RedEarth
ENERGY STORAGE

Gecko

User Guide

RedEarth's Gecko is the premium Australian-made Battery Energy Storage System. It provides an excellent and enduring investment in your home.

Available in both single and three-phase configurations, the Gecko provides a range of power outputs and scalable battery size tailored to suit your specific needs.

It also opens up the world of RedEarth's Private Power Plant (PPP), which turns your purchase of a battery system into a genuine investment that increases the value of your home.

Fast Installs

One Pallet

Plug 'n' Play

Version 1.0

Gecko
USER GUIDE

AUSTRALIAN MADE AND OWNED
CLEAN ENERGY COUNCIL MEMBER
SMART ENERGY COUNCIL
ISO 9001:2015 COMPANY
ISO 14001:2015 COMPANY
ISO 45001:2018

Safety Instructions

⚠ WORKING ON THE INSIDE OF THE GECKO SYSTEM IS RESTRICTED TO QUALIFIED PERSONNEL.

General Safety Notes

FIRE

The Gecko uses RedEarth's Troppo ULTRA batteries. This is a lithium-iron-phosphate based battery (LFP). It is the safest lithium chemistry.

However, in the unlikely event of a fire, or if the unit emits smoke, sparks, flames, or vapour, produces a burning smell, becomes excessively hot or swells, leaks, or makes unusual noises,

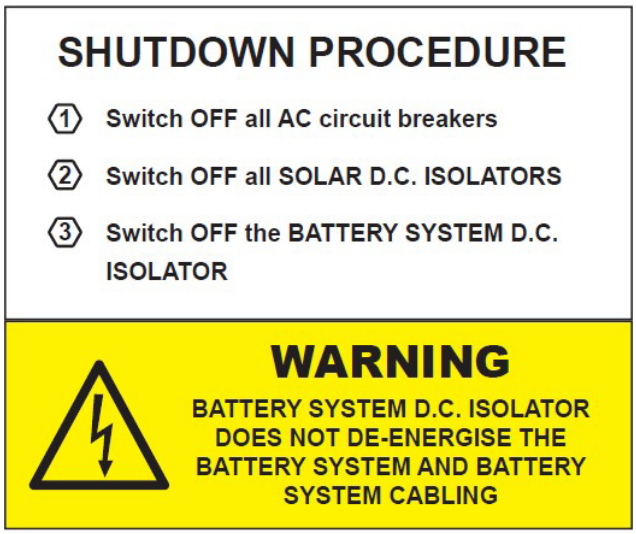
IMMEDIATELY:

- **Evacuate the area.** Move yourself and others to a safe distance.
- **Call Emergency Services (000).**
- **Do NOT attempt to extinguish the fire.**
- **Do NOT touch, move, or handle the system or the batteries.**
- **Do NOT use water or household extinguishers unless trained and safe to do so.**

Battery fires can reignite and may release toxic and flammable gases. Always prioritise personal safety.

- **Note:** The Safety Data Sheet for the Troppo ULTRA battery must be left with the Main SwitchBoard for the fire brigade.
- The Safety Data Sheet for the Troppo ULTRA battery can also be found at: *https://redearth.energy/troppo-ultra-safety-data-sheet/*

- The Gecko must only be installed by suitably qualified personnel who have read and are familiar with its operation and hazards. Working on the inside of the Gecko system is restricted to qualified personnel.
- The batteries provided with this system must only be charged by the inverter or the V2G (vehicle to grid) charger supplied by RedEarth. Do not attempt to charge the batteries with any other charging device or connect any devices directly to the DC battery bus unless approved by RedEarth.
- Do not use a damaged battery.
- Batteries should only be disposed of at an appropriate recycling centre. Contact RedEarth for advice.
- The shutdown procedure can be found on the label on the right-hand side of the Gecko. More details in Shutdown, Turn On, Bypass Procedures.



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Issue date: 3/3/2026. Version 1.0
For technical support: *https://redearth.energy/warranty-form/*
1800 733 637 | 15 Fienta Place, Darra BRISBANE QLD 4076 | www.redearth.energy

Introduction

Congratulations on the purchase of your new Gecko system, making your home more valuable and the world a **greener, cleaner** place!

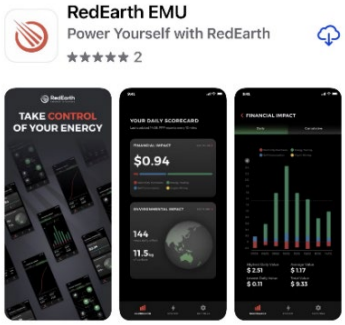
The system can source energy from PV solar panels, the grid, or a standby generator, and stores excess energy during the day in the batteries for use during evening and peak periods.

As an Australian-made product, built in Brisbane, it is optimised for local conditions. With a climate prone to extreme heat, floods, cyclones, bushfires, and heavy storms, being prepared is essential. We've got you covered in an unexpected blackout. The Gecko supports backup capability, ensuring your essential household loads remain powered during a grid outage.

For off-grid customers, the Gecko is ready to connect your backup generator to ensure uninterrupted electricity supply.

The Gecko is designed with scalable battery capacity of up to 44.8 kWh, enough to take the typical Australian home completely off-grid, or to energy trade or share your power if you are on-grid. Batteries can easily be added in the future. You only need to purchase what is suitable for your needs now, and as your requirements change, and your demand for power grows (e.g., when you purchase an electric vehicle), you have the option to add more batteries.

The Gecko system can be installed at the same time as a new PV solar system, or it can easily be retrofitted to an existing PV solar system that is already installed at your home. Your installer will be able to ensure that the capacity of your solar system matches your battery system.



You can monitor and control the Gecko battery system via RedEarth's app, available for both Apple and Android phones.

Finally, RedEarth won't leave you high and dry once you have purchased your system—we're with you for the long haul.

The system is supplied with a **10-year manufacturer's warranty,** supported by RedEarth's onshore technical service team to ensure reliable long-term performance and a seamless installation and ownership experience.

Gecko Customer Handover Checklist

Your installer will go through the following steps to handover your Gecko system:

Installer's contact details:

☐ Provide the documentation that comes with the Gecko

- Gecko Installation Manual
- Gecko User Guide (this document)
- Gecko Identification Sheet (serial #s etc.)
- SDS Troppo ULTRA Battery (Safety Data Sheet)
  This SDS must be left in the switchboard for the fire brigade
- Deye Inverter User Manual
- Eastron Feed-in Meter Manual
- Warranty terms

☐ Provide an overview of your Gecko installation

Explain to you the switches on your Gecko and the isolation switches installed in your switchboard.

Your system includes a SMART port that can be configured for three different modes of operation:

- ☐ As generator input
- ☐ As input for a 3rd-party solar inverter
- ☐ As controlled load output

Confirm how your SMART port is configured. See **Overview of your Gecko installation** for more information.

☐ Demonstrate operation including:

On-Grid: Demonstrate what happens during a grid outage by turning off the Main grid breaker to the house and observing the Backup operation. Confirm that the correct circuits continue to operate.
Note: that there may be a short delay before the backup circuits activate after the grid is disconected from the home. See **Backup operation – On-Grid installation**

Off-Grid: Demonstrate the operation of the backup generator.

☐ Demonstrate the operation and effect of the bypass switch

If your Gecko system develops a fault, the Gecko will begin emitting a beeping sound. If this happens, bypass the whole system which isolates the battery from your home. The grid will provide power directly to all house loads, including the backup loads. All circuits in your home should continue to operate.
See **Bypass Procedure.**

☐ Show maintenance requirements

To maintain optimal performance and ensure product longevity, all maintenance procedures outlined in the User Manual must be followed directly. *Non-compliance may limit or void your warranty coverage.*

☐ Register your system with RedEarth

1. Scan the QR code sticker attached to your Gecko with your mobile phone.
   It looks like this example, but will be specific to your Gecko
   This will take you to the RedEarth customer portal
2. Click Register
3. Enter your contact information and click REGISTER
4. You can now download the **Gecko Warranty document** or view or change your details
   Note: *If it is not possible to register at the time of installation, you can contact RedEarth Customer Service to complete onboarding later.*

☐ Activate Monitoring using the RedEarth App

Monitoring your system is done via the RedEarth app

1. On the RedEarth customer portal, depending on your phone type, click either Google Play or App Store to download the RedEarth app
2. Open the app and create an account. It's recommended to use the same email as used to register your warranty
3. A confirmation email will be sent. Open it and verify your email address
4. You can now log into your account on your RedEarth app to instantly see your system

☐ Ensure all documentation required for claiming STCs is signed by the customer

Overview of your Gecko installation

Your Battery Energy Storage System Gecko is connected to your home via the Main SwitchBoard (MSB) or distribution board. Both at the system itself as well as in the MSB, you can interact with the system via switches and breakers.

To monitor how your system is performing you use the RedEarth app.

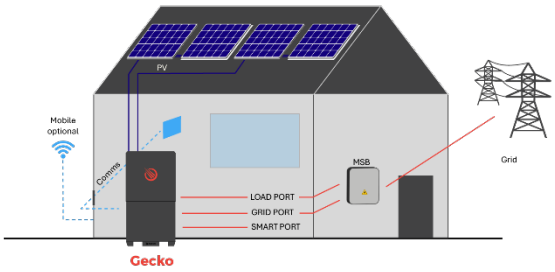
On-grid or Off-grid

Your system can be either an on-grid or an off-grid installation. The pictures below show the main differences. **Note:** Throughout this manual we use:

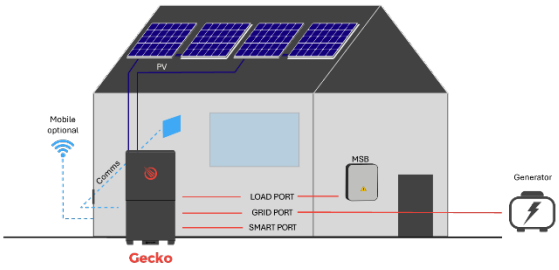
for on-grid systems

for off-grid systems

On-grid example



Off-grid example



Switches on your Gecko

On your Gecko, you will find all AC switches located on the right-hand side of the unit. These are the grid connection, the load connection and a smart port connection.

On this right-hand side is also the communication device, used to monitor your system. You will normally not need access to it, but if directed by RedEarth's technical support, you need to unscrew the lower panel to get to it.

The DC switches are all located on the left-hand side of the Gecko. These are the main battery switch and the DC switches for the solar panel arrays.

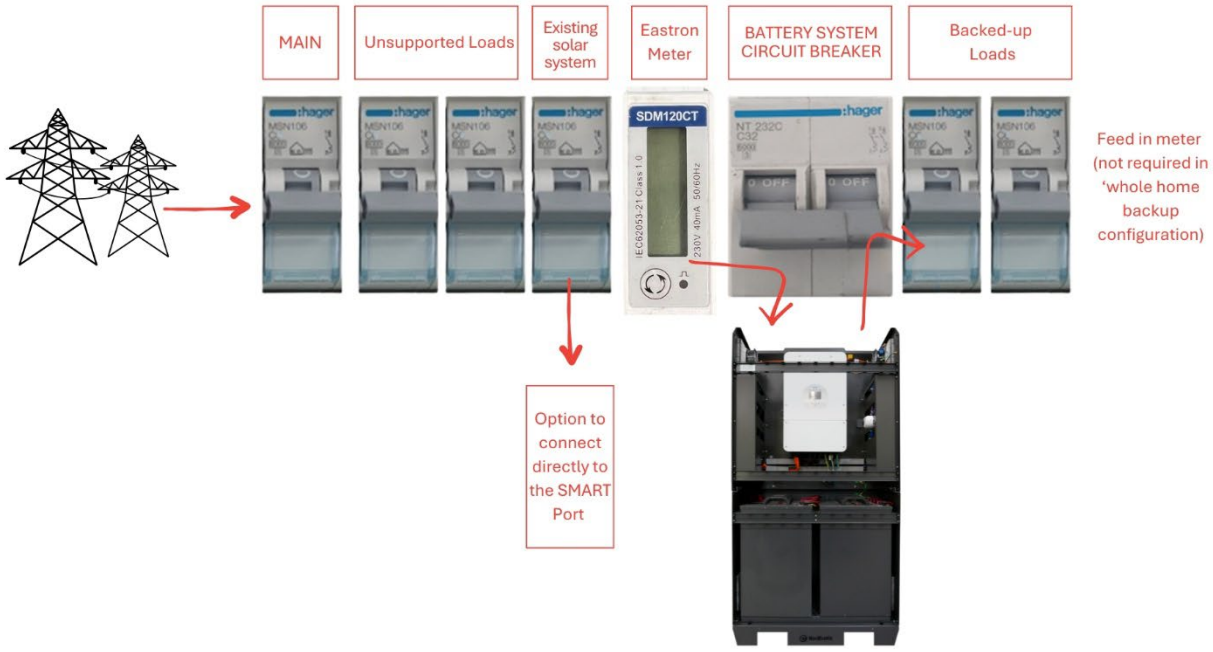
All these switches together control the flow of power in your system. In normal operation there is no need to operate them.

Main SwitchBoard (MSB)

During installation, your Gecko has been connected to your MSB (or distribution board).
The key components added to your MSB related to your Gecko system are:

- **Battery System Circuit Breaker:** This isolates the Gecko from the switchboard, which may be required if, for example, work is to be done inside the switchboard. At all other times this switch remains on.
- **Eastron Meter (optional):** This measures the amount of power imported from or exported to the grid. This may not be present if your installation is a whole-house backup installation or if your Gecko is installed as an off-grid system.

The images below shows how the switchboard typically should look for a **1-phase switchboard with the Battery System Circuit Breaker and Eastron Meter:**

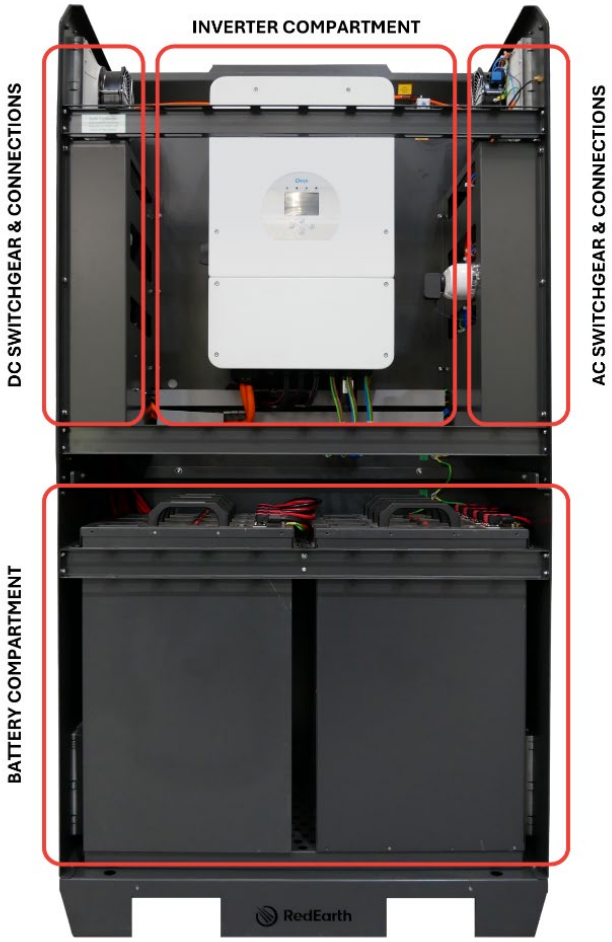


Inside layout

Removal of the covers must only be done by qualified personnel.

Behind the cover, the Gecko is divided into four main areas.

1. The lower section is the battery compartment. Up to eight (8) RedEarth Troppo ULTRA 5.6 kWh batteries can be installed in the Gecko. All eight sets of battery cables are pre-wired into the system. This makes it very easy to add additional batteries in the future.
2. In the top middle section is the inverter compartment. Here you will find the Deye Inverter (5 kW or 10 kW for 1-phase and 12 kW or 15 kW for 3-phase).
3. On the right-hand side are the AC electrical components and cable connections. Below the AC panel is RedEarth's communication device, the RUT.
4. On the left-hand side are the DC electrical components and cable connection points for installation.



How your Gecko works

Normal operation

Your Gecko is setup to provide power to your home in the most cost-effective way to optimise the use of your solar panels and batteries.

For on-grid installations, the Gecko can be sized large enough so that all household loads can run off the installed solar and battery capacity and grid power is only occasionally required. The Gecko can also be smaller and wired up to provide power to your essential loads and grid power is used to supplement for other household loads.

In an on-grid installation the following priorities are used:

- Electricity required to power the home loads comes from the PV solar first, then from the battery and finally from the grid.
- The solar power produced will go to the home loads first and only the excess will be stored in the batteries for later use.
- If the home load is being met by the solar power alone and the batteries are already full, the excess solar power produced can be exported to the grid.

For off-grid installations the Gecko is sized so that all household loads can run off the installed solar and battery capacity. A generator is usually included for prolonged periods of overcast weather which limits the amount of electricity the solar panels can generate.

In an off-grid installation the following priorities are used:

- Electricity required to power the home loads comes from the PV solar first, then from the battery and finally from the generator.
- The solar power produced will go to the home loads first and only the excess will be stored in the batteries for later use.
- If the home load is being met by the solar power alone and the batteries are already full, the solar power will automatically be reduced to match the available loads.

Backup operation

On-grid installation

When there is a grid outage, the Gecko will seamlessly take over the loads that are connected to the output of the Gecko.

If your Gecko is large enough to take over all the loads in your home, they all will continue to operate.

For a smaller installation, only your essential loads will continue to operate during an outage such as refrigeration, key lighting, your roller door, and key power points. In this case, other loads will not work until the grid returns.

Restricting your use of large loads that are less important during a grid outage, such as air-conditioning, home heating, pool pumps, and other, ensure your battery lasts as long as possible.

The solar panels will continue to support your loads and charge your batteries during the day even if the grid is not available.
Monitoring your system via the RedEarth app will show you the amount of electricity that your house is using currently.

In *Appendix 1 – An example of the operation of an on-grid system* you will find a comprehensive example of the normal operation of an on-grid installation. There is also an example of a black out operation.

The black out operation in the appendix is essentially the same as an off-grid installation.

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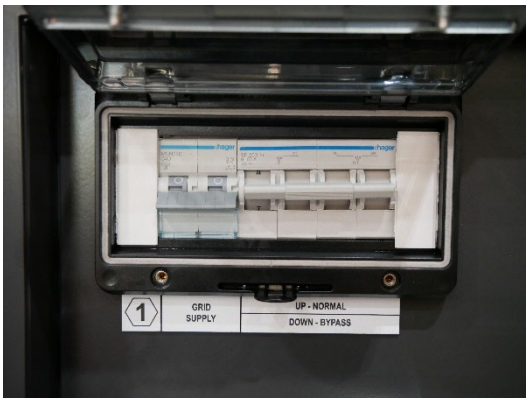
Shutdown, Turn On, Bypass Procedures

Shutdown Procedure

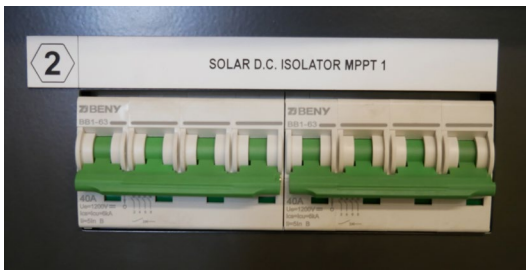
The devices listed below are located behind the doors on the left- and right-hand side of unit and can be identified by the number and labels.
Note: This Shutdown Procedure can also be found on the label at the right-hand side of the unit.

① **Switch OFF all AC circuit breakers**



1. Open the door at the right-hand side of the unit. Here are all the AC circuit breakers.
2. Open the plastic IP protection windows.
3. Switch off the AC breakers.
   Note: The position of the Bypass switch is irrelevant for the switch off procedure. For clarity it's easiest to switch it to DOWN-BYPASS.

② **Switch OFF all SOLAR D.C. ISOLATORS**



1. Open the door at the left-hand side off the unit.
   Locate all the Solar D.C. Isolators. It depends on your system how many Isolators there are.

2. Open the plastic IP protection windows.
3. Switch off the Solar D.C. Isolators.

Switch OFF the BATTERY SYSTEM D.C. ISOLATOR

1. Also, on the left-hand side of the unit, the Battery System D.C. Isolator is located at the bottom of the panel.
2. Open the plastic IP protection window.
3. Switch off the Battery System D.C. Isolator.
4. Close all plastic IP protection windows and close both doors.

WARNING: BATTERY SYSTEM D.C. ISOLATOR does not de-energise the battery system and battery system cabling.

Turn On Procedure

The devices listed below are located behind the doors on the left- and right-hand side of unit and can be identified by the number and labels. Refer to the photos in the Shutdown procedure.
Note: Numbers are in reverse order for turning the system on, 3 to 1.

Switch ON the BATTERY SYSTEM D.C. ISOLATOR

The on/off push button on the left side of the Inverter inside the Gecko should already be ON.
This can only be accessed by a qualified person.

1. Open the door at the left-hand side of the unit.
2. Find the Battery System D.C. Isolator at the bottom of the panel.
3. Open the plastic IP protection window.
4. Switch on the Battery System D.C. Isolator.

Switch On all SOLAR D.C. ISOLATORS

The PV Solar Isolator on the left side of the Inverter inside the Gecko should already be ON.
This can only be accessed by a qualified person.

1. Still on the left-hand side of the unit, locate all Solar D.C. Isolators. It depends on your system how any there are.
2. Open the plastic IP protection windows.
3. Switch on the Solar D.C. isolators.

4. Close all IP protection windows and close the door at the left-hand side of the unit.

Switch ON all AC circuit breakers

The individual battery breakers on each Troppo ULTRA battery inside the Gecko should already be ON. This can only be accessed by a qualified person.

1. Open the door at the right-hand side of the unit. Here are all the AC circuit breakers.
2. Open the plastic IP protection windows.
3. Switch on the AC breakers.
4. Ensure the bypass switch is in NORMAL (**UP)** position as indicated on the label.
5. Close all IP protection windows and close the door at the right-hand side of the unit.

Bypass Procedure

If your Gecko system develops a fault, the Gecko emits a beeping sound. If this happens, you can bypass the whole system.

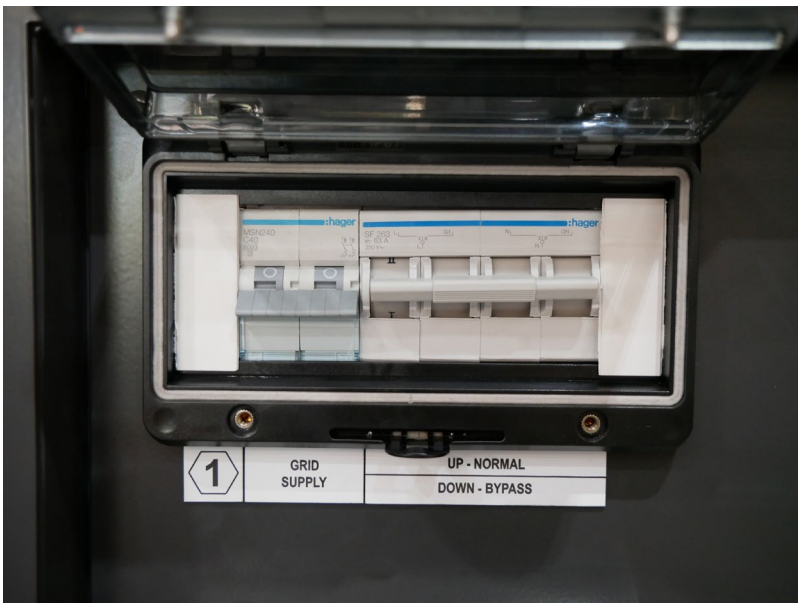
The grid will provide power directly to all household loads, including the essential loads.
Note: in bypass mode there is no back-up protection available.

Your generator will provide power directly to all household loads.

Contact your installer to begin rectification work. If they are not available, contact RedEarth.

To bypass the whole system:

1. Shutdown the system following the *Shutdown procedure*
2. Switch the Bypass switch into the downwards position (DOWN-BYPASS).



Note: The images show the switches for a single-phase Gecko. The three-phase Gecko operates similarly.

Once rectification work has been completed the Gecko system can resume normal operation.

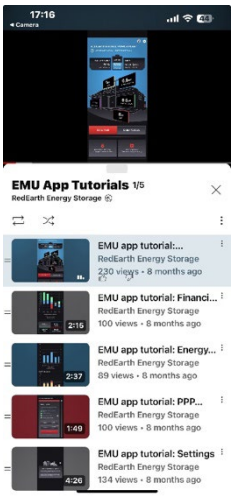
To resume normal operation:

1. Switch the bypass switch into the up position (UP-NORMAL)
2. Turn the system back on following the *Turn On procedure*

Monitor and Control your System

The RedEarth app is used to monitor your system. During the handover with your installer, you have registered and installed the app. Refer to your **Handover Sheet.**

For continuous monitoring, the Gecko needs a reliable internet connection. This can either be via mobile or connecting to your home internet via WiFi or a wired connection to LAN. The best solution depends on your location. Generally, the home internet provides a more reliable solution, however, if only mobile is possible, there are some options to increase the signal strength. Your installer can explain the best solution for your location.
Your Gecko battery system comes with an automatically three-months free remote monitoring via mobile internet. During that time RedEarth can provide feedback on what Private Power Plant (PPP) options would be suitable for you to sign up to. After this initial period, there is a charge to continue remote monitoring via mobile internet. However, you can access the same monitoring using your home internet.



Note: When any issues with your system arise, it's invaluable to have a continuous monitoring history for troubleshooting. It's important to regularly check the internet connection. This can easily be checked by accessing the RedEarth app.

To get the most value out of monitoring your system use, scan the QR code which will take you to several videos explaining how your RedEarth app works.

RedEarth PPP (Private Power Plant)

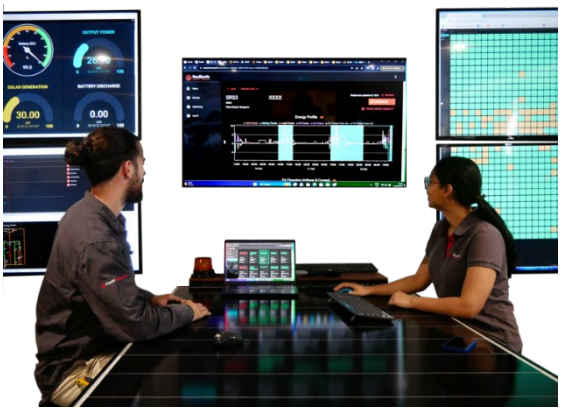
You've bought a Gecko. Now why don't you use it to make your home smarter? Transforming your Gecko into a more valuable and lucrative investment is easily achievable through the integration with our proprietary Private Power Plant (PPP) benefits.
Our PPP is made to benefit **you**; give **you** control and make **you** money.
With your Gecko installed, you not only gain access to a continuous source of renewable energy; by harnessing the untapped potential of your rooftop, you can generate more solar energy than needed to power your residence or business. The result? Your property can become your very own energy trader, creating an additional value stream by feeding surplus energy back into the grid or sharing it with your family. This not only offsets your energy costs but could even turn a profit.

Included PPP modules currently available are:

1. **PowerRanger**—The Power Ranger module gives you the ability to manually (or on an automated schedule) force charge or discharge the battery.
   This means power to:
   - choose to charge the batteries before a scheduled grid outage.
   - charge the batteries on a schedule if there are not enough solar panels on the roof.
   - manually charge on a one-off cloudy day
2. **Disaster Protection Mode**— When severe weather or other conditions are expected to cause grid outages, this mode ensures the batteries are fully charged to last as long as possible during the interruption.
3. **Scheduled EV charging**— View EV charging in real time through the RedEarth app, together with Gecko monitoring. Determine the best time to charge the EV and set the charge rate.
   With the addition of the Boomerang V2G, it can also discharge the vehicle. This can be especially valuable when off

grid, either voluntarily or when storms bring down power lines, as it provides direct access to the large battery in the electric vehicle.

4. **Peer-to-peer electricity trading**—Trade excess electricity with other people at a price agreed on, for free to help out peers or family or for a second property, such as a rental property. This feature is available provided it is supported by the energy retailer.
5. **Manual Energy Trading**—Sell excess electricity at a profit at peak times.



As a Gecko system owner, you can join the RedEarth Smart Energy Trading program benefiting from our proprietary trading algorithms. You can register via the RedEarth —the same platform you use to monitor your Gecko.
Smart Energy Trading requires a sufficiently large Gecko system and a wholesale energy retailer. Our support team will advise you if your system qualifies.

Smart Energy Trading PPP modules currently available include:

1. **Access to wholesale electricity pricing**— RedEarth can assist in transitioning from a standard electricity plan to wholesale pricing through a wholesale energy retailer. This shift can lower the average energy costs, when the Gecko system provides electricity during periods of high market prices.
2. **Automatic Energy Trading**— Sell excess electricity at peak times using RedEarth's proprietary automated trading algorithms. The system identifies the best moments to buy and sell, maximising the financial return.
6. **Smart EV charging**—RedEarth's algorithm determines the optimal time to charge.
   When paired with the Boomerang V2G (Vehicle-2-Grid), the system can also discharge the vehicle, providing an additional energy source from the large battery in an electric vehicle during off-grid operation or storm-related outages.

RedEarth continues to develop new PPP modules, each designed to deliver specific benefits depending on whether the system is on-grid or off-grid and on the size of the Gecko system.

Maintenance and End of Life

IMPORTANT: To maintain optimal performance and ensure product longevity, all maintenance procedures outlined in this guide must be followed as directed. Failure to carry out required maintenance tasks or using non-approved parts or materials, may reduce product performance and compromise safety.
Non-compliance with these maintenance requirements may also limit or void your warranty coverage.

Maintenance Schedule

Weekly

- ❑ Check the RedEarth app to note the operation of your Gecko system and confirm that your internet connection is functioning (if in use).
- ❑ Confirm the Earth fault alarm is not beeping.

Monthly

- ❑ Clear any vegetation or overgrowth around the Gecko system. The Gecko must have a **minimum of 500 mm clearance** in all directions to any grasses, bushes or foliage at all times.
- ❑ 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 any important updates.

Every 2 Months

- ❑ Clean the filters (6 filters in total). Refer to *Appendix 2 Filter cleaning and replacement procedures*

Annually

- ❑ Visually inspect for loose or damaged cables or connections near inverter.
- ❑ Ensure safety labels/instructions remain visible.
- ❑ Replace the filters (6 filters in total) Refer to *Appendix 2 Filter cleaning and replacement procedures*
- ❑ Test the back-up functionality of the Gecko by switching off the main breaker to the house. Confirm that the selected essential loads remain on (e.g., fridge etc.). Switch the main breaker to the house back on to resume normal operation.

Solar Panels

RedEarth recommends, while maintaining your Gecko system, to attend to maintenance activities for your solar panels. Dirt or shading from overhanging branches can have a significant effect on the amount of electricity produced. This is especially important in winter when the sun is lower on the horizon.

End of life recycling

Batteries should only be disposed of at an appropriate recycling centre. Please contact RedEarth for advice.

FAQs

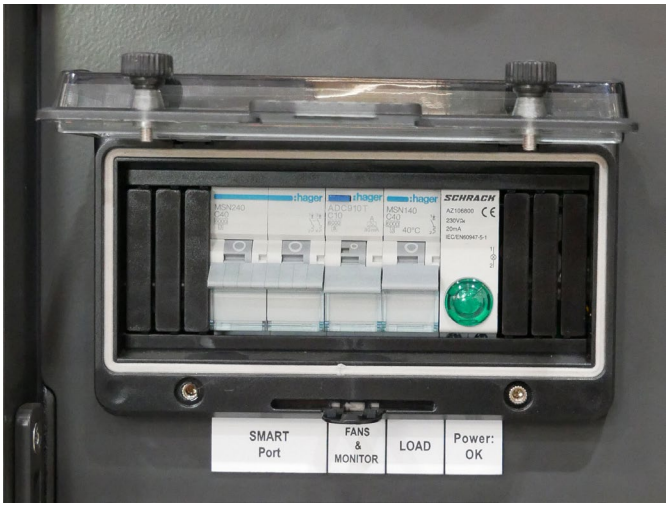
Q: "I lost power!" What should I do?

A: If the grid has failed, you will have lost power on the non-essential loads. **Your essential loads will still have power**. When the Gecko is in this Backup Mode (no grid available) it is important to understand that you now have a limited electricity supply. When the batteries runs out, the essential loads will also turn off. It's important to limit your electricity use where possible. The batteries will recharge once the sun is shining on the solar panels again.
The power to non-essential loads will remain off until the grid power is restored by the electricity utility.

Q: How do I reset my monitoring?

A: Simply follow these steps to reset your monitoring:

1. Turn off the breaker labelled *fans &monitor* as shown in the picture.



2. Wait for 20 seconds.
3. Turn the breaker back on.
4. Monitoring should be restored within 15 minutes.

Q: How do I move my monitoring to WiFi or Lan?

A: There is a procedure to do this at *RedEarth.Energy/Support*

Customer Support

At RedEarth, we stand by the quality of our products. Supported by our dedicated Australian service team, we're committed to making sure your system delivers reliable performance – and that you always feel supported.

If you encounter any problem with your system, please follow the steps below:

1. **Contact your certified installer or authorised reseller**
   Your first point of call should be your installer or authorised reseller. They will know all the details of your specific installation and will be in the best position to offer you help.
2. **Contact RedEarth**
   If Step 1 is not available, contact RedEarth Customer Support. The quickest way to reach them is to go to our website *http://www.redearth.energy* and click on *Raise a Ticket*.
   Please add your System ID and Installers details to the ticket for expedited assistance.

3. **Next steps**
   Our Customer Support will contact you soon after with next steps and advice.

Additional options available for the Gecko

RedEarth can provide several additional options for the Gecko system. Contact your installer for pricing and assistance with adding or expanding your system.

- Additional Troppo ULTRA batteries - up to a total of eight for the Gecko, adding 5.6 kWh extra per battery.
- Electric vehicle charger, that can be monitored on the RedEarth app (both 1-phase and 3-phase)
- Boomerang V2G (Vehicle to Grid) charger that can both charge the electric vehicle and discharge to the Gecko (coming soon).
- Cell phone booster to improve 4G connection.
- Starlink satellite internet connection if the location does not allow another reliable internet connection.
- RedEarth's PPP Smart Energy Trading program.

Appendices

Appendix 1 - Gecko Specifications

Dimensions

- 460 kg – 500 kg (5 kW – 15 kW) with 8 x Troppo ULTRA Lithium batteries (45 kg per battery)
- 100 kg – 140 kg (5 kW – 15 kW) complete without batteries.
- 1950 H x 1060 W x 450 D [mm]

Technical Specifications

	Single phase		Three phase	
Gecko Model	**Gecko 5 kW** 2GC1-DY5-XUL	**Gecko 10 kW** 2GC1-DY10-XUL	**Gecko 12 kW** 2GC3-DY12-XUL	**Gecko 15 kW** 2GC3-DY15-XUL *~ Coming soon*
Battery capacity (Troppo ULTRA 5.6 kWh)	2 to 8	2 to 8	3 to 8	3 to 8
Battery capacity (kWh nominal)	11.2 – 44.8 kWh	11.2 – 44.8 kWh	16.8 – 44.8 kWh	16.8 – 44.8 kWh
Inverter model	5K-SG04LP1-AU	10K-SG02LP1-AU	12K-SG04LP3-AU	*~Coming soon*
Battery data				
Battery type	Troppo ULTRA 5156 LFP self-managed lithium			
Battery capacity (nominal)	5.6 kWh per Troppo ULTRA battery			
Battery operating voltage range (V)	40 V - 57.6 V			
Maximum charging current (A)	120 A	220 A	240 A	280 A
Maximum discharging current (A)	120 A	220 A	240 A	280 A
PV string input data				
Maximum allowable PV (W)	10,000 W	20,000 W	24,000 W	30,000 W
Maximum usable PV (W)	7,500 W	15,000 W	18,000 W	24,000 W
Maximum PV input voltage (V)	500 V	500 V	600 V	600 V
MPPT range (V)	150 to 425 V	150 to 425 V	200 to 600 V	160 to 600 V
Start-up voltage (V)	125 V	125 V	160 V	160 V
PV input current (A)	13 A + 13 A	26 A + 26 A + 26 A	26 A + 13 A	36 A + 36 A
Maximum PV Isc (A)	19.5 A + 19.5 A	44 A + 44 A + 44 A	39 A + 19.5 A	54 A + 54 A
No. of MPPT trackers	2	3	2	2
No. of strings per MPPT tracker	1 + 1	2 + 2 + 2	2 + 1	2 + 2
AC output data				
Rated AC input/output active power (W)	5,000 W	9,999 W	12,000 W	15,000 W
Maximum. AC input/output apparent power (VA)	5,000 VA	9,999 VA	12,000 VA	15,000 VA
Peak power (off-grid)	2 times of rated power, 10 sec			
Rated AC input/output current (A)	21.7 A	43.5 A	17.4 A	21.8 A
Maximum AC input/output current (A)	21.7 A	43.5 A	17.4 A	21.8 A
Maximum continuous AC passthrough (A)	35 A	50 A	45 A	50 A
Generator Total Harmonic Distortion (THDi)	< 3% (of nominal power)			
Power factor	0.8 leading to 0.8 lagging			
Output frequency and voltage	50 Hz; 230 V / 400 V, 240 V / 415 V			

	Single phase		Three phase	
Protection	**Gecko 5kW** 2GC1-DY5-XUL	**Gecko 10kW** 2GC1-DY10-XUL	**Gecko 12kW** 2GC3-DY12-XUL	**Gecko 15kW** 2GC3-DY15-XUL *~ Coming soon*
Integrated	DC Reverse Polarity Protection, AC Output Overcurrent Protection, Thermal Protection, AC Output Overvoltage Protection, AC Output Short Circuit Protection, DC Component Monitoring, Insulation Impedance Detection, Arc Fault Circuit Interrupter (optional), DC Switch, Anti-islanding Protection (Active Frequency shift), Residual Current Detection			
Over voltage category	DC Type II / AC Type II			
Certifications and standards				
Grid regulation	AS/NZS 4777.2			
EMC / safety regulation	IEC/EN 61000-6-1/2/3/4, IEC/EN 62109-1, IEC/EN 62109-2			
General data				
Operating temperature range (°C)	-40~60°C, >45°C derating			
Cooling	Smart cooling with temperature-controlled fans			
Weight of Gecko system (excl. batteries) (kg)	100 kg	120 kg	125 kg	140 kg
Size of Gecko system (mm)	1060 W x 1950 H x 450 D			
Protection degree of Gecko system	IP43			
RedEarth Warranty	10 years (AU & NZ and South Pacific region)			
Electrical connections	Grid connection, Backup circuits connection, Smart Port connection (AC coupled inverter/smart load/generator), PV solar array			
Monitoring	Monitoring hardware included and activated via RedEarth's app (subject to network availability).			
Energy trading	On-grid only			
EV charging	Yes			

* The Gecko system is designed to only use the RedEarth Troppo ULTRA -5156 lithium-ion battery (LFP).
** The Nominal Energy Capacity depends on the number of Troppo ULTRA-5156 batteries installed in the Gecko system. The model numbers reflect the total battery capacity installed in the system.

Appendix 2 - Filter cleaning and replacement procedures

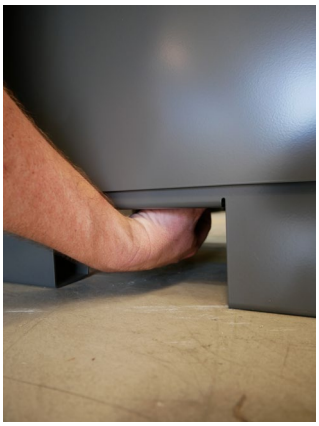
Filter cleaning procedure

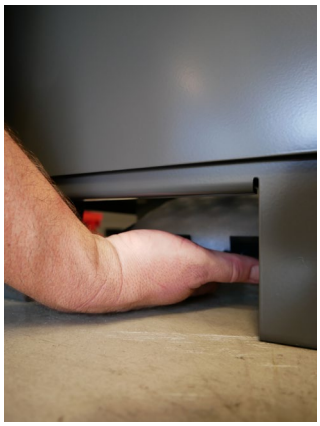
1. **Remove the filters from the system**
   Open the four fan panels of the system by unclipping and lifting them away from the unit. Be aware, the latches only need to unclip, they don't open up. There is a seal behind the panels, which might make it feel like they are stuck. Just use a bit of force to lift them away. The panels should stay open on their own. There are also two filters at the bottom of the unit which are exactly the same as the others. However, you can't see them, so you need to open them by feeling. You access them by putting your hand under the unit.


Closed latch


Open latch


Opening the panel


Accessing the bottom panel



Tip: Note how the filters are positioned so you can easily reinstall them after cleaning. A quick photo can be a helpful reminder when putting everything back together.
Now, slide out the filter with both hands to avoid bending or damaging the material. If the filters are a bit snug, gently wiggle them back and forth as you pull.

2. **Wash the filters**
   Rinse the filters under running water to remove dust. Spray the water at a slight angle to avoid damaging the filter's fibres. Let the water run through the filter from both sides until it's clear. If the filter has stubborn dirt buildup, spray a mild cleaning solution first and then rinse.
   Do not vacuum or brush the filters as this can cause damage.

3. **Dry the filters**
   Shake off any excess water and leave the filters to dry in the shade or place it on a towel in a well-ventilated area inside, away from direct sunlight. The filters must be completely dry before you place them back into the unit, as a wet filter can grow mould.

4. **Clean the louvres**
   While the filters are drying clean the louvres. Use a soft brush or vacuum cleaner with a brush attachment to remove dust and a damp cloth to remove grime.

5. **Put the filter back in the unit**
   When the filters are completely dry, reinsert them securely into its original position in the system. It should fit snugly with no gaps or signs of misalignment. Close and latch the filter cover/panel back into place properly to prevent air leaks. Then wipe away any dirty fingerprints you may have left on the exterior of the system.

Filter replacement procedure

- Follow the cleaning procedure but omit step 2 and 3.
- At step 5 insert new filters.

Appendix 3 - An example of the operation of an on-grid system

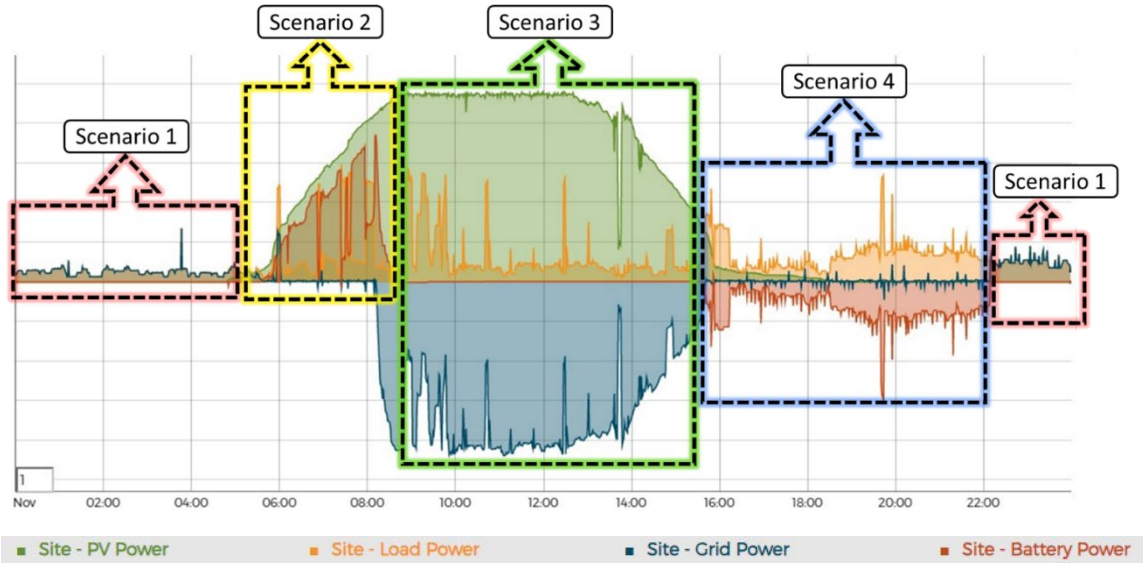
Normal operation - on-grid

To understand this better, please review the example from one of our customers below. It covers a full 24-hour day.

The green area is the **solar power** that was generated (from 6am to 4pm).
The orange area is the **home load.**
The red area is the **battery** (charging and discharging during the day).
The blue area is the **grid** (importing and exporting during the day).

In this example there are 4 clear scenarios:

- **Scenario 1:** It is very early in the morning. There is no solar power and the batteries are empty. Therefor the grid is providing power to the loads.
- **Scenario 2:** From 6am, as the solar power increases, it provides power to the loads and any excess power charges the batteries. Grid power is now not required.
- **Scenario 3:** The solar power is at its maximum and is still providing power to the loads. Because the batteries are already full, the excess solar power is exported to the grid.
- **Scenario 4:** As the solar power reduces in the evening, the batteries start to "take over" the loads. While the batteries still have energy the loads are powered from the solar power stored during the day. Grid power is not required.



Operation during blackouts

If grid power is lost, e.g., due to storms damaging powerlines, the Gecko system will power the backed-up loads that were connected during the installation of your system. This will usually include as a minimum your fridge, key lights and power circuits.

Note that this is also the normal operating mode of the Gecko if It has been installed as an off-grid only system.

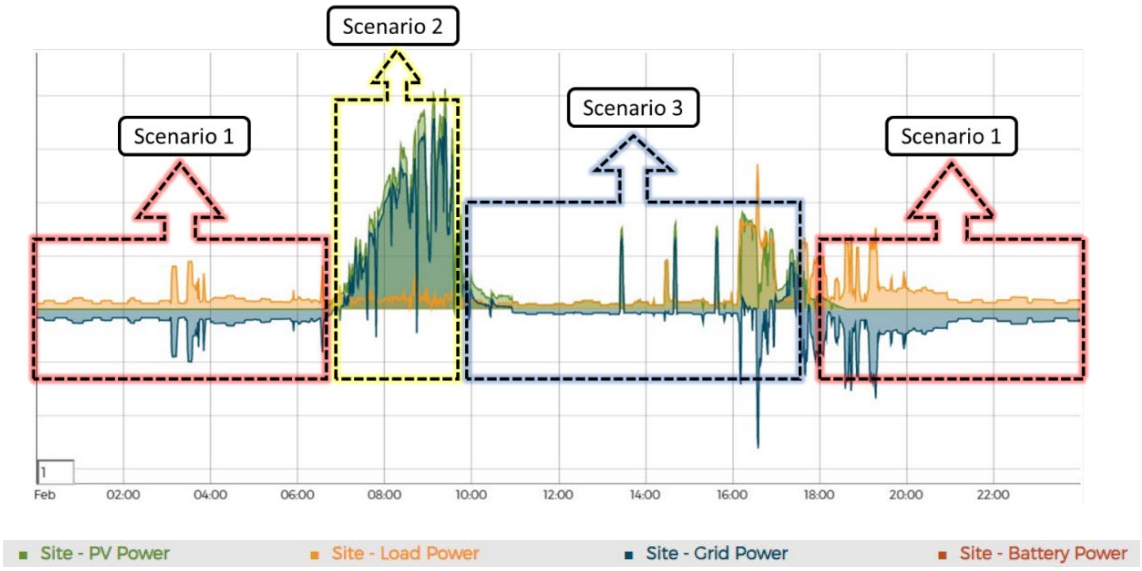
While in this back-up operating mode, the Gecko will use power from the battery and from the solar panels connected directly to it (during the daytime). Excess solar will charge the batteries.

If you are careful with your electricity use during a blackout, you can maintain electricity supply to your essential loads for an extended period of time. If the conditions are overcast or it is raining then the solar panels will not generate as much electricity. Monitoring your RedEarth app will show you the remaining capacity of your battery (providing there's still an internet connection).

Once the batteries are empty, the Gecko will turn off and you will lose power on the essential loads as well. It will restart when the solar panels start generating power again, or if a generator is connected. Note that it will only start inverting once the batteries have absorbed some charge.

To better understand the operation of your Gecko during a blackout review the real-life example below. The green area is the solar power, the orange line are the house loads, and the blue line is the battery. Note that in this example the grid in not present, which is what happens during a blackout. In this example there are three clear scenarios:

- **Scenario 1:** It is early morning. There is no solar power or grid, the batteries are providing power to the loads.
- **Scenario 2:** From 6am, as the solar power increases, it provides power to the loads and the excess power charges the batteries.
- **Scenario 3:** Here the batteries are now full and the solar generation is automatically reduced to match the house loads as there is nowhere else for excess solar energy to go.



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Power yourself.