



POWER YOUR LIFESTYLE WITH REVOLUTION LITHIUM BATTERIES



USER MANUAL

   www.revolutionpoweraustralia.com.au

CAMPING | 4WD | CARAVAN | MOTORHOME | MARINE | OFF GRID

For safe and optimum performance, Revolution Power Australia LiFePO₄, Lithium Iron Phosphate Batteries must be used properly. Carefully read and follow all instructions and guidelines in this manual and give special attention to the CAUTION and WARNING statements.

PLEASE KEEP THIS MANUAL FOR FUTURE REFERENCE

DISCLAIMER

While every precaution has been taken to ensure the accuracy of the contents of this owner's manual, Revolution Power Australia assumes no responsibility for errors or omissions. Note as well that specifications may change without notice.

IMPORTANT

Please be sure to read and save the entire manual before using your Revolution Power Australia LiFePO₄, Lithium Iron Phosphate Battery. Misuse may result in damage to the battery and/or cause harm or serious injury.

Read manual in its entirety before using the unit and save manual for future reference.

PRODUCT NUMBERS COVERED IN THIS OWNER'S MANUAL:

RPL12-60SLIM	RPL12-100USLIM	RPL12-100TJMSLIM	RPL12-100OT	RPL24-200LD
RPL12-100GT	RPL12-100TJM	RPL12-100SLIM	RPL12-200	RPL48-100

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1. GENERAL INFORMATION

Thank you for purchasing a Revolution Power Australia Lithium battery. Please read the following information carefully before installing your new battery. This information outlines the operational guidelines of the Revolution Power Australia LiFePO4 battery range and describes the type, performance, and technical characteristics. This battery is designed and intended only for use in deep cycle applications.

Suitable applications may include Camper Trailer, 4WD (AUX battery), Caravan, watercraft and marine vessels, Low power communication sites or any application that requires the use of a deep cycle battery that meets the amp hour capacity.

The battery is equipped with a LiFePO4 Battery Management System (BMS) that can monitor and optimize each cell during charge & discharge to protect the battery pack from over charge, over discharge & short circuit. The BMS helps to ensure safe and accurate operation of the battery.

Lithium batteries require a specific charging algorithm. The charging source must include the correct charging algorithm suitable for charging Lithium batteries. Using the incorrect charging source will damage the battery cells and void the warranty.

AC mains, DC-DC chargers and solar controllers to suit all Lithium batteries are available from Revolution Power Australia. Please contact Revolution Power Australia for more information.

This Battery IS NOT designed for, nor should it be fitted into an engine bay or other area subject to high heat.

Incorrect use, charging and care of the battery WILL damage the battery and is not covered by Revolution Power Australia Warranty.

2. INSTALLATION AND USE

Your Revolution Power Australia battery must be installed in a dry and cool location.

Revolution Power Australia recommends the use of battery trays and straps as well as battery boxes as the preferred mounting method. Ensure that sufficiently rated fasteners are used to hold the tray -firmly to the mounting material.

Revolution Power Australia recommend the battery is installed in the upright position.

Batteries must be fully charged before adding to an existing installation.

Temperatures must not exceed the rated operating temperatures. Revolution Power Australia recommends a 25mm clear space around the battery when installed.

REVOLUTION POWER AUSTRALIA BATTERIES ARE NOT RECOMMENDED:

- In vehicle engine bays or in high heat environments, refer to Section 10 - Battery Specifications
- Open Ute trays or boat deck areas.

CONNECTION

It is recommended that no more than four terminals be connected to a battery post. If you do have more than 4 connections, the use of a fuse block and negative busbar are recommended. When paralleling batteries, Revolution Power Australia strongly recommends the use of busbars when paralleling more than 3 batteries. Battery Positive & Negative Link Cable must be equal lengths. Use of insulating terminal boots is recommended, especially in areas where accidental shorting may occur.

Connect the Positive (Red) and Negative (Black) cables to the battery, ensuring you are using cable that is of adequate size for the demands of the system, and well crimped and protected termination lugs.

STANDARD	UNIT												
AWG	0000	000	00	0	1	2	4	6	8	10	12	14	16
Diameter (mm)	11.68	10.40	9.27	8.25	7.35	6.54	5.19	4.11	3.26	2.59	2.05	1.63	1.29
Cross Section (mm ²)	107.1	84.9	67.5	53.5	42.4	33.6	21.2	13.3	8.4	5.3	3.3	2.1	1.3
Current A	230	200	175	150	130	115	85	65	50	35	25	20	17

Use of spring washers are highly recommended on the battery terminal bolts - they apply pressure to the lugs for a secure connection. There is no need to over-tighten the bolts, simply ensure there is no movement of the cables. Make sure the main Battery Cable lug is mounted directly onto the Battery terminal with no washers between them.

CHARGING

Lithium batteries require specific charging algorithms. The charging source required must include the correct charging algorithm and voltage parameters to ensure long life and maximum capacity. Revolution Power Australia lithium batteries require the use of chargers with a lithium LiFePO4 setting for all AC chargers, DC-DC charger, and Solar controllers. Using the incorrect charger will damage the battery cells and void the warranty.

It is recommended that the charging current should be 25% of your battery capacity. You can charge at higher currents but 25% is the recommendation for optimal battery life.

A lithium battery will accept charge from a non-lithium charger, but these chargers can deliver too much or too little voltage and may not cut off when the battery is full.

DO NOT use a charger with a “Pulse Stage” or “Equalisation Mode”. This will damage the battery and void warranty.

DO NOT connect this battery to a start battery with a VSR (Dual Battery System or “Voltage Sensitive Relay”). The voltage of the Lithium battery may keep the VSR switched on resulting in it discharging into the start battery, and/or flattening the start battery.

DO NOT charge Revolution Power Australia lithium batteries direct from an alternator.

DISCHARGING AND INVERTER USAGE

Lithium batteries can be discharged at high rates, however for optimum battery life, Revolution Power Australia do not recommend discharging the battery beyond the batteries specification. This is most important when using an inverter to provide power to appliances that require 240V (Kettles, Toasters, Coffee Machine). As a guide, converting Watts to Amps can be done by taking the wattage of an appliance and dividing it by the battery voltage (eg. $1000W/12V = 83Amps$). Exceeding the batteries recommended discharge rates can damage the Battery Management System (BMS) and put undue stress on the cells and will void all warranty. Please refer to the batteries specification sheet or contact Revolution Power Australia for recommended discharge rates.

Revolution Power Australia strongly recommends not using an inverter or 240v appliances when the battery bank is at or below 30% “State of Charge” (SOC%). Please refer to table 1 in Battery Specifications Section for recommended discharge rates.

Revolution Power Australia highly recommend the use of a battery monitor which uses a “shunt” to measure the current going into (Charging) and coming out of (Discharging) the battery.

It is recommended that Lithium batteries not be discharged below 20% State of Charge, or the battery life may be shortened. As an added layer of protection, Revolution Power Australia Lithium Batteries have a built-in low voltage disconnect circuit. If this occurs, please refer to battery specification table. If your battery has shut down due to low voltage you must charge your battery within 14 days to prevent permanent damage occurring to the cells.

LOW BATTERY VOLTAGE DISCONNECT

The battery has a low voltage disconnect incorporated for self-protection. If the battery is drawn down to the internal low voltage disconnect set point of ($\leq 10.0V$) the Battery Management System (BMS) will disconnect.

To reconnect, a charge voltage of $\geq 12.8V$ must be applied to the battery before the over-discharge release will activate and allow charge current to flow into the battery. The use of a portable power pack to jump start the battery or any battery charger that has a 0v start can be used to wake the battery. Revolution Power strongly recommends keeping the battery charged to avoid activating the low battery voltage disconnect. By continuously tripping the low voltage disconnect of the battery, you may cause damage to sensitive electronic equipment inside and/or attached to the battery.

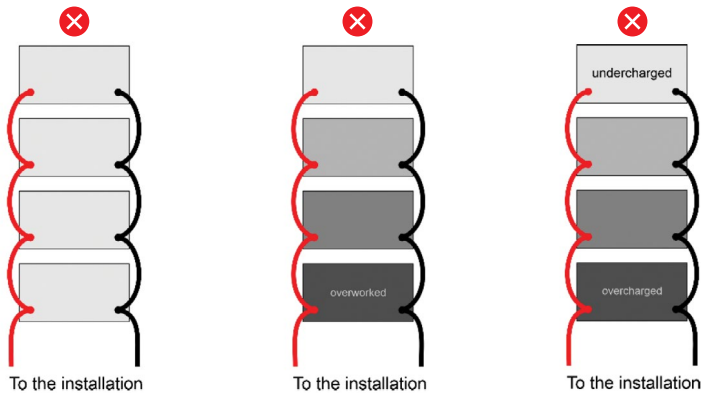
WARNINGS

Please read and follow the cautions listed below and/or on the battery before installation. Improper use may cause heat, fire, rupture, damage, or capacity deterioration of the battery. Revolution Power Australia is not responsible for any accidents caused by the usage without following our specification.

- Do not use the battery for cranking/starting applications.
- Do not disassemble the battery. Battery warranty will be void if the case is opened.
- Do not connect the batteries in series to increase the overall voltage.
- Do not dispose of in fire.
- The battery must be installed away from major heat sources, high voltage, and avoid exposed sunlight for long periods of time.
- Do not connect the positive and negative terminals of the battery together.
- Do not drop, impact, or puncture the battery.
- Do not allow the battery to sit in a discharged state $\leq 10.0V$
- When the battery capacity is low (12.0V), please charge the battery.
- Do not use unregulated non-lithium LiFePO4 battery chargers. Failure to install the correct battery charger will void all warranty.
- If battery emits a peculiar smell, heating, distortion or appears to have any abnormality during operation or storage, please stop using the battery and take it out of service. Contact Revolution Power Australia for further details.
- Do not mix lithium batteries with other types/chemistries or brands of batteries as they will not be compatible.

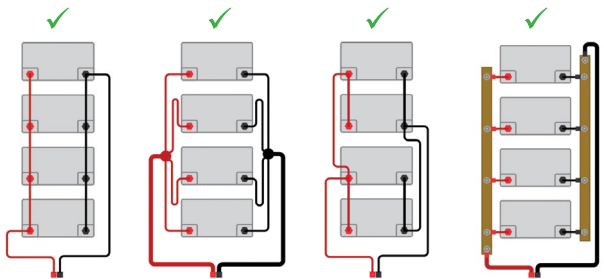
CONNECTING BATTERIES IN PARALLEL

When wiring a battery bank, it is easy to make a mistake. One of the most common mistakes is to parallel all the batteries together and then connect one side of the parallel battery bank to the electrical installation. As indicated in the image below. What happens when a load is connected? The power coming from the bottom battery will only travel through the main connection leads. The power from the next battery must travel through the main connection and through the 2 interconnecting leads to the next battery. The next battery up must go through 4 sets of interconnecting leads. The top one must go through 6 sets of interconnecting leads. Each set of leads has its own resistance and is additive. The top battery will provide much less current than the bottom battery. What happens if the battery bank is being charged? The bottom battery gets charged with a higher current than the top battery. The top battery gets charged with a lower voltage than the bottom battery. The result is that the bottom battery is worked harder, discharged harder, charged harder. The bottom battery will fail prematurely.



Current will always choose the path of least resistance. Most of the current will therefore travel through the bottom battery. And only a small amount of current will travel through the top battery. The correct way of connecting multiple batteries in parallel is to ensure that the total path of the current in and out of each battery is equal. There are 4 ways to do this:

- Connect diagonally.
- Use a positive and negative post. The cable lengths from post to each battery need to be equal.
- Connect halfway. Make sure all cables have the same thickness.
- Use busbars.



***Note:** Slight variance of State of Charge or Amps may occur between the batteries in parallel however these should not vary by more than 5%. It is recommended that annually the batteries be disconnected and individually charged allowing them to sit at a fully charged state for 12hrs each before connecting back together.

BATTERY SPECIFICATIONS

	RPL12-60SLIM	RPL12-100GT	RPL12-100U SLIM	RPL12-1000T
TOTAL CAPACITY	75 Ah	125 Ah	125 Ah	125 Ah
USABLE CAPACITY (C20, 25°C TO 10.5V)	60 Ah	100 Ah	100 Ah	100 Ah
CELL RATING	2C	0.5C	1C	2C
NORMAL DISCHARGE	20A	20A	20A	20A
MAXIMUM CONTINUOUS DISCHARGE 60MINS 25°C	85A	50A	100A	100A
PULSE DISCHARGE 30MINS 25°C	100A	80A	160A	170A
PEAK DISCHARGE 5 SECONDS	120A	120A	400A	400A
RECOMMENDED 25°C	30A	30A	50A	40A
MAXIMUM 25°C	30A	50A	100A	50A
RECOMMENDED CHARGE VOLTAGE	14.6V ± 0.2V	14.6V ± 0.2V	14.6V ± 0.2V	14.6V ± 0.2V
CHARGE TEMPERATURE	-0°C ~ 45°C	-0°C ~ 45°C	-0°C ~ 45°C	-0°C ~ 45°C
DISCHARGE TEMPERATURE	-20°C ~ 60°C	-20°C ~ 60°C	-20°C ~ 60°C	-20°C ~ 60°C
STORAGE TEMPERATURE	-20°C ~ 40°C	-20°C ~ 40°C	-20°C ~ 40°C	-20°C ~ 40°C
WEIGHT	8Kg	11Kg	12.5Kg	10.5Kg
DIMENSIONS (L X W X H)	291 x 106 x 223mm	305 x 165 x 215mm	500 x 75 x 260mm	305 x 165 x 215mm
WARRANTY	5 Years	5 Years	5 Years	5 Years
IP RATING	IP65	IP65	IP65	IP65
USES	Camper / 4WD	4WD / Camper / Caravan	4WD / Camper / Caravan	4WD / Camper / Caravan / Marine
BATTERY LEVEL COMPLIANCE	IEC 62619 62133/ UL1642 CERTIFIED	IEC 62619 62133/ UL1642 CERTIFIED	IEC 62619 62133/ UL1642 CERTIFIED	IEC 62619 62133/ UL1642 CERTIFIED

STORAGE AND TRANSPORTATION

The battery has a self-discharge rate of ≤3% per month @ 25°C. The battery should not be left for more than 30 days without checking its charge state. Failure to follow these requirements will see an early failure of the battery which is not covered under warranty. Battery should be stored in a dry, clean, shaded, and well-ventilated environment at a temperature between -20°C to 40°C.

The battery should be stored at 50-70% SOC for long-term storage (over 30 days) with all loads to battery terminals disconnected. Keep the top of the battery and its terminals clean. Protect the battery from being dropped and serious stacking during loading.

RPL12-200	RPL24-200LD	RPL48-100LD	RPL12-100TJM (TJM EXCLUSIVE)	RPL12-100TJMSLIM (TJM EXCLUSIVE)	RPA1236-50A
250 Ah	125 Ah	125 Ah	125 Ah	125 Ah	DC-DC Converter
200 Ah	200 Ah	100 Ah	100 Ah	100 Ah	12V-36V
0.5C	0.5C	0.5C	0.5C	1C	50A Continuous
40A	20A	20A	20A	20A	Voltage range 9-16VDC
100A	100A	50A	50A	100A	Output voltage 36VDC
160A	100A	50A	80A	160A	
250A	200A	100A	120A	400A	
50A	40A	30A	30A	50A	
100A	100A	60A	50A	100A	
14.6V ± 0.2V	14.6V ± 0.2V	14.6V ± 0.2V	14.6V ± 0.2V	14.6V ± 0.2V	
-0 °C ~ 45 °C	-0 °C ~ 45 °C	-0 °C ~ 45 °C	-0 °C ~ 45 °C	-0 °C ~ 45 °C	
-20 °C ~ 60 °C	-20 °C ~ 60 °C	-20 °C ~ 60 °C	-20 °C ~ 60 °C	-20 °C ~ 60 °C	-35 ~ +85 °C
-20 °C ~ 40 °C	-20 °C ~ 40 °C	-20 °C ~ 40 °C	-20 °C ~ 40 °C	-20 °C ~ 40 °C	-40 ~ +85 °C
21.5Kg	38Kg	38Kg	11Kg	12.5Kg	3.5kg
483 x 170 x 242mm	522 x 238 x 220mm	522 x 238 x 220mm	305 x 165 x 215mm	500 x 75 x 260mm	220 x 156 x 65mm
5 Years	5 Years	5 Years	5 Years	5 Years	
IP65	IP65	IP65	IP65	IP65	IP67
Marine / Caravan / Off Grid	Marine / RV / Off Grid / Motorhome	Off Grid	4WD / Camper / Caravan	4WD / Camper / Caravan	Marine
IEC 62619 62133/ UL1642 CERTIFIED	IEC 62619 62133/ UL1642 CERTIFIED	IEC 62619 62133/ UL1642 CERTIFIED	IEC 62619 62133/ UL1642 CERTIFIED	IEC 62619 62133/ UL1642 CERTIFIED	



REVOLUTION POWER AUSTRALIA LITHIUM BATTERY PRODUCT WARRANTY

Revolution Power Australia warrants its deep cycle lithium batteries against defects due to faulty manufacturing during the specified warranty period. The benefits under this warranty are in addition to other legal rights and remedies you may have in relation to Revolution Power Australia Batteries in Australia and New Zealand. In Australia, our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

WARRANTY COVERAGE

For models RPL12-60SLIM; RPL12-100LD; RPL12-100LDSLIM; RPL12-100SLIM; RPL12-100; RPL12-200; RPL24-200LD; RPL48-100; RPL12-100TJM; RPL12-100TJMSLIM, 60 Months from date of purchase;

This warranty covers:

- And is limited to the repair or replacement of the battery only and does not cover the cost of transport of battery, labour for removal and replacement of the battery or any other consequential damages and costs incurred.
- Batteries that become unusable or unserviceable due to manufacturing defects during the model's warranty period, commencing from the date of purchase.
- Batteries that are sized correctly, used in the application for which it was intended, and properly charged with an approved charging profile.

WARRANTY CONDITIONS

- Without exemptions, proof of purchase is required to claim under this warranty.
- This warranty is not transferable and is only offered to the original end-user of the Revolution Power Australia battery.
- The warranty period is not renewed or extended as a result of a warranty repair or replacement subject to your rights under the Australia and New Zealand consumer laws.

WARRANTY EXCLUSIONS

The warranty will be voided and not be honoured if the battery:

- Defects are as a result of normal wear and tear.
- Exposure to weather conditions over time.
- Has been subjected to overcharging, undercharging, freezing, fire, and explosion.
- Has been discharged resulting to failure due to excessive load.
- Shows evidence of after-sale physical damage, abuse, and neglect.
- Has been used in the wrong application (e.g., used in starting applications) or under-specified against the vehicle's requirement.
- Failure to use approved lithium profiled charger.
- If the integral state of the battery has been compromised.
- Installation, repairs or maintenance of the product by, or under the supervision of, a person who is not a qualified auto electrician or technician, or if non-genuine or non-approved parts have been fitted.
- Has been used with a faulty charging system or faulty terminal connection (corroded, loose, flayed, or reversed);
- Has been stored or installed for an extended period without maintenance or recharging.
- Is damaged due to improper mounting or installation.
- Has been repaired or modified by a third party, without Revolution Power Australia's consent.

WARRANTY CLAIM PROCEDURE

- The battery, together with the sales invoice or receipt as proof of purchase, must be endorsed, for warranty evaluation and validation, to any nearest Revolution Power Australia authorised reseller, or state or territory office in person or freight pre-paid by you.
- If Revolution Power Australia (by itself or through an authorised reseller) finds on examination that the battery is defective due to faulty manufacturing and is within the specified warranty period, then the battery will be replaced with an equivalent battery free of charge. This warranty is given by Revolution Power Australia located at AU: 1B/1 Waterway Drive, COOMERA QLD 4209; Revolution Power Australia can be contacted through email info@revolutionpower.com.au or phone AU: 1300 303 498.

NOTES: