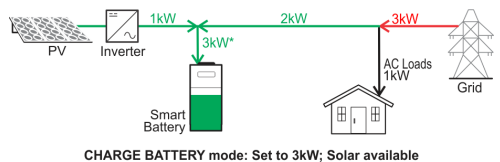
The inverter automatically reverts to the previous mode of operation when solar or battery energy is available.



10.5.3 CHARGE BATTERY MODE

CHARGE mode may be used to prepare for a severe weather event and prioritises charging the battery at a nominated rate*, from the grid.

AC Loads are fulfilled by the grid.

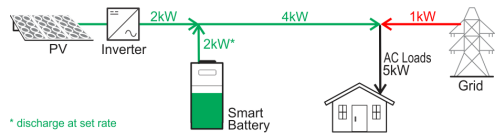


10.5.4 DISCHARGE BATTERY MODE

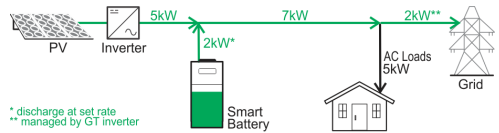
DISCHARGE mode is user selectable in the app or portal, and prioritises battery discharge to the following:

1. AC loads
2. Grid

Battery discharge is at the nominated Discharge Power.



DISCHARGE BATTERY Mode: Set to 2kW; Load exceeds Solar + Battery



DISCHARGE BATTERY Mode: Set to 2kW; Solar + Discharge exceeds Load

10.5.5 BACKUP MODE

BACKUP mode starts automatically when the grid supply is interrupted (default setting).

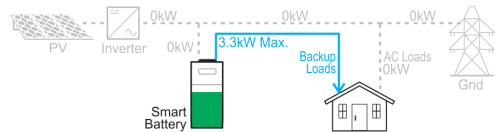
In BACKUP mode, the inverter supplies energy to the backup circuit only.

To maximise the effectiveness of the backup circuit, the circuit should only support essential appliances such as refrigerators, or low energy devices such as fans, computers, tablets, or phones.

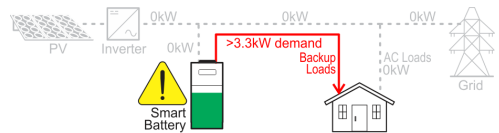
BACKUP mode is invoked within 10ms of a grid interruption. BACKUP mode reverts to the previous mode when the inverter detects grid supply has been restored for over 1 minute.

Note: If available Battery power is less than the detected Backup Load the inverter will consider this an overload and will automatically shut down.

The inverter will restart after approximately one minute. If overload persists, the cycle will repeat.



BACKUP Mode: Grid outage; battery has charge



BACKUP Mode: Backup load exceeds 3.3kW; battery has charge

11. Connect your system to the internet

Onboarding connects your system to the internet using your network. If you can login to the Redback portal and your system is “Online”, then your system is onboarded. Connection to the network is by Ethernet cable or Wi-Fi.



This equipment is not compatible with 5Ghz Wi-Fi networks or hotspots. Use 2.4Ghz networks.

Occasionally, it may be necessary to reconnect your inverter to the internet. This most often occurs after a significant disruption to your network such as replacing your router, changing passwords, or changing internet providers.

There are two onboarding processes: Ethernet or Bluetooth Low Energy (BT or BLE).

11.1 Ethernet

Ethernet is the preferred method of connection: onboarding occurs automatically, confirmed by:

- Inverter Status Panel NETWORK icon is Blue (not flashing), and
- Inverter EMS icon is Blue (continuous, not flashing).

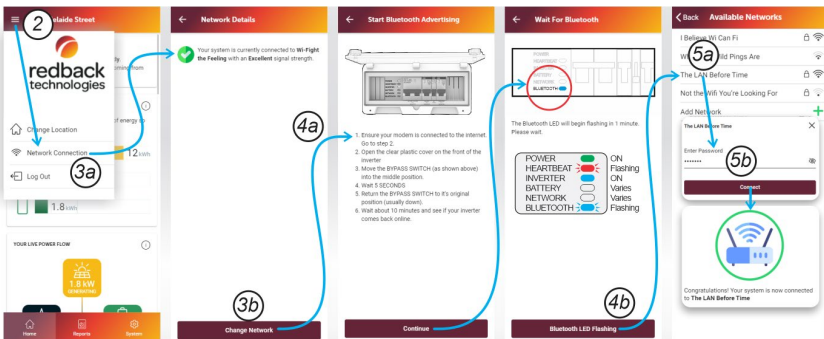


11.2 Bluetooth Low Energy (BLE)

BLE onboarding is needed if ethernet is not available—a Bluetooth connection is set up between the inverter and the MYRedback app, and the app will guide you through the process of connecting the inverter to your Wi-Fi network.

To onboard using Bluetooth:

1. Go to your inverter. Ensure your network signal is Good or better at this location.
2. On your system press the sun icon once. Bluetooth advertising will begin in about 2 minutes, indicated by the EMS icon flashing.
3. On your device, open MyRedback and login. Touch the **Hamburger** to display the flyout menu.
4. Select **Network Connection**. Note your system status and select **Change Network**.
5. You may be notified to start Bluetooth—follow the on-screen instructions, otherwise touch **Bluetooth LED Flashing** to continue.
6. Select your **Wi-Fi network** from the list.
7. Enter **Password** if asked, and touch **Connect**. A success message will appear.
8. Wait a few minutes and then confirm onboarding success:
 - On the app, check that data is refreshing every 60 seconds;
9. On the Portal, check that your system is online, and refreshing every 60 seconds.
10. If onboarding fails, try again, or contact Redback Customer Support for help.



12. Troubleshooting

12.1 Backup circuit has no power

The most common causes are overloaded circuit isolators tripping OFF (anytime), or the battery being fully discharged (during a grid outage). Troubleshoot using the guide below.

i The total power load matters, and it adds up fast: a kettle, toaster, large fridge, TV, iron, and a few lights may exceed a backup circuit's allowable power delivery.
This rule applies even when the grid is connected.

INDICATION	PROBABLE CAUSE	ACTION	
No power on the backup circuit (during a grid outage)	BATTERY SYSTEM DC isolator is OFF (down) Battery is depleted.	Turn BATTERY SYSTEM DC isolator ON. Contact your installer if you suspect the Battery System DC isolator is tripping. Wait for grid power to be restored.	
	Battery depletes prematurely.	As above, and contact your installer if you suspect the battery is not charging correctly.	
The <u>House</u> Backup Circuit isolator is tripping	Faulty appliance, overload, or electrical fault.	Identify and deactivate any suspect or excess appliances. Reset the house Backup Circuit isolator at the switchboard. If the problem persists, contact your installer for help.	
The <u>Inverter</u> BACKUP AC isolator has tripped	The inverter backup circuit is overloaded	Reset the BACKUP AC isolator (move up). If it trips immediately, minimise loads on the backup circuit and try again.	
The <u>Inverter</u> BACKUP AC isolator trips repeatedly.	A more complex problem exists.	Place the inverter into Bypass mode (up). This supplies power to the backup circuit from the switchboard. Contact your installer.	
Battery System Main Switch trips	There is a wiring or inverter fault.	Contact your installer for help. Note: The Battery System Main Switch is usually located on the main switchboard.	

12.2 Inverter unexpected shutdown

The inverter may shutdown or isolate itself from the grid if it detects supply conditions that may cause damage to the inverter or batteries; or create an unsafe situation. Incident causes can be diagnosed by examining the data available on the portal. Unexpected shutdowns may occur in the following circumstances:

CAUSE	RELEVANT CHARTS FOR DIAGNOSIS (IN PORTAL)	COMMENT
Continuous Backup Load exceeds 3.3kW (SB7200) or 4.5 kW (SB9600 or SB14200).	Backup Load- Power	May occur when too many devices are active on the backup circuit.
If internal temperature is greater than 60°C.	Inverter- Temperature Battery Cabinet-Temp.	Output is reduced above 45°C.
Grid supply is not of acceptable quality, as defined by AS/NZS 4777.2.	Grid-Voltage Grid-Frequency Grid-Status	The EMS and backup circuit will work if power is available from batteries. Ask your installer or electricity provider to investigate if grid supply is often poor.

12.3 Internet connection problems

Occasionally, your inverter may lose internet connection and be reported as “offline”. Ethernet connected systems usually self-repair after a system restart. Wi-Fi problems usually require that the system is re-onboarded. The most common causes of “offline” reports are:

CAUSE	CONNECTION AFFECTED		REMEDY
	ETHERNET	WI-FI	
Change of Internet Service Provider e.g., Telstra, Optus, TPG, Dodo etc	✓	✓	Ethernet: Restart the system. Wi-Fi: Restart the system and re-onboard.
New router or modem	✓	✓	
Change of Network name or SSID	✓	✓	
Changed settings in router or modem	✓	✓	
Changed Wi-Fi or Network password		✓	Wi-Fi: Restart and re-onboard
Too many users or devices on your home Wi-Fi network		✓	Limit users or devices; upgrade Wi-Fi router; connect inverter using ethernet.
Wi-Fi signal is weak or variable due to obstructions or distance between the inverter and your Wi-Fi router's antenna.		✓	Experiment with Wi-Fi router locations; use a Wi-Fi extender; connect using ethernet.
Attempting connection to a 5Ghz Wi-Fi network		✓	This equipment is not compatible with 5Ghz Wi-Fi networks. Use a 2.4Ghz network or ethernet.

12.4 Earth fault alarm

If the Redback system detects an earth fault:

1. An audible alarm will sound in the inverter.
2. The Status Panel System icon will be solid red (see below).
3. An email will be sent to Redback customer service, the installer, and the system owner.



An email is also sent when the alarm is cleared.

12.5 Inverter Status Icons

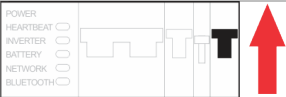
Your Redback inverter is equipped with an icon array to indicate system status and aid diagnosis.

The table below lists indications, probable cause, and rectification steps you can try yourself. Refer to page 9 to identify controls.



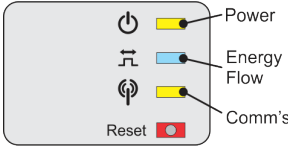
If the problem is not solved contact your installer for assistance.

NAME	ICON & PATTERN	MEANING AND OR PROBABLE CAUSE	SOLUTION(S)
SYSTEM		System ready	OK. No action needed.
		System is starting up	This may be normal behaviour. The system may cycle several times during start-up: completion is indicated by the System icon stabilising to steady green within 10 minutes.
		Backup circuit is overloaded	Reduce loads on your backup circuit.
		System fault	Contact your installer
		Earth fault	See section 9.4. Contact your installer
		System not working	If the icon stays OFF for more than one minute, contact your installer.
EMS		Communications OK	OK. No action needed.
		Bluetooth is advertising	Inverter onboarding is available for up to 30 minutes.
		Communications failure	Onboard the inverter
BATTERY		Battery is more than 75% charged	Contact your installer if this is unexpected behaviour e.g., your battery does not appear to be charging correctly.
		Batteries are 51-75% charged	
		Batteries are 25-50% charged	
		Batteries are less than 25% charged	
		One or more batteries are OFF, disconnected, not active or cannot be detected.	Contact your installer.

NAME	ICON & PATTERN	MEANING AND OR PROBABLE CAUSE	SOLUTION(S)
GRID		Grid is active	No action needed.
		Searching for grid	No action needed.
		Grid not detected	Normal behaviour during a Grid outage. If grid is available: Turn Grid isolators on.
			
NETWORK		Wi-Fi, LAN or BT is connected	No action needed.
		No Wi-Fi, LAN or BT connected	Onboard the inverter.

12.6 SM3000 Smart Meter diagnostics

The Redback SM3000 Smart Meter is usually located at the main switchboard. It detects the grid energy traffic of all 3 phases and indicates if the site overall is importing or exporting energy to the grid. This information informs inverter operation.



NAME	COLOUR & PATTERN	MEANING
Power		ON: Meter has power.
		OFF: Meter does not have power or has failed.
Energy Flow		ON: Site is consuming energy from the grid.
		Flashing: Site is exporting energy to the grid.
Comm's		OFF: Energy flow is not detectable.
		Flashing: Transmitting data.
		5x Flash: Reset in progress.

13. Maintenance

13.1 Schedule



WARNING: ELECTROCUTION HAZARD. Lethal voltages may be present. There are no user serviceable parts inside. Do not remove front covers.



CAUTION: Do not lay tools or metal parts on top of batteries.

CAUTION: Do not open or damage batteries. Released electrolyte is harmful to the skin and eyes. It may be toxic

Your Redback system is a low maintenance product. You should undertake the minor annual maintenance listed below. Internal maintenance must be conducted by a qualified person, such as your installer.

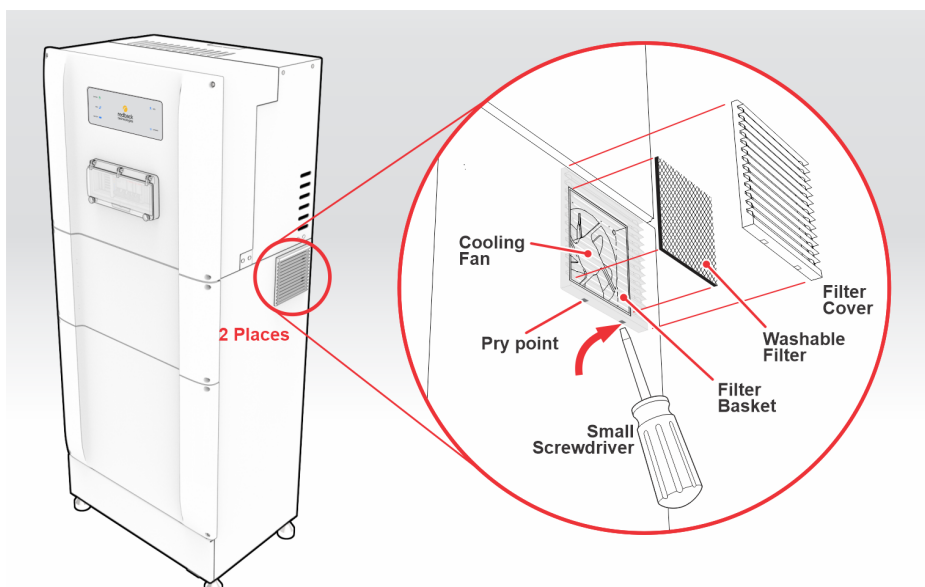
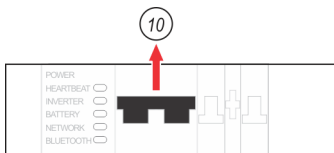
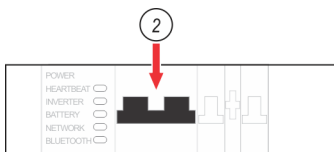
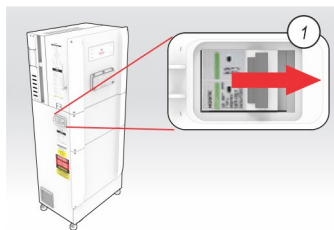
Note: Filters, fans and heatsink fins may require more frequent cleaning in dusty conditions.

ITEM	NAME	REASON	PROCEDURE	BY SERVICE PERSON	BY OWNER
1	Battery Enclosure vents, filters, and fan blades.	Airflow is reduced when dust accumulates on the vents, or the filter is clogged. The lower intake vents are more likely to be affected.	See section 10.2.	✓	✓
2	Cabinets	Cabinets may become soiled.	Wipe down the outside of cabinets with a just-damp cloth. Immediately wipe dry with a microfibre cloth. Do not use cleaning agents as they may damage the finish.	✓	✓
3	Inverter heatsink fins	Cooling efficiency reduces when dust, dirt or debris accumulate on the heatsink.	Clean the heatsink fins using a small brush, cloth, or compressed air.	✓	✗
4	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.	✓	✗
5	Cabinet seals	Concealed seals ensure cabinet water resistance.	Remove covers and inspect seals for hardening, tears, or other damage. Look for signs of water in cabinets.	✓	✗
6	Cable seals	Cable seals prevent water and insects entering the Inverter.	Remove BoS Front Cover and tighten all visible cable glands and waterproof caps.	✓	✗
			Remove the Connection Kit Top Cover (if fitted) and tighten all cable glands and waterproof caps.	✓	✗

13.2 Cleaning the system fan filters

Occasionally, it is necessary to clean the battery enclosure filters and filter covers. SB7200 has two filters, located on opposite corners of the enclosure. SB9600 and SB14200 have filters at each corner. To clean the filters:

1. Switch the BATTERY ENCLOSURE isolator OFF (right)
2. Switch BATTERY SYSTEM DC isolator OFF (down).
3. Fans are installed in the upper vents only and will run if the batteries are hot. Ensure the fans are off before accessing the upper vent. While waiting, you can start work on the lower vent.
4. Using a small screwdriver or similar tool, pry the filter covers from the filter baskets- there are two pry points at the lower edge of the cover.
5. Brush, wipe or vacuum any dust or debris from the covers.
6. Remove the filters from the baskets. Wash in cold soapy water, rinse and squeeze out excess water. Lay flat to dry.
7. Inspect the fan blades. Remove heavy dust build-up with a brush, cloth, or vacuum cleaner. Do not use fluids of any type.
8. Refit the filters to the baskets.
9. Refit the filter covers, ensuring the louvres face down so water cannot run into the vent. There should be two tactile "clicks" as the snap-fits engage.
10. Switch the BATTERY SYSTEM DC isolator ON (up).
11. Switch the BATTERY ENCLOSURE isolator ON (left)



14. Specifications

PRODUCT MODEL	SB7200	SB9600	SB14200
GRID INTERACTIVE PORT			
Nominal Output Voltage	230V	230V	230V
Nominal Output Frequency	50 Hz	50 Hz	50 Hz
Rated Output Current	AC 14.3A	AC 19.6A	AC 19.6A
Rated Output Active Power	AC 3300W	AC 4500W	AC 4500W
Rated Output Apparent Power	3300VA	4500VA	4500VA
Rated Input Current	AC 30.4A	AC 39.1A	AC 39.1A
Input Voltage	230V	230V	230V
Input Frequency	50 Hz	50 Hz	50 Hz
Rated Input Apparent Power	7000VA	9000VA	9000VA
Power Factor (range)	0.8 lagging to 0.8 leading	0.8 lagging to 0.8 leading	0.8 lagging to 0.8 leading
Output Voltage THD	<3%	<3%	<3%
Inrush Current	AC 65A 5 μ s	AC 65A 5 μ s	AC 65A 5 μ s
Maximum Output Fault Current	30A 0.2s	40A 0.2s	40A 0.2s
Maximum Output Overcurrent Protection	AC 65A 5 μ s	AC 65A 5 μ s	AC 65A 5 μ s
Decisive Voltage Class (DVC)	DVC-C	DVC-C	DVC-C
BACKUP PORT			
Nominal Output Voltage	AC 230V	AC 230V	AC 230V
Nominal Output Frequency	50 Hz	50 Hz	50 Hz
Rated Current	AC 14.3A	AC 19.6A	AC 19.6A
Rated Active Power	AC 3300W	AC 4500W	AC 4500W
Rated Apparent Power	3300VA	4500VA	4500VA
Power Factor (range)	0.8 lagging to 0.8 leading	0.8 lagging to 0.8 leading	0.8 lagging to 0.8 leading
Output Voltage THD	< 3%	< 3%	< 3%
Inrush Current	AC 65A 5 μ s	AC 65A 5 μ s	AC 65A 5 μ s
Maximum Output Fault Current	33A 10 μ s	44A 10 μ s	44A 10 μ s
Maximum Output Overcurrent Protection	AC 65A 5 μ s	AC 65A 5 μ s	AC 65A 5 μ s
Decisive Voltage Class (DVC)	DVC-C	DVC-C	DVC-C
EFFICIENCY			
Maximum Efficiency	96.6%	96.6%	96.6%
PHYSICAL DATA			
Installed weight	130kg	165kg	203kg
Dimensions (W x D x H) (mm)	566 x 370 x 1238	566 x 370 x 1655	566 x 370 x 1655
Material	Aluminium	Aluminium	Aluminium
Finish	Powdercoat & seal	Powdercoat & seal	Powdercoat & seal
BATTERY ENCLOSURE DATA			
Number of Battery Units	3	4	4
Storage Capacity	3 x 2.4kWh	4 x 2.4kWh	4 x 3.55kWh
Battery System Model	RB-HVS-144-50-AC	RB-HVS-192-50-AC	RB-HVS-192-74-AC
Maximum Capacity	7.2kWh	9.6kWh	14.2kWh
Nominal Voltage	DC 144V	DC 192V	DC 192V
Rated Current	DC 25A	DC 25A	DC 25A
Fan Specification	DC 12V / 0.3A	DC 12V / 0.3A x2	DC 12V / 0.3A x2
Protective Class	Class I	Class I	Class I

Ingress Protection Rating	IP54		IP54	IP54
Noise Emissions	<38dBA*		<38dBA*	<38dBA*
Material	Steel		Steel	Steel
Finish	Powdercoat & seal		Powdercoat & seal	Powdercoat & seal
ISOLATORS	GRID INTERACTIVE PORT	BACKUP PORT	BATTERY PORT	BATTERY CABINET
Manufacturer Part Number	S201M-C50	S201M-C32	GM5-40P/2 C32	NoArk Ex9BP
Rated Insulation Voltage	440V	440V	DC 1000V	DC 1000V
Rated Impulse Withstand Voltage	4kV	4kV	8kV	4kV
Suitability for Isolation	C	C	C	C
Rated Operational Current	50A	32A	32A	32A
Utilisation Category	A	A	A	A
Rated Breaking Capacity	15kA	10kA	1.5kA	10kA
COMMUNICATION PORTS AND PROTOCOLS				
ETHERNET	RJ45; straight thru		RS485	RJ45; Factory use only
DRED	RJ45; DRED		WI-FI	802.11b/g/n/ac; 2.4GHz
RELAYS	RJ45; 3x Digital I/O; +DC5V & GND		LTE	NA
KWHR METER	RJ45; RS485 MODBUS		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; MYRedback app			
Remote firmware updates	Supported			
Power/energy monitoring	Includes 1 x utility grade energy meter (class 1)			
GENERAL INFORMATION				
Operating Temperature	-20 to 60°C	Moisture Location Category	4K4H	
Unconditioned without solar effects		Active Anti-islanding Method	Active Frequency Drift	
Operating Temperature Derated Output	Below 10°C and over 45°C	External Environment Pollution Degree	Grade 1, 2 and 3	
Operating Relative Humidity	0 – 100%	Inverter Topology	Non-isolated	
Operating Altitude	0-4000m	Country of origin	China	
Protective Class	Class I	Demand Response Modes	DRM 0	
Ingress Protection Rating	IP54	Standby Self-Consumption	<15W	
AC Overvoltage Category	OVC III	Noise emissions	<42dBA	
DC Overvoltage Category	OVC II	Warranty	10 years	
		Recommended application	Household	
CERTIFICATIONS, STANDARDS AND APPROVALS				
AS/NZS 4777.2:2020	IEC 62040-1:2017	IEC 60529	RCM Approval	
IEC 62109-1: 2010	IEC 62116:2014	EN 61000		
IEC 62109-2: 2011	IEC 62477-1:2012	CE Mark (LVD, EMC, RoHS directives)		
DESIGNED WITH INSTALLATION STANDARDS CONSIDERED				
AS/NZS3000:2018	AS/NZS 5139:2019	AS/NZS 5033:2014 (incl Amdt 1 & 2)		
*Measured in Redback laboratory at 1m in front of system.				

15. Redback installation details

SUPPLIER	INSTALLER
Company:	Company:
Address:	Address:
Telephone:	Telephone:
Email:	Email:
Date Installed:	

INSTALLATION DETAILS			
	MODEL	Serial number	
Redback System	☐ SB7200 ☐ SB9600 ☐ SB14200		
Battery 1	☐ H48050 ☐ H48074		
Battery 2	☐ H48050 ☐ H48074		
Battery 3	☐ H48050 ☐ H48074		
Battery 4	☐ H48050 ☐ H48074		
	YES	NO	
Backup circuits	☐	☐	1
	☐	☐	2
	☐	☐	3
Relay 1	☐	☐	
Relay 2	☐	☐	
Relay 3	☐	☐	

Notes

