



HoneyBadger

HOME BATTERY SYSTEM – OFF-GRID

Victron with Troppo-4841 Lithium batteries

User Manual





Register your RedEarth system

Contact us

Please contact RedEarth when the system is being commissioned, to ensure remote monitoring is working and that the system is operating correctly. This can avoid the need to return to site later.

For technical support:
0487 002 451
support@redearth.energy

RedEarth Energy Storage
1800 733 637
15 Fienta Place, Darra BRISBANE QLD 4076
www.redearth.energy

Power yourself.

RedEarth Energy Storage is an Australian-owned and operated manufacturer of energy storage systems. Co-founded by CEO Charlie Walker, CTO Chris Winter, and non-executive director Bruce Ebzery in 2013, RedEarth Energy Storage began as a startup doing research and development into battery energy storage systems specifically for the Australian market.

Starting in the off-grid environment with the development of BlackMax, RedEarth has since added on-grid, commercial and industrial, and residential systems to its suite of products, all designed to be modular and scalable to allow the end-user customer to update their systems should their needs change.

RedEarth operates with the belief that electricity will be the primary energy source in the future, and that every business and residence can generate more clean, green electricity than it can consume – meaning they can financially capitalise on their excess solar energy.

RedEarth Energy Storage

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Safety

Symbol	Explanation
	Refer to the operating instructions.
	Indicates additional information, emphasized contents or tips that may be helpful.
	Caution, risk of electric shock.
	Caution, risk of danger.
	Do not touch live parts until 10 minutes after disconnection from the power sources.



The wiring diagrams and installation instructions are given as a guide only and compliance to appropriate standards is the responsibility of the installer. Relevant standards are listed below:

AS/NZS 3000:2018	Wiring rules
AS/NZS 5033:2021 (and 1&2)	Installation and safety requirements for photovoltaic (PV) arrays
AS/NZS 4509.2:2012	Stand-alone power systems-Design
AS/NZS 1170.2:2011	Structural design actions-Wind actions
AS/NZS1768:2007	Lightning protection
AS/NZS 3008.1.1:2017	Electrical installations – Selection of cables
AS/NZS 5139:2019	Electrical installations-Safety of battery systems for use with power conversion equipment



The HoneyBadger must only be installed by suitably qualified personnel who have read and are familiar with its operation and hazards.



The battery provided with this system must be charged only by the Victron inverter and MPPT. Do not attempt to charge the batteries with any other charger device or connect any devices directly to the DC battery bus unless approved by RedEarth.



In the event of a fire evacuate the area and call emergency services. A dry agent fire extinguisher should be readily available and used. DO NOT use water.

Note: MSDS document is provided with the system and can be found at www.redearth.energy



Do not use a damaged battery. Batteries should only be disposed of at an appropriate recycling centre. Please contact RedEarth for advice.



A battery can present a risk of electrical shock and high short-circuit current. The following precautions should be observed when working on batteries:
Disconnect charging source prior to connecting or disconnecting battery terminals.



In our efforts towards constant product enhancement, this document is subject to change at any time. Please visit <http://www.redearth.energy> and download the appropriate and latest version manual.



About your HoneyBadger

Your HoneyBadger is an Australian-made all-in-one battery system built for off-grid homes.

The system is designed to be easy to install and use. It is fully assembled, factory-tested prior to shipment and requires only limited programming on-site (e.g. generator size & run-times).

It includes a 10kVA Victron Quattro inverter (5kW option is also available), up to two Maximum Power Point Trackers (MPPT), and up to 32.8kWh of self-managed Troppo-4841 lithium batteries.

The two MPPTs allow you to connect at least 15kW of solar panels (maximum 250VDC (4 large panels in series) and a generator (either 2-wire auto start or manual start). Note that an additional AC-coupled solar inverter can be added if more Solar is required (e.g. Fronius 8.2).

Remote monitoring is available subject to mobile phone coverage. This uses RedEarth's EMU app that is available for download onto your phone. Just scan the QR code on the HoneyBadger.

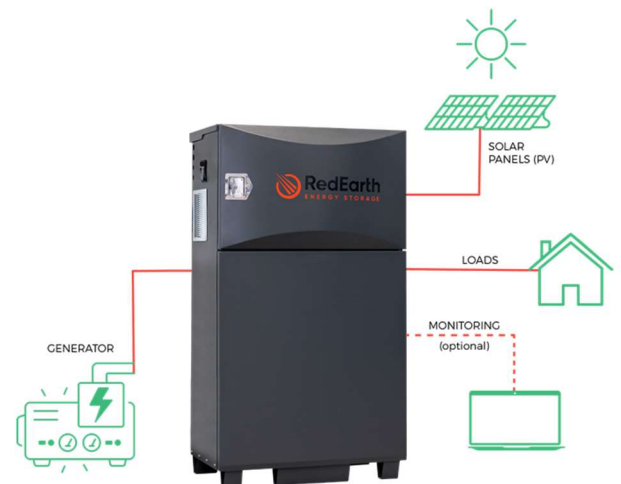
The Victron VRM portal is also available for more detailed analysis.



The HoneyBadger system can be installed either inside or outside, ideally in a shaded area against a wall. A changeover switch is included in case of system problem. The loads can then be run off a generator until the system is operational again.

A typical complete installation of the HoneyBadger will require the electrical connection of:

- The customers' load: usually via an external switch board with an earth stake and MEN link – there are dedicated terminals inside the unit to connect to.
- PV solar panels: with one array per MPPT (maximum 250VDC per string) (with two MPPTs, two different PV array orientations can be used).
- Generator: recommended (2-wire auto start or manual start generator). Terminals for connecting a dry-contact compatible generator start or signal light are included. A Victron smart charger is also included to keep the starter battery of the generator charged up.
- In addition, the installer may need to program the Victron CCGX controller for the customer's specific requirements (e.g., generator size and run times). RedEarth tech support is available 7-days a week.
- Remote monitoring: The HoneyBadger comes with RedEarth's RedPi Lite 4G modem, with SIM card built in. If there is mobile phone coverage, then remote monitoring is possible. Optimal positioning of the antenna will help with reception. A direct connection from the customers router to the HoneyBadger is also possible. A Starlink satellite option is also possible where there is no other internet connection..



Note: The HoneyBadger is not designed to act as a main switch board for the premises, as it does not include space for additional main & customer circuit breakers or RCDs. The MEN link and Earth connection must be in place at the premises as required.

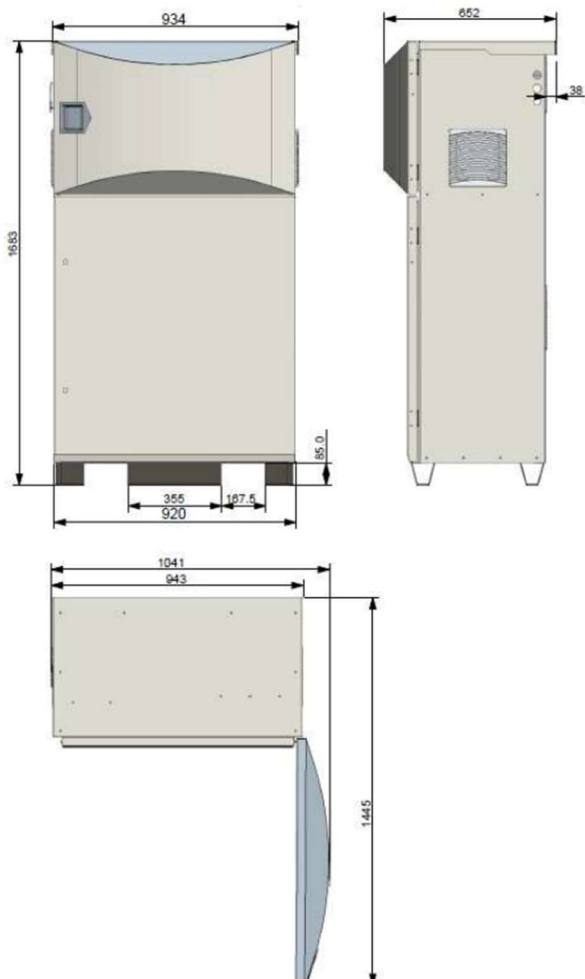
Finally, the HoneyBadger conforms to the Australian Battery Safety Guide. This includes the requirement to have an earth fault detection and alarm function on Victron MPPT equipment operating at above 120Vdc. (AS5033:2021 paragraph 3.5.1)

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Dimensions and clearance/positioning information



HoneyBadger Weight

- 560kg with 8x Troppo LFP batteries (42kg per battery)
- 224kg without batteries

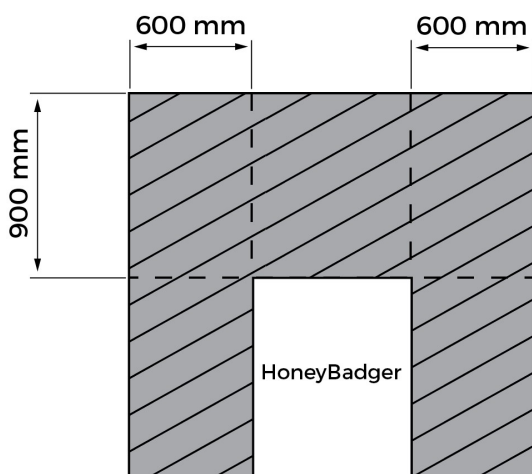
Dimensions w/ door closed:

169 H x 94 W x 65 D [cm]

Dimensions w/ door open:

169 H x 104 W x 144 D [cm]

IP rating: IP43



Positioning information summary:

Minimum Clearance around HoneyBadger where no windows doors, etc. are allowed. According to AS/NZS 5139.

Note: if the system is >300mm off the wall then this does not apply, however the system should be attached to a wall for stability.

The HoneyBadger is rated for outside installation. It should be installed in a shaded area.



HoneyBadger Overview

Overview of operation

Your HoneyBadger has two sections. The top area contains the inverters, MPPT's and all the electrical switch gear. The bottom section is pre-wired for up to eight of RedEarth's 4.1kWh Troppo batteries. Each section has a key-lockable door. Note that the keys are not the same for the two doors.



External Power outlet – 10amp

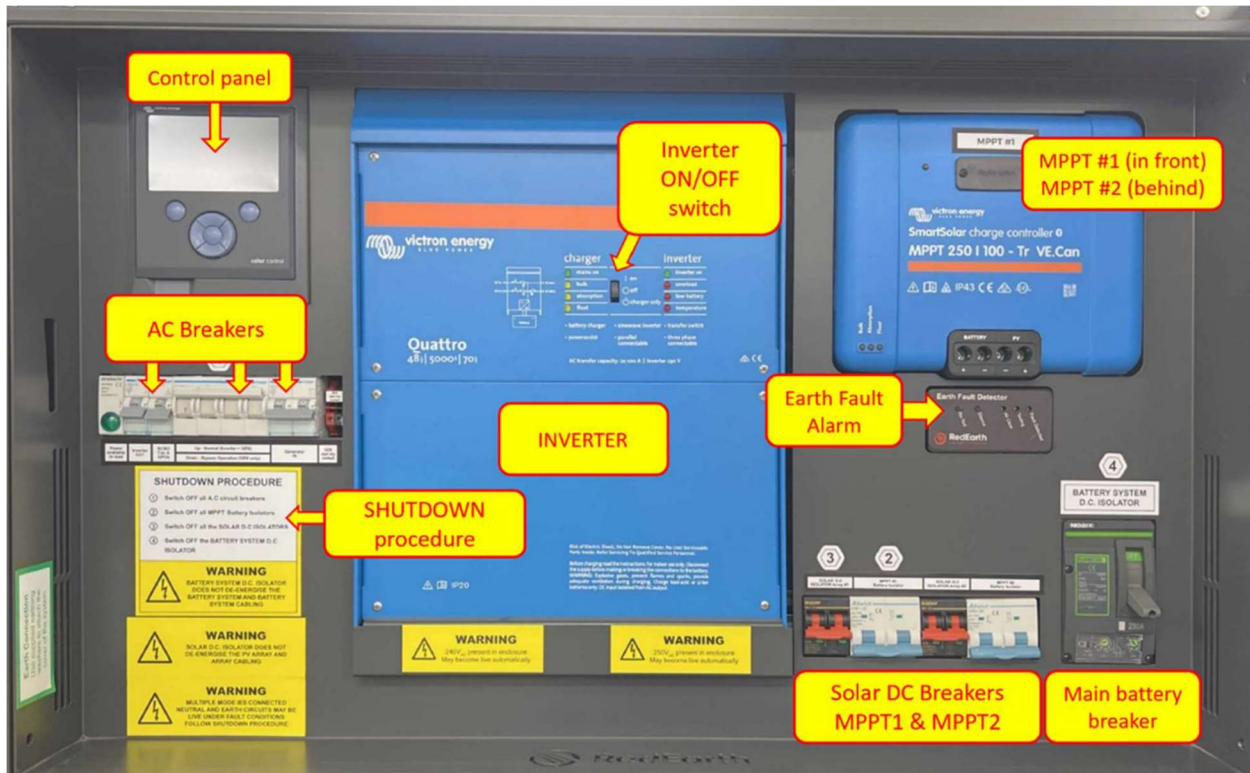
On the left side of the HoneyBadger is a 10amp power outlet. This is available anytime the system is turned on. It does not require the solar panels to be connected.





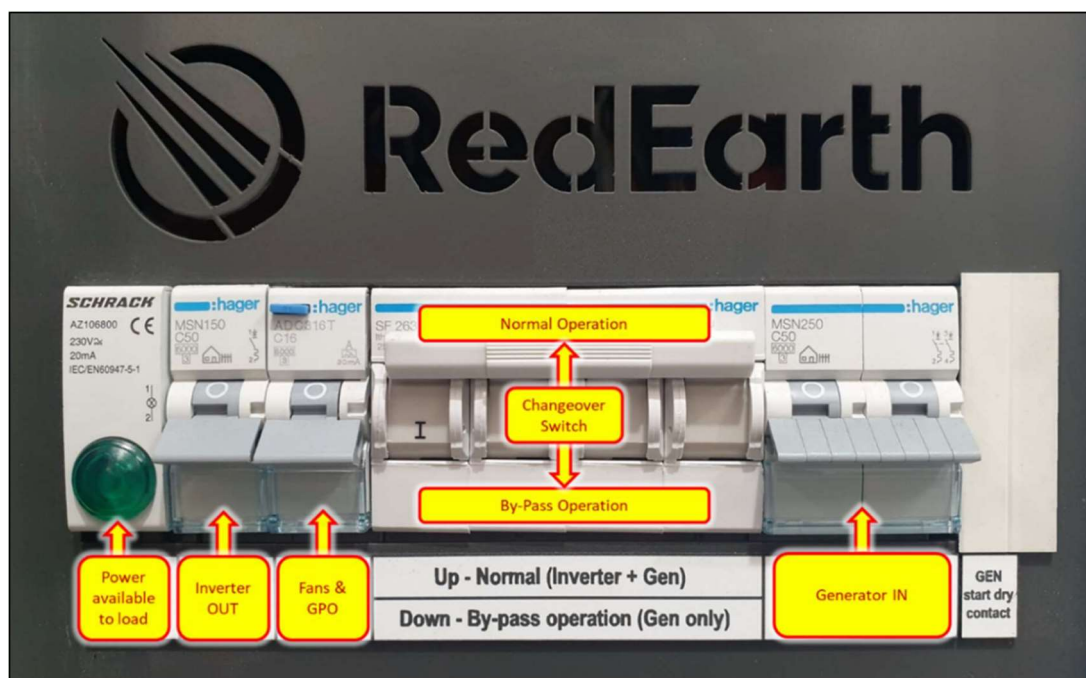
HoneyBadger Components

Opening the top door provides access to the monitoring display and switch gear of your HoneyBadger. This is also where you turn on/off your HoneyBadger.



AC Breakers

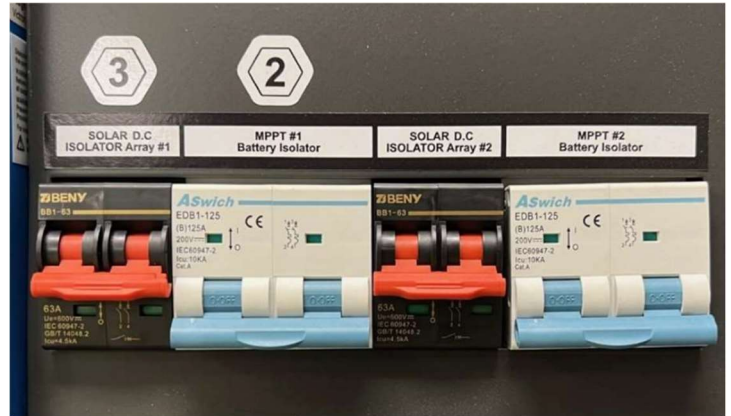
The AC Breakers include a two-pole breaker for connecting a generator. There is also a By-pass switch to use if the HoneyBadger has a problem and the load is to be run off the generator alone. Each switch has an identification label directly below it. These are shown below.





DC Breakers

The DC Breakers are used for isolating the MPPT from the Solar array and the battery. If two MPPT's are included in the system then there will be two sets of breakers as shown, otherwise there will only be one set.



Earth fault alarm

Just below the MPPT, is the Earth Fault Alarm display. This monitors your unearthed Solar Array and battery storage system for conductor insulation degradation.

The ALL-CLEAR light is illuminated in normal operation.

If the device detects a fault, the FAULT DETECTED light will illuminate and a buzzer will sound that can be muted by pressing "Silence" button. Contact your installer.



More information on the Earth Fault device is available at the following link, www.aerl.com.au/wpcontent/uploads/2020/10/EarthGuard-300-User-Manual-REV-1.2.pdf

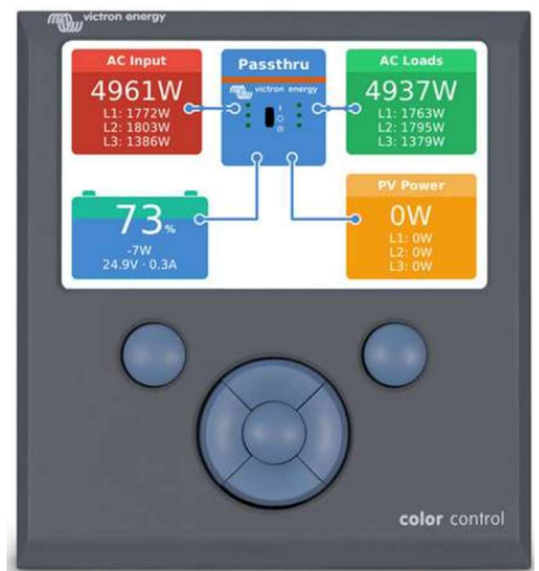
Monitoring display

This display allows monitoring of the system status as well as some parameter changes.

Additional detailed instructions on the monitoring display are available from Victron at <https://www.victronenergy.com/upload/documents/ManualColor-Control-GX.0.3-EN.pdf>

Documentation

The system documentation is kept in the holder on the inside of the top door. It includes the manuals and other system paperwork.

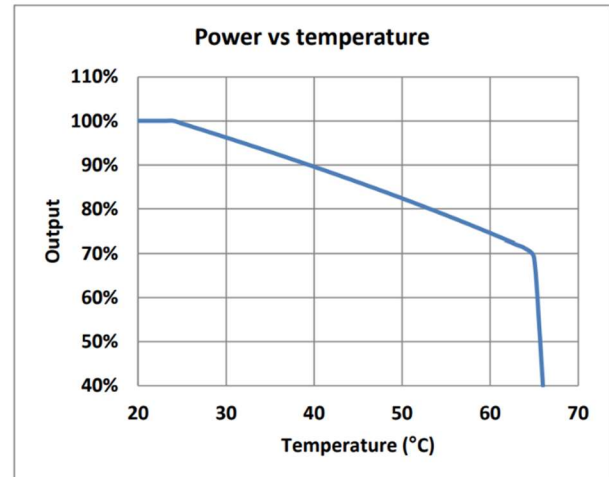




Fan ventilation

The top enclosure has 2 fans in the rear that come on once the Internal air temperature reaches 35 degrees centigrade. The graph at right shows the derating of the Inverter output as the temperature rises.

The fan can be adjusted to come on at a lower temperature however this is accompanied by the fan operating noise.

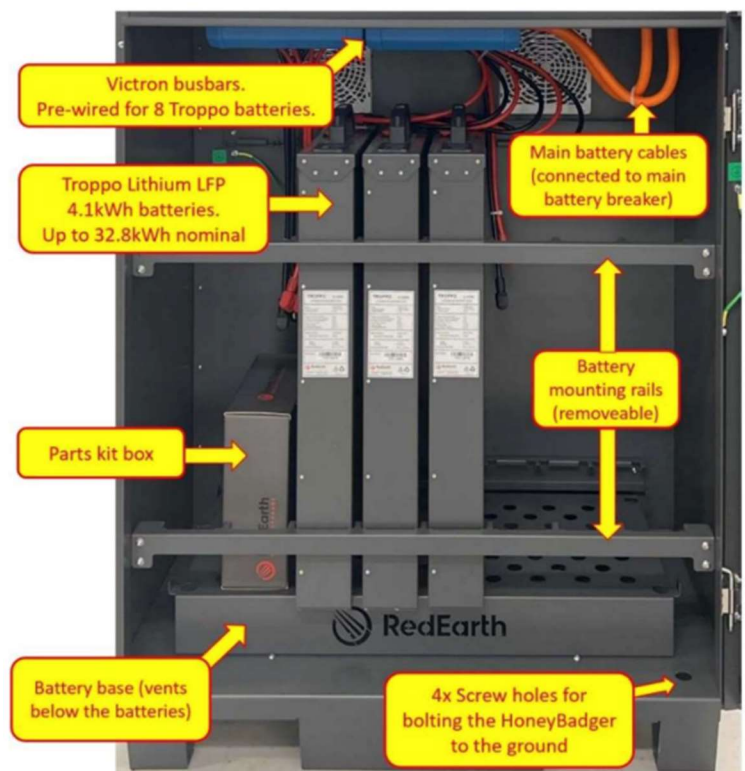


Battery compartment

The bottom compartment can hold up to eight of RedEarth's 4.1kWh Troppo batteries.

Passive ventilation is provided via the vents in the base of the HoneyBadger and through the vents in the top rear of the compartment. Ensure that these are not blocked by other material.

Additional batteries can be purchased from RedEarth. A maximum of eight batteries can be installed. All the battery cables are already included in your HoneyBadger.





How to Turn ON / Shutdown my HoneyBadger

Turn ON procedure

1. In the battery compartment; switch on the battery switches on the top of each Troppo battery. The display and LED light on each battery will illuminate.
2. In the top section; switch on the BATTERY SYSTEM D.C. ISOLATOR [4]; the Monitoring display and Inverter will start (note the small black rocker-switch on the front of the Inverter, In the centre, needs to be in the ON position). The main monitoring display will begin its power-up sequence.
3. Switch ON the SOLAR D.C. ISOLATOR #1 and, if present, Isolator #2 [3]
4. Switch ON the MPPT #1 and, if present, MPPT #2 Isolator [2]
5. Ensure that the Changeover switch Is In the UP position (position 1)
6. Turn ON all AC circuit breakers [1]



Shutdown Procedure

The shutdown procedure is the reverse of the “turn on” procedure and is shown below. This procedure can also be found on the front faceplate of the unit just below the AC breakers.

1. In the top section Turn OFF all AC circuit breakers [1]
2. Switch OFF the MPPT #1 and, if present, MPPT #2 Isolator [2]
3. Switch OFF the SOLAR D.C. ISOLATOR #1 and, if present, #2 Isolator [3]
4. Switch OFF the BATTERY SYSTEM D.C. ISOLATOR [4]
5. Leave the Changeover switch In the UP position (position 1);
6. In the battery compartment switch off the battery switches on the top of each Troppo battery. The display and LED light on each battery will turn off.

SHUTDOWN PROCEDURE

- ① Switch OFF all A.C circuit breakers
- ② Switch OFF all MPPT Battery Isolators
- ③ Switch OFF all the SOLAR D.C ISOLATORS
- ④ Switch OFF the BATTERY SYSTEM D.C ISOLATOR



WARNING

BATTERY SYSTEM D.C. ISOLATOR
DOES NOT DE-ENERGISE THE
BATTERY SYSTEM AND BATTERY
SYSTEM CABLING

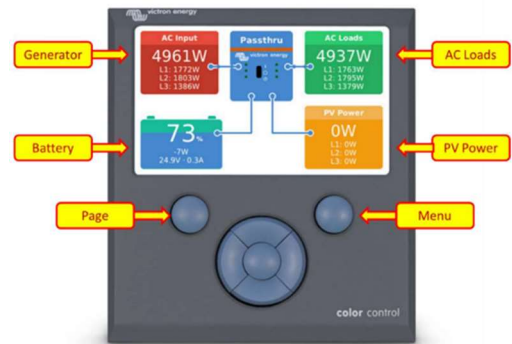


Monitoring your HoneyBadger

There are three ways to monitor your HoneyBadger.

1. Direct monitoring via the Display screen in your HoneyBadger

The Colour Control GX is the communication-centre of your HoneyBadger. It offers at-a-glance live information on power demand from the loads (house), power production from the PV (solar) and the batteries. It also shows the state-of-charge of the batteries and the load on the generator if it is operating.



2. Monitoring via RedEarth's EMU App

This option provides easy remote monitoring of your system operation using your mobile phone.

Note: Remote monitoring assumes that your HoneyBadger Is Installed In an area with mobile phone coverage, and that your system was connected during installation.

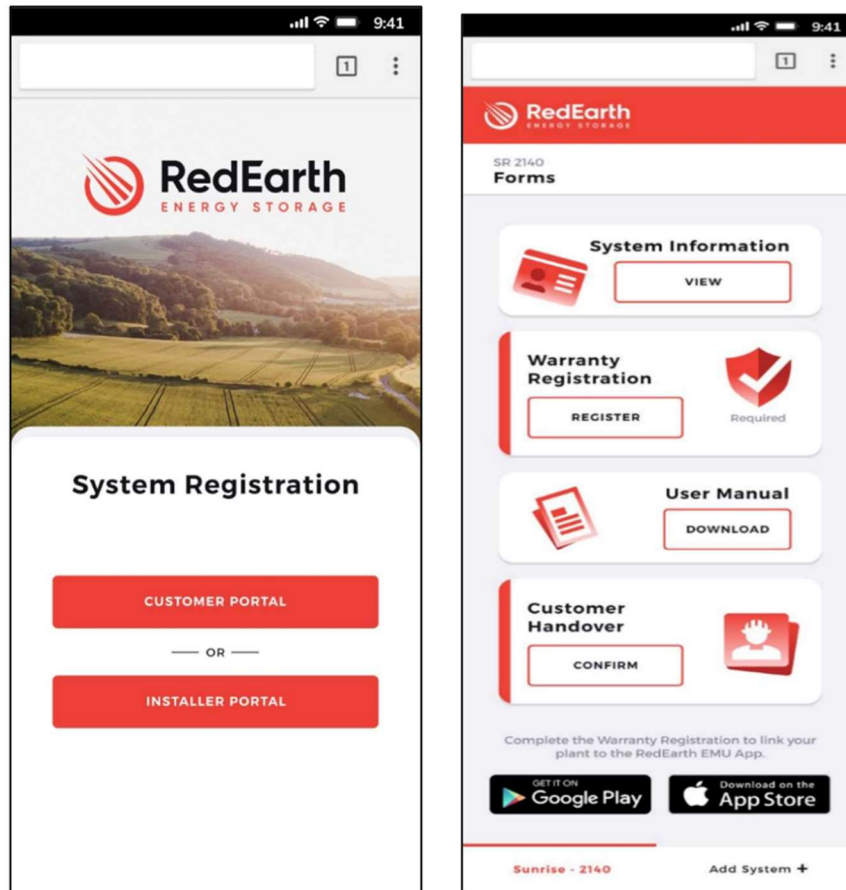
To setup monitoring via the EMU App follow the steps below.

Using your mobile phone, scan the QR code sticker attached on the inside of the top door of your HoneyBadger (shown below)

Scanning the code will automatically take you to the RedEarth customer portal for system registration, as shown below.

Entering all the information requested will help you to get the most from your investment in your HoneyBadger. It will also register your email. You will then be sent an email that allows you to log into the EMU app.

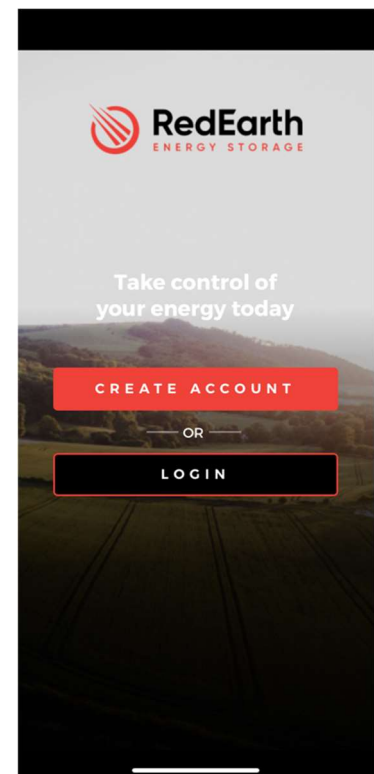
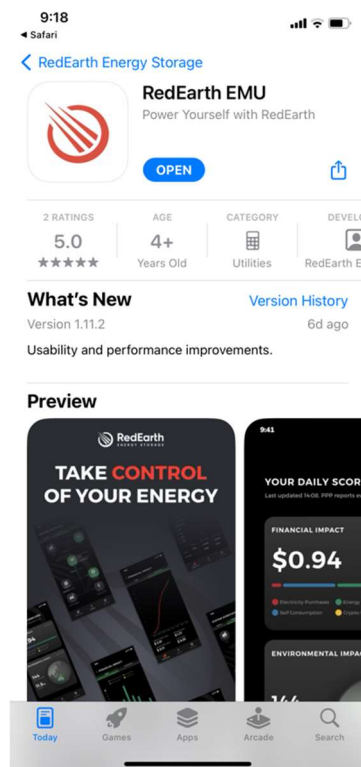


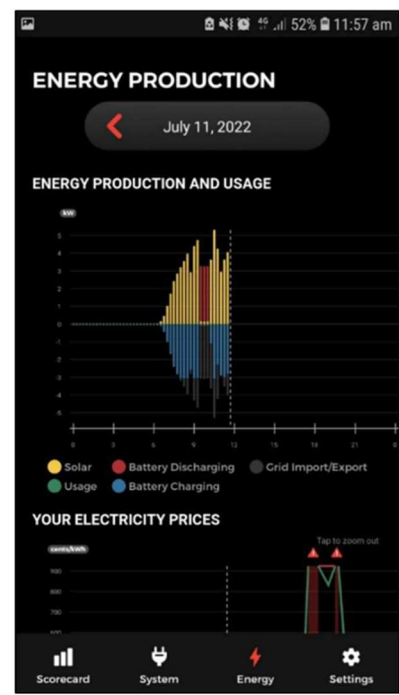
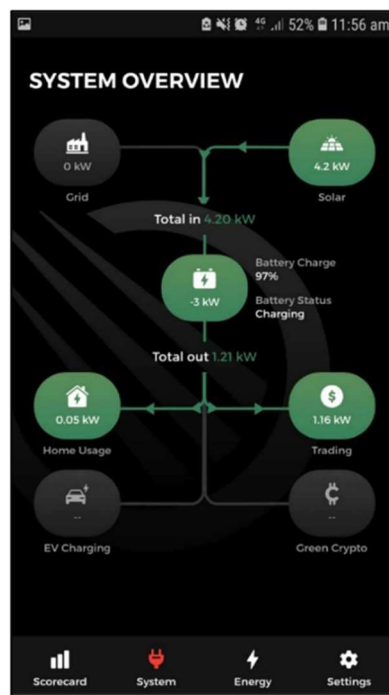


Download RedEarth's EMU app by clicking on the Google Play or App Store icons to download the RedEarth EMU app.

Open the EMU app and create an account using the email you just registered via the QR code. You can then start viewing your system straight away.

If you have any issues email support@redearth.energy.



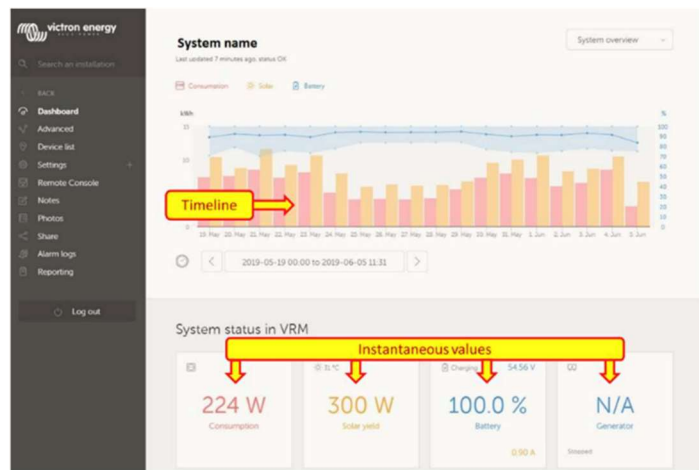


3. Monitoring via Victron's on-line VRM portal

The VRM portal (Victron Remote Monitoring) allows you to monitor additional operating parameters of your HoneyBadger. It is ideally viewed on a laptop/computer.

To access the VRM portal email or call RedEarth tech support with the serial number of your Honey Badger (it can be found on the inside of the top door and looks like this HB-xxxx). You also need to provide an email address to receive your invitation to join the VRM portal.

After receiving the invitation email from Victron, follow the prompts to setup your account. Happy monitoring in the VRM portal.





FAQ's

Q: Something went wrong, and I do not have power.

A: If you have lost power, it can be because your battery is flat and the generator did not start when it was requested. Start the generator. If the system starts up, then leave it running while it charges the battery and supplies your loads. If the system does not come on when you start the generator, then switch to By-Pass mode by following these steps:

1. Turn OFF the Victron Quattro (switch on inverter)
2. Turn OFF the Generator breaker;
3. Turn changeover switch from position 1 to position 2 (down position);
4. Turn ON generator AC breaker;
5. Manually start generator.

In By-Pass mode your loads will be run directly off your generator. Contact RedEarth during office hours to help resolve your problem.

Q: My Generator is turning on too frequently and/or staying on for too long. What does this mean?

A: If connected to the auto-start function of the HoneyBadger, there are several reasons that it might be turning on. The default settings are set to turn on the generator on low State of Charge (SOC) and low voltage levels of the battery. However, Victron has many adjustable parameters that may have been activated and are causing the generator to run. Another possible reason for frequent and extended runtime is that the batteries are constantly reaching low SOC meaning that the loads are too large compared to the battery size. We recommend either reviewing your loads or contacting RedEarth for additional Troppo batteries.



Maintenance and End of Life

Maintenance Schedule

Weekly

- ☐ Check the monitoring display on the HoneyBadger
- ☐ Check the RedEarth EMU app to monitor the operation of your HoneyBadger system (If available)
- ☐ Check the earth fault alarm is green "all OK"

Monthly

- ☐ Clear any vegetation or overgrowth around the HoneyBadger
- ☐ Ensure airflow around the unit is not blocked, including for air entering the base of the unit.
- ☐ Review any emails from RedEarth to remain up to date on relevant opportunities
- ☐ Confirm the generator battery is charged and that the generator starts.

Annually

- ☐ Visually inspect for loose or damaged cables or connections near the system
- ☐ Ensure safety labels/instructions remain visible
- ☐ Inspect condition of solar panels, cables, array frame for damage or corrosion
- ☐ Test the Generator (Back-up) functionality, also confirm the fuel in the generator is still fresh

End of Life Recycling

Please contact RedEarth Energy Storage to arrange recycling of your battery.



Working on the inside of the HoneyBadger system is restricted to qualified personnel.

RedEarth recommend installation by licensed electricians only.

Note that government rebates for solar panels are only available if solar panels are installed by a certified installer



Services and options available for your HoneyBadger

As a RedEarth HoneyBadger system owner you have the choice of joining our customer community. You just need to register your contact details with RedEarth.

You can receive regular relevant communications from RedEarth, especially if you join the RedEarth Optimum program.

Other benefits include:

- Access to our PPP (Private Power Plant) stream of benefits to you
- Remote monitoring service if required. Includes recommendation for system upgrades.
- Additional batteries for system expansion
- Extended warranty option

In addition to the HoneyBadger system RedEarth offers other systems for both on-grid and off-grid applications. Contact RedEarth for more information.





Power yourself.