



TRANSPARENT TECHNOLOGY

SAFIERY LITHIUM



Experience from over 3,000 installed Lithium batteries in RV's and boats since 2011 drove this development for the safest, easiest to operate Lithium battery

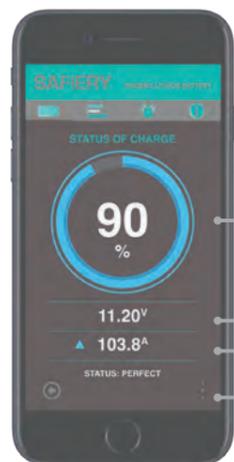


Battery Name

Tip:
To avoid confusion, please rename your battery before installation.

Battery Signal

Tip:
The bigger "db" value shows stronger signal, which means the battery is closer.



State of Charge

- Discharging & Power >20%
- Charging & Power >20%
- Power <=20%

Input/Output Voltage

- Input Current Flow
- Output Current Flow

Rename Battery*

*Please ask custom service for Password



Voltage

Current

Temperature

Cycles



Notification

Alarm

Normal

Battery Health



| | |
|--------------------------------|---------------|
| Guide to operation | 125Ahr |
| Nominal voltage | 12.8V |
| Max charge voltage | 14.5 to 14.6V |
| Float charge voltage | 13.8V |
| Max charge current | 80A |
| Max constant discharge current | 100A |
| Peak discharge current | 350A for 3s |
| Recommended cutoff voltage | 11.8v |
| Battery safety cut off | 10V |
| Battery storage | 50% SOC. |

- Battery needs to be charged every 6 months.
- Parallel application is allowed, however please use a large interconnecting bus.



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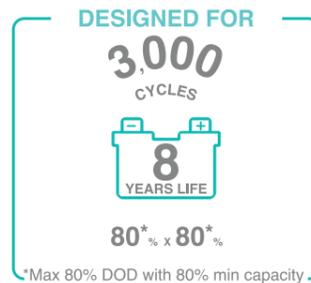


WEIGHT SAVINGS

- **SAFIERY LITHIUM** batteries have a cycle life of 3,000 cycles or about 8 calendar years with 80% DOD (Depth of Discharge).**
- **SAFIERY LITHIUM** batteries are designed to be grouped in parallel for additional capacity. 125Ahrs; 250Ahrs; 375 Ahrs; 500Ahrs; 625Ahr; 750Ahrs.
- **SAFIERY LITHIUM** batteries have 99.9% charging efficiency.
- **SAFIERY LITHIUM** batteries can be charged with most existing automatic battery chargers, DC to DC converters and solar chargers that have an AGM setting and do not have an automatic "desulfate" mode.
- **SAFIERY LITHIUM** battery can be charged safely by vehicles without a DC to DC booster providing they have at least 13.8V.*
- **SAFIERY LITHIUM** batteries have in built bluetooth diagnostic alerts that you can read on your smartphone.

* Vehicle alternator output at 13.8 volts will charge the battery to 80% capacity or less but will not damage the battery.

** Usable capacity decreases with time with all lithium batteries.



Q&A

- **Can I use my existing AGM battery or solar charger?**

AGM battery or solar chargers that typically have a bulk charging mode of 14.4V and a float mode of 13.7 or 13.8V can be used charging Safiery Lithium Batteries.

The result is the battery will get to about 95~97% of charge quite quickly however the remaining 3-5% will take longer to fully charge compared to a dedicated Lithium Charger. There is no negative impact on the battery nor does it shorten it's life using this type of charger. It is important though that the charger is locked into AGM mode and does not have an automatic de-sulphate program.

- **What is best charge level to store the batteries when not in use?**

Lithium batteries are best stored at 40-60% charge. There is a noticeable shelf life discrepancy if you store them fully charged. When returning from a trip, turn off the battery charger and let the State of Charge % drop down to this range, then isolate the batteries at 60%. It is best to use State of Charge on the Bluetooth app and NOT voltage as it is very difficult to determine battery status level from voltage with Lithium Batteries.

LITHIUM BATTERIES IN PARALLEL

SAFIERY LITHIUM Batteries have an additional Battery Management Unit for parallel connection. Benefits of parallel connections are:

- Provide power to larger inverter because the power output is double when two batteries are in parallel and triple when three.

| Requirement | Nespresso Mini Espresso | Microwave | Induction Cooktop | Aircon from Battery |
|--|-------------------------|-----------|-------------------|--|
| Rating in KW | 1240W | 1600W | 2000W | Startup 4.3kw Operating current with Truma rooftop unit is 70A DC after startup |
| 2 x 125 Ahr Safiery Batteries Current Output | 200A Continuous | | | 200A Continuous 700A burst for 3 secs |

- 2 x 125 Ahr has a lower depth of discharge compared to a single 200Ahr Battery, contributing to a longer cycle life of the batteries.
- 2 x 125 Ahr can be installed anyway except inverted.

| Unit: (mm) | Placed on top of each other lengthwise terminals facing forward | Placed side by side, terminals facing in up position | Placed side by side with small face down, terminals facing forward |
|--|---|--|--|
| Combined Dimensions of 2 x 125 ahr Safiery lithium | 318 L 430 H 165 D | 318 L 215 H 330 D | 330 L 318 H 215 D |

Q&A

- **What if I have a deep discharge and let the battery go flat?**

Everyone experiences a flat battery on their travels with something being left accidentally on. With Safiery Lithium, provided you act quickly in a day or so, there will be no noticeable impact. The number of cycles may be reduced but lets put that in perspective: If you travel and camp 150 nights a year, then in 10 years your battery should have done 1,500 cycles. The design life is 3,000 cycles and after a deep discharge, this may shorten to 2,000 cycles. However the Lithium chemistry reduces capacity at around 2.5% per annum. So in 10 years, you would have 75% capacity remaining. This is more important than the number of cycles. Read how to extend shelf life...

- **What is the impact of high temperatures?**

Surprisingly, Lithium Batteries produce a higher capacity is slightly elevated temperatures. At 60 °C battery temperature, these batteries will produce 103% of the nominal capacity. At 0 °C battery temperature, they will produce 85% of nominal capacity. At 30-40 °C they produce 100%: perfect for Australian conditions.

SIZING LITHIUM BATTERIES

1. SIZE YOUR SOLAR REQUIREMENTS FIRST

- You should have Solar in place to replenish the energy you use first:
- Even on a poor solar day, a good solar system will produce 20-30% energy.
- Purchase a portable system that can be directed to the sun as a backup. This adds energy when parked in the shade or on a poor solar day.

2. ASSESS HOW MUCH ENERGY YOU CONSUME PER DAY

- Frugal couples use 60 Ahrs/day with a compressor fridge
- Moderate users consume 80-100Ahrs/day with compressor fridge
- Bold users consume 120Ahrs/day with compressor fridge and laptop charging

3. SIZING FOR LITHIUM:

- In a typical camping period, you should get solar for part of the period. So don't assume you need Lithium battery capacity for the whole period. We recommend 2 full days capacity as a minimum.
- Take your daily usage and multiply by 2 for 2 days requirement with zero solar;
- For Lithium, multiple this by 1.2) to allow for 80% depth of discharge);

Examples

- Frugal user: 60 Ahrs/Day; x 2 days = 120Ahrs; x 1.2 =144 Ahrs
- Moderate user: 90 Ahrs/Day; x 2 days = 180Ahrs; x 1.2 =216 Ahrs
- Bold user: 120 Ahrs/Day; x 2 days = 240Ahrs; x 1.2 =268 Ahrs

4. REMEMBER

- Round the sizing. The 268 Ahrs above could be matched with 250Ahrs.
- Portable Solar will add significantly to the 2 days when available;
- Long drives should top your battery right up;
- Lithium absorbs the most solar energy because of high charging efficiency;
- If you want to stay for a week or more "off-grid", then if the solar replenishment matches your daily usage, this sizing will give you a good overnight buffer.

Q&A

- **What is the impact of installing these batteries in parallel?**

These batteries have a new form of battery management system that, in addition to the individual battery cell management, allows up to 6 batteries to operate in parallel. They do this with data communication through the 12V interconnecting cables. The batteries have to be installed in parallel in a short distance to each other.

- **What is the warranty on these batteries?**

These batteries have a 2 year warranty. However, it is important to note that Lithium chemistry degrades at a nominal 2.5% per annum so after 2 years the battery capacity will be 95%. The capacity may also be affected by deep discharges that are left uncorrected. If the battery is not recovered within days after a deep discharge, the capacity of the battery can't be warranted. Deep discharge history is retained in the battery memory and accessible from the Bluetooth app.