



ROAMER **USER MANUAL**

Roamer SMART3
LiFePO4 Leisure Battery

www.roamer.com



Roamer Batteries

Since founding Roamer in 2020, we have strived to create and deliver exceptional products and service that give you the confidence to venture further. The company has grown exponentially in the last three years but our values and quality-first approach are still as strong as they were on day one.

We're committed to supporting off-grid lifestyles through the quality manufacturing of superior LiFePO4 batteries, customer care and expert support. We are confident that you'll be delighted with the quality and performance of your new Roamer battery but if you have any concerns or questions, please get in touch straight away.

Our commitment is not only to our customers, but also the Vanlife, Liveaboard and DIY solar communities as a whole. We've had campervans for 12 years, we live and breathe this lifestyle and we love hearing about your adventures after installing a Roamer battery.

Please don't forget to tag @roamervans in your Facebook, Instagram, Threads and TikTok posts so we can follow along with your journey.

We look forward to seeing you on the road someday soon...

Steve, Kate and the Roamer team

Roamer Batteries
Powering your Off Grid Adventures

www.roamer.com

Safety

Roamer have taken every precaution to ensure that our batteries are as safe as possible and give you complete peace of mind while using our products. No battery is 100% safe however, and caution should always be taken when handling or operating equipment containing, or connected to, high-capacity energy storage devices.

LiFePO₄ batteries should only be installed and operated by a competent person. Please read this manual carefully and pay particular attention to the recommended charge, discharge and temperature limits as these may be different to the Battery Management System (BMS) maximum limits.

Please read the separate Safety User Guide carefully. This will be inside the box with your battery. This contains essential safety information and best practice on how to use your battery. If you have not received this guide, or if you have any concerns about safety, please do not hesitate to contact Roamer at support@roamer.com

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Quick start guide

We've put together a summary of the installation process to help you get started straight away

Installation

Your battery should be installed in a location where it cannot be exposed to extreme temperatures, moisture or vibration. If possible, install your battery, inverter and chargers in the same area to keep cable lengths to a minimum. If installed in a vehicle, fix the battery securely using brackets or ratchet straps bolted to the chassis.

Connecting cables

Our batteries are supplied with female M8 terminals and corresponding bolts. Cables should be finished with copper tube M8 ring terminals, we do not recommend using battery post adapters as these are not suitable for the sort of sustained high currents possible with a Roamer battery.

You should also avoid connecting more than two cables to each battery terminal, if you need multiple cables at the same voltage then you should install busbars and connect one cable to each stud. Make sure all connections are tight and unable to shake loose, we recommend using a torque setting of 10Nm.

Install the Roamer BMS app

Our SMART batteries can be monitored in real time using the free Roamer BMS app for iOS or Android. During installation, make sure that you allow Bluetooth and GPS connections when prompted or you will not be able to connect (don't worry we do not collect your data). You can use the app to check the state of charge, individual cell voltages, current draw, and any fault codes.

Please note that the state of charge reading may be inaccurate until the battery has completed 1-2 cycles, including a full discharge to 0% (10.8V for a 12V battery or 21.6V for a 24V battery). This does not affect the operation of the battery and you can continue to charge the battery when the state of charge suggests it is full, as long as the battery voltage does not exceed 14.2V.

Charging

For safety reasons your battery will be shipped at a low state of charge so you should charge your battery on arrival. Battery chargers should be configured with a LiFePO4 profile. Boost/absorption time should be 1 hour, and equalisation mode and temperature compensation should be disabled. Do not leave the battery unattended while charging and do not allow battery voltage to exceed 14.2V. Please read the charging section of the user manual carefully.

Recommended Charging Voltages for 12V and [24V] LiFePO4 Batteries

Absorption/Boost – 14.2V [28.4V]

Float – 13.5V [27.0V]

Storage – 13.2V [26.4V]

Long term storage

If you are not ready to install your battery yet or you will not be using it for a while, we recommend charging the battery to between 13.0V and 13.25V (40% and 80%) and then isolating it completely from all external loads and chargers. If you really need to keep the battery turned on when not in use and your charger has a storage mode, you should set this to 13.2V. It is not necessary to trickle or float charge as Roamer Batteries have an extremely low self-discharge rate of just 3% per month.

You should also monitor your battery voltage occasionally and ensure it does not drop below 12.8V, if voltage drops below this then you will need to top up the charge. You should fully cycle your battery every 6 months if storing for an extended period.

What else is in the box?

- 2x M8x10mm stainless steel terminal bolts with captive washers
- Battery factory test report
- User manual
- Safety Instructions
- Warranty terms and conditions

Please retain all documentation for future reference, but if you misplace them or decide to recycle them then digital versions are also available on our website.

If any of these parts are missing, please contact us at support@roamer.com or call our technical support team on **(+44) 113 8878335** to arrange a replacement.

What's inside a Roamer battery?

Roamer only use the highest quality components including factory original grade A cells purchased directly from top tier manufacturers. We also provide cell serial numbers for complete transparency and traceability. These are logged by Roamer before shipping and are printed on the factory test sheet and via the QR code on the battery case. This can be scanned to view the serial numbers.

Our custom high-power BMS and Roamer app give you complete protection and visibility of what is going on inside your battery, and our premium active balancer helps keep all cells perfectly in line for a long and healthy life.

Your battery is professionally constructed using precision engineered brackets, CNC-cut epoxy insulation board and high-capacity flexible copper busbars. We take immense pride in the quality and reliability of our batteries, but we also make them fully serviceable in case of problems or if an upgrade becomes available. While the case can be opened for repairs and upgrades, please do not try to do this yourself without speaking to Roamer Technical Support as you will invalidate your warranty.



32053
12V 5000mAh

ROAMER

AXXX

CE RoHS UHF01.3

PER GRIP
ROAMER
CE RoHS UHF01.3

ROAMER

POWERED BY
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Installation

Your battery can be installed in any orientation, including on its side. If installing in a vehicle, then it is crucial that the battery is securely fixed down so it cannot slide while the vehicle is moving. It must also be accessible so it can be removed or disconnected in an emergency. We recommend having tools readily available including cable cutters and a socket wrench of the correct size.

You should install the battery in a way that avoids exposing it to extreme hot or cold temperatures and facilitates an even temperature distribution across the whole battery pack. If installing the battery on the floor of a vehicle, you should fit insulation and/or an air gap between it and the floor's surface as this will prevent cold bridging from the metal sub-floor.

Your battery comes supplied with M8 bolts, flat washers, and spring washers. You should therefore terminate your battery cables with copper tube ring terminals with an 8mm hole. The cable terminal should be placed flat, directly onto the battery terminal. Next place the flat washer, then the spring washer, then feed the bolt through this stack. The bolts should be tightened to a torque setting of 10Nm. Loose connections can introduce contact resistance which will cause the termination to heat up during high current flow. This is a serious fire risk and must be done correctly. If you are upgrading from a lead acid battery with clamp posts, we recommend re-terminating your cables as described above, instead of fitting screw-in battery posts. These are not appropriate for the high current flow possible with your Roamer battery.

You should only have a maximum of two cables connected to each battery terminal bolt. If you have multiple chargers and other components to connect, then you should use busbars or a distribution system. Too many cable connections on one bolt adds excessive resistance, which under high current flow can become extremely hot. You should ensure that this risk is minimised by only installing one ring terminal on a single stud or terminal. Shifting any complex connection points away from the battery reduce the risk of starting a battery fire.

Be very careful not to short-circuit the positive and negative terminals. The resulting current surge could cause damage to the battery and any external components it flows through. Double check the polarity of the battery and any equipment before connecting them. Connecting a battery the wrong way around can cause irreparable damage to the battery and any components connected to it.

BT 2551

230SB3

12.8V 230AH 250A

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UK
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Parallel and series connection

Multiple batteries can be wired together in parallel or series to create higher capacity or voltage battery banks.

Parallel configuration is achieved by connecting the positive terminals of multiple batteries together to create one common positive node and connecting the negative terminals together to create one common negative node. The capacities and maximum current outputs are added together but the voltages are not. For example, two 230SMART3 batteries in parallel will have a total capacity of 460Ah, a peak delivery current of 500A, and a nominal system voltage of 12.8V.

Series configuration is achieved by connecting the positive terminal of one battery to the negative terminal of another. The negative terminal of the first battery is used as the system negative node, while the positive terminal of the second battery is used as the system positive node. The voltages are added together but the capacities and maximum current outputs are not. Two 230SMART3 batteries in series will have a total capacity of 230Ah, a peak delivery current of 250A, and a nominal system voltage of 25.6V.

- We do not recommend connecting more than 4 batteries in parallel. Where possible, a single higher capacity battery is usually safer and easier.
- We do not recommend connecting more than 2 batteries in series. Roamer also sell 24V and 48V batteries if required.
- All batteries must be fully charged and allowed to settle to within 0.05V of each other before connecting in series.
- Batteries in parallel series must be the same brand, voltage, capacity and age.
- If connecting two batteries in parallel, you should take the positive cable to loads/chargers from battery A and the negative cable from loads/chargers to battery B. This helps to evenly distribute loads across both batteries.
- If connecting more than two batteries in parallel, you should connect each battery to a busbar rather than connecting together directly. If you use this method then it is vital you use connecting cables that are exactly the same length.

Discharging

Your Roamer battery can deliver extremely high continuous discharge currents and allows the operation of high-power appliances either directly at DC 12V or 24V, or at mains AC voltages (230V in the UK and mainland Europe) via an inverter. You should ensure that connecting cables and the main battery cables are sized appropriately for the loads, and the correct size and type of protective fuse is used. Please refer to the inverter manual for guidance. Recommended maximum inverter sizes for each Roamer battery model are given in the table below.

	100SMART	160SMART	230SMART	230SEATBASE	320SMART	460SMART	24-230SMART
Max BMS discharge current [A]	200	200	250	250	250	250	250
Recommend max discharge current [A]	100	160	230	230	250	250	250
Recommended max inverter power [VA]	1200	2000	3000	3000	3000	3000	5000

Pre-charging your Inverter

Inverters contain large internal capacitors which, when connected to a LiFePO₄ battery for the first time can draw a very high inrush current of up to 4000A. This surge current can damage a LiFePO₄ battery BMS and other connected equipment and is also potentially dangerous. The solution is to pre-charge the capacitors in the inverter. We recommend that any inverter larger than 1500VA should be pre-charged on first connection. This also applies if the battery has been isolated from the inverter for prolonged periods of time.

Pre-charging involves slowing down the inrush current, thereby filling the capacitors with charge in a steady and controlled way. There are a few ways to do this: the traditional method is to hold a high-power resistor between the battery and the inverter for 30 seconds, you can then remove the resistor and connect the cable normally. We recommend a 8Ω 50W resistor for 12V inverters and 16Ω 100W resistor for 24V inverters. The other method is to isolate the battery and use a fixed current power supply (or charger) to energise the DC system. For example, you could use a DCDC charger powered by an engine alternator.

Please note that your Roamer battery BMS includes a surge current protection feature, if you attempt to connect the inverter without pre-charging then your battery may enter full protection mode with an error code of ASCD. See the troubleshooting guide at the end of this manual for tips on how to reset your battery if this happens.

Charging

You can charge your Roamer battery in a number of different ways:

- Using mains or a generator via a multi-stage AC-DC charger or an inverter-charger
- Using solar panels or a wind turbine via a MPPT charge controller
- Using a vehicle alternator via a DC-DC charger

Whichever method you choose, it is important to choose a charger model with appropriate LiFePO₄ charge profile. The Roamer BMS will automatically prevent you from overcharging the battery by disabling charging when the high voltage threshold is reached. This is an emergency protection however and should not be relied upon as a substitute for an appropriate LiFePO₄ charger.

The ideal charge profile for your battery involves bulk charging at a constant current up to a target voltage of 14.2V and then stopping. The active balancer in your Roamer battery means an absorption or float stage is not required although we recommend a short absorption period (up to 1 hour) to ensure battery is charged to its absolute maximum capacity.

Most multistage chargers have bulk, absorption and float stages that can be configured via a Bluetooth app or selector switch. Some brands use different terminology, but the functions are the same. You should choose the profile that most closely matches the parameters given below, with ideal and acceptable charge voltages also shown:

- Bulk/Absorption/Boost/Target Voltage: 14.2V (13.9V to 14.4V is ok)
- Float/Storage Voltage: 13.5V or off (13.2V to 13.6V is ok)
- Absorption Time: 1 hour (0 to 2 hours is ok)
- Equalisation: Off (or set equal to boost voltage with equalisation time 0)
- Temperature Compensation: Off

You should have at least one charger in your system that is able to 'wake up' a lithium battery in low voltage protection mode. If you run down your battery to the low voltage cutoff point, then the BMS will enter protection mode to prevent any further, damaging, discharge and will show 1-3V across the terminals. Many lead acid (and even some lithium-ion) chargers cannot detect the battery in this instance and will not send a charge. Therefore, a charger (or a power supply) that works in this situation will be required or you could end up without power or a way to recharge the battery.

Note that almost all Victron branded chargers have a preset charge profile called ‘Smart Lithium LiFePO4’ with a charge profile that matches the ideal voltages shown. They will also wake up a lithium battery in low voltage protection mode. This is why we recommend Victron chargers but there are lots of other great brands out there that work well too.

Low temperature charging

Standard LiFePO4 batteries should not be charged at temperatures below 0°C as it can permanently damage the cells. Roamer batteries therefore include a low temperature charge protection function in the BMS which will prevent you charging once the internal battery temperature reaches this point. This protection will remain in place until the temperature rises back above 5°C. Due to the size and bulk of the battery cells, it can take several hours for the internal temperature to match the ambient temperature, and for all cell temperatures to equalise.

We do not recommend applying an external source of direct heat to either the cells or the battery casing. If you need to warm the battery then gently heat the air around the battery, not the battery itself. This is another reason leaving an air gap underneath the battery is a good idea. If you require a battery that can be regularly charged at sub-zero temperatures, then have a look at the Roamer XTREME range which can be fast charged at very low temperatures without using a heater.

To maintain a long and healthy life for your battery and to minimise safety risks, you should also reduce charge currents according to the battery temperature. Please pay attention to the recommended charge currents are given below, failure to adhere to this advice could lead to premature battery failure and will increase the risk of a battery fire.

	100SMART	160SMART	230SMART	230SEATBASE	320SMART	460SMART	24-230SMART
BMS charge current limit [A]	200	200	250	250	250	250	250
Recommended max charge current at 25°C [A]	50	80	115	115	160	230	115
Recommended max charge current at 10°C [A]	20	32	46	46	64	92	46
Recommended max charge current at 5°C [A]	10	16	23	23	32	46	23

Roamer BMS app

The Roamer BMS app allows you to monitor your battery in real time, showing state of charge, current, voltages and protection warnings

Getting started

The Roamer BMS App is available to download for both iOS and Android on the AppStore and Play Store. It can be installed in iOS 10.0 or above and Android 4.3 or above. Bluetooth version 5.0 or above with BLE is required. When installing the app, you **MUST** accept all security permissions, this includes GPS on Android phones. We do not collect any customer data.

The Roamer BMS can only connect to one device at a time, if you install the app on multiple devices then you must force close and disconnect the app on the first device before attempting to connect on the second device. If you do not do this, then the battery will not show up in the available devices list.

After opening the app, find your Roamer battery from the list (it will have the same name as your serial number shown on the original box and the case label). It can take up to 10 seconds for your battery to appear, and the same again after clicking to connect.

BMS tips

If your battery is in protection mode and shows any of the error codes above, you should stop using and isolate the battery immediately. Investigate what has caused the issue, then rectify the situation before reconnecting the battery.

If your battery has discharged below its safe voltage, the Bluetooth module may not function correctly. If you cannot detect the battery over Bluetooth, immediately disconnect the battery from any load and refer to our troubleshooting guide.

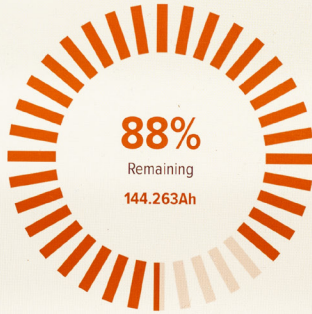
If you are unsure, please see the troubleshooting guide at the end of this manual, or email support@roamer.com with screenshots of each page of the Roamer BMS App and we will help you resolve it.

15:29

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ROAMER BMS



Charging on



Discharging on



13.49
Voltage



Cal

47.29
Current



22°C
Temperature



0
Cycle time

BMS dashboard

The dashboard gives you the main overview of your battery. The top 'clock' display shows you the estimated state of charge and amp-hours remaining. Please note that this state of charge reading is just an estimate, if it has not been calibrated recently then this could be incorrect. See Troubleshooting for more tips on calibration.

Underneath this is the charging and discharging panel. This shows whether charging and discharging are enabled or disabled. If there is an issue and BMS is in protection mode, then one or both will be greyed out. It is also possible to manually turn off charging and discharging but we do not recommend doing this during normal use.

The bottom panel shows:

Battery Voltage

This displays the total battery pack voltage as measured across the cell pack.

Battery Current

This displays the sum of any current flowing in and out of your battery.

Cell Temperature

This displays the average internal temperature of the battery, measured from multiple points within the cell pack.

Cycle Count

This shows the estimated number of cycles (full discharge and full charge) that the battery has completed.

BMS details page

The detailed information page provides further data about your battery. The cell voltage section shows the voltage of each cell in your battery. Under normal operation the cells voltages should be similar (within 0.1V). The only exception is when the battery is at 100% state of charge. If you notice that there is a significant difference between cells at any other time, please contact Roamer as this may indicate a problem with your battery.

Clicking the Protect State button in the top right-hand corner of the details page takes you to the Protect State page. If your battery is in protection mode for any reason, this is where you will find the error code. Under normal operation, no protection states should be highlighted.

The following list provides details of the protection state codes:

Charging Status and Alarms Discharging Status and Alarms

SOCC = Over Current Charge (charging current is too high)

SOCD = Over Current Discharge (discharging current is too high)

OTC = Over Temperature Charge (cells are too hot to charge safely)

OTD = Over Temperature Discharge (cells are too hot to discharge safely)

UTC = Under Temperature Charge (cells are too cold to charge safely)

UTD = Under Temperature Discharge (cells are too cold to discharge safely)

COV = Cell Overvoltage (one or more cell voltages are too high)

CUV = Cell Undervoltage (one or more cell voltages are too low)

FC = Fully Charged (total cell pack voltage is too high)

FD = Fully Discharged (total cell pack voltage is too low)

ASCD = Automatic Short Circuit Detection (a surge current has been detected)

CHG = Charging Allowed (this is on by default when everything is OK)

DSG = Discharging Allowed (this is on by default when everything is OK)

Troubleshooting

Q) I cannot connect to my battery via Bluetooth.

A) Check that your phone is within range of the battery (approximately 5m). If in doubt, place the phone on the lid of the battery for maximum signal strength. Check that your phone/tablet's Bluetooth is enabled, and you have allowed all permissions requested by the Roamer BMS App. On Android phones this includes GPS. Click "scan" at least twice and if that still does not work, force close the app on your phone and reopen it. Check that another phone/tablet is not connected to the battery as this blocks any new connections. Place your battery on charge, a completely flat battery may not be able to connect correctly.

Q) My battery will not charge/discharge.

A) There are a few reasons this could be, the first step is to determine if this is an internal battery issue or an external cabling/equipment issue. You can verify this on the Roamer BMS app home page, look to see if either charging or discharging button is turned off (button will be greyed out if off – this means it is in protection mode). If it is in protection mode, then check the protect state page for the corresponding error code. If all is functioning normally, the only buttons to be highlighted orange would be CHG (charging allowed) and DSG (discharging allowed). Please see app section of the manual for error code descriptions.

Q) My App is reporting incorrect amp-hours (Ah) remaining or percentage (%).

A) The Roamer BMS App estimates the remaining percentage based on the current flowing in and out of your battery. On the first charge of the battery this Ah remaining value may be out of calibration and show a figure that is much higher than should be possible for the battery capacity. The battery will therefore require a full cycle including discharging down to the Pack Low Voltage threshold (10.8V for a 12V battery, 21.6V for a 24V battery), this will reset the app to 0% and 0.0Ah remaining and it should count accurately after this. Please note that the app reading for the battery state of charge has no effect on the operation of the battery, BMS protections for over charging and over-discharging are based on voltages only. Even if your app is out of calibration and incorrectly reporting the state of charge, the battery will still operate normally and all protections will remain in place.

Q) My battery is entering ASCD protection state when I connect my inverter.

A) Inverters have large capacitors to smooth the current flow in and out of the equipment, on first connection this can cause a surge current from the battery of up to 4000A. When this happens, the BMS will go into protection state with a protect code of ASCD (Automatic Short Circuit Detection) and both charge and discharge will be switched off. The solution is to isolate the battery using the main battery switch (or remove cables) and wait for protection state to reset. You can then pre-charge the inverter and reconnect the inverter. Please see 'discharging' section of the manual for tips on pre-charging.

Q) I can't access the parameters page.

A) The parameters page contains important settings that control your battery's operation. We do not allow access to this by default as it is possible to cause damage to your battery if parameters are set incorrectly. Accessing the parameters menu without Roamer's permission will invalidate your battery's warranty. The password will be provided through a support ticket if there is a need to change your parameters to resolve an issue.

Q) I cannot resolve my issue.

A) Please get in contact with the Roamer Support Team on support@roamer.com and we will be more than happy to assist. Please provide your battery model, serial number, and order number along with a detailed description of your system and the nature of the fault. Where possible, please also provide screenshots of the home page of your Roamer BMS App, full details page, and the protection state page.

Monitoring state of charge

The Roamer BMS app should keep a fairly accurate track of the state of charge of your battery but it is helpful to have a second point of reference for comparison and troubleshooting. You could install an external shunt based battery monitor and battery capacity can also be roughly estimated from the voltage.

There are subtle differences in the voltages of different batteries so the below parameters are for reference only. The table below shows approximate SoC at different voltages for a single cell, a 12V battery and a 24V battery. With the exception of the first line, all voltages are 'resting' voltages ie after the battery has been sat without charging or discharging for 30 minutes.

State of Charge at 25°C	Single Cell LiFePO4 [V]	12V LiFePO4 [V]	24V LiFePO4 [V]
100% (Charging)	3.55	14.20	28.40
100% (Resting)	3.40	13.60	27.20
99%	3.35	13.40	26.80
90%	3.33	13.32	26.64
80%	3.31	13.24	26.48
70%	3.29	13.16	26.32
60%	3.28	13.12	26.24
50%	3.26	13.04	26.08
40%	3.25	13.00	26.00
30%	3.24	12.96	25.92
20%	3.20	12.80	25.60
10%	3.03	12.12	24.24
0%	2.50	10.00	20.00

Note how the voltage at 99% is very different to 100% but there is hardly any difference in voltage between 20% and 80%. Voltage is therefore more useful as a guide when the battery is nearly full, or nearly empty. For example, you can consider any resting voltage of 13.4V or above as being full. You can also consider anything below 12.8V to be very low and if you see this as a resting voltage, you should aim to recharge as soon as possible.



Storing your battery

If you happen to need to store your battery for an extended period of time – for example through the winter months – we have a few recommended tips to prolong the life of your battery.

- Before putting into storage, you should discharge it to between 13.0V and 13.25V (equivalent to 40% to 80% state of charge) and fully isolate the battery from any chargers or loads.
- Never store your battery at 100% state of charge or continuously charge the battery via solar or a trickle charger. This is one of the worst things you can do to a lithium battery as it will degrade the LiFePO₄ cells and reduce the life of your battery. If you need to leave the battery connected and on charge then set the charger to a storage voltage of 13.2V.
- Keep it in a dry location with a stable temperature. While cold temperatures are generally ok for storage, you should avoid very warm temperatures (above 40 °C).
- Your battery will self-discharge by approximately 3% every month so it is normal to find it in a lower condition than you left it but do not let it drop too far.
- Cells will be damaged if you allow voltage to drop below 2.5V per cell. You should check the battery app regularly and top up the charge if needed.
- Note that the BMS app will not record any self discharge while in storage so you should use voltage as a guide, not the percentage shown on the app. The State of Charge calibration may also need to be reset when using the battery again after a long period of storage.

Disposing of your Battery

Although we hope your battery will keep you running off-grid for many years, it will eventually reach a point where it has to retire. Batteries and electrical components should be recycled responsibly and must not be disposed of in domestic waste. If in any doubt, please get in touch with us and we'll be more than happy to advise you on how best to go about this.

As a responsible manufacturer we conform with WEEE and WBA directives which means we can handle this process for you. Simply get in touch with us through the usual routes and we'd be more than happy to arrange disposal and recycling for you.



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12 BV 160AH 200A



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ROAMER
PART GUIDE

Tech specs

Each table contains detailed technical parameters for our batteries including charging information, operating conditions and more. Do not use the battery outside of the recommended ranges.

	100SMART3	160SMART3	230SMART3
Battery Specification			
Nominal Voltage [V]	12.8	12.8	12.8
Current Capacity [Ah]	105	160	230
Energy Capacity [Wh]	1344	2048	2944
Cell Chemistry	Lithium Iron Phosphate / LFP / LiFePO4 Prismatic Cells		
Physical Specification			
Length [mm]	338	338	502
Width [mm]	185	185	185
Depth [mm]	215	215	239
Weight [kg]	11	16	21
Electrical Specification			
Min/Max Safe Voltage [V]	10.0/14.6		
Recommended Absorption Voltage [V]	14.2 (13.9 to 14.4 is acceptable)		
Recommended Float Voltage [V]	13.5 or off (13.2 to 13.6 is acceptable)		
Max BMS Discharge Current [A]	200	200	250
Max Recommended Discharge Current [A]	100	160	230
Max Recommended Inverter Power [VA]	1600	2000	3000
Max BMS Charge Current [A]	200	200	250
Recommended Max Charge Current at 25°C [A]	50	80	115
Recommended Max Charge Current at 10°C [A]	20	32	46
Recommended Max Charge Current at 5°C [A]	10	16	23
Operating Specification			
Storage Temperature [°C]	-20 to 40 (recommended 10 to 35 at voltage between 13.0V and 13.2V)		
Charging Temperature [°C]	0 to 60		
Discharge Temperature [°C]	-20 to 60		
Average Cycle Life	6500 cycles @ 50% Depth of Discharge (25°C) 3500 cycles @ 80% Depth of Discharge (25°C) 2000 cycles @ 100% Depth of Discharge (25°C)		

Tech specs cont.

	230SEAT-BASE3	320SMART3	460SMART3	24-230SMART3
Battery Specification				
Nominal Voltage [V]	12.8	12.8	12.8	25.6
Current Capacity [Ah]	230	320	460	230
Energy Capacity [Wh]	2944	4096	5888	5888
Cell Chemistry	Lithium Iron Phosphate / LFP / LiFePO4 Prismatic Cells			
Physical Specification				
Length [mm]	330	521	521	521
Width [mm]	290	242	268	268
Depth [mm]	180	218	218	218
Weight [kg]	22	29	38	38
Electrical Specification				
Min/Max Safe Voltage [V]	10.0/14.6			20.0/29.2
Recommended Absorption Voltage [V]	14.2 (13.9 to 14.4 is acceptable)			28.4
Recommended Float Voltage [V]	13.5 or off (13.2 to 13.6 is acceptable)			27.0
Max BMS Discharge Current [A]	250	250	250	250
Max Recommended Discharge Current [A]	230	250	250	230
Max Recommended Inverter Power [VA]	3000	3000	3000	5000
Max BMS Charge Current [A]	250	250	250	250
Recommended Max Charge Current at 25°C [A]	115	160	230	115
Recommended Max Charge Current at 10°C [A]	46	64	92	46
Recommended Max Charge Current at 5°C [A]	23	32	46	23
Operating Specification				
Storage Temperature [°C]	-20 to 40 (recommended 10 to 35 at voltage between 13.0V and 13.2V)			
Charging Temperature [°C]	0 to 60			
Discharge Temperature [°C]	-20 to 60			
Average Cycle Life	6500 cycles @ 50% Depth of Discharge (25°C) 3500 cycles @ 80% Depth of Discharge (25°C) 2000 cycles @ 100% Depth of Discharge (25°C)			

Warranty

The period of warranty is TEN years from the date of shipment. Faults and manufacturing defects can occur with any electrical device, and we aim to make the process as simple and pain free as possible. Roamer guarantees to give a free repair or replacement in cases where cells or the BMS have defects proven to be due to manufacturing process (instead of misuse, accidental damage, or general wear & tear).

It is important that you contact us as soon as you notice a fault with your battery. We can talk you through a few simple tests that will help identify any issues or even resolve the problem remotely. If we cannot resolve the problem remotely then we will arrange to collect the battery from you and return it to our warehouse for testing. Any shipping fees incurred for approved warranty returns will be covered by Roamer. In the event of a repair that falls outside of the warranty, we will still be very happy to help but it will result in a charge to the customer agreed upon at the time based on the scope of the work required.

In the event of a proven manufacturing defect or battery failure that meets the warranty terms and conditions, we will either repair the battery (usually by replacing an internal component such as a cell or the BMS) or replace the entire battery with an equivalent (or better) product from our current range. If we are unable to repair or provide a suitable replacement, then we will refund the original purchase price. Please note that Bluetooth and Wi-Fi are not essential features for battery operation and any issues with Bluetooth or Wi-Fi (such as no signal or weak signal) are not covered under warranty.

If we cannot reproduce the problem or if the defect or failure is found to have been caused by customer abuse or misuse then we will return the battery to you, or if you prefer, we can recycle the battery. Depending on the state of the battery, we may be able to offer a credit towards an upgrade. Any shipping costs incurred because of a rejected warranty claim will be charged to you.

This Limited Warranty is to the original purchaser of the Product and is not transferable to any other person or entity. If you did not purchase from Roamer directly then please contact the place of purchase regarding any warranty claim. Warranty Service is only available for products residing within the UK or Europe. Any warranty claims made from without the stated regions will require the claimant to return the products at their own expense to a location convenient to Roamer within the UK or Europe. Return shipping is only offered to similar locations within the above stated regions.

For full Limited Warranty terms and conditions, refer to the included warranty slip delivered with your battery.

Returns & Refund policy

We hope you are happy with your purchase. However, if you are not completely satisfied with your purchase for any reason, you may return it to us for a full refund or an exchange.

Returns

- All return requests must be within 14 days of the purchase date. You have another 14 days to return the item after the initial request
- Batteries must be in new and unused condition (we will check the case for scratches and the BMS for usage history)
- If you have installed or cycled your battery then we may still be able to accept your return, however we may offer a reduced amount instead of the full refund

How to return

- Please email customer service support@roamer.com to obtain a Return Material Authorisation (RMA) number
- Place the item securely in its original packaging and return your battery to the address below. If you are using a courier then it is your responsibility to ensure that they are aware of the relevant Dangerous Goods transport restrictions
- Please note, you will be responsible for all return shipping charges. Alternatively we can arrange for collection via our Dangerous Goods shipping service (we will charge £50 shipping fees, per battery)

Refunds

- After receiving your return and inspecting the condition of your item, we will process your return or exchange
- Please allow up to 14 days from the receipt of your item to process your return or exchange
- We will notify you by email when your return has been processed



Contact Roamer

General Enquiries

(+44) 113 8878335

hello@roamer.com

Technical Support

(+44) 113 8878335

support@roamer.com

Roamer UK Office

Duke Studios

Sheaf Street

Leeds

LS10 1HD

Roamer EU Office

Rohrauerstraße 1081477

München

Germany

Roamer Batteries

Powering your Off Grid Adventures

www.roamer.com