

NORSK™

LITHIUM

PRODUCT MANUAL

Marine Lithium Batteries



Website: <https://www.norsklithium.com>

Email: support@norsklithium.com

Phone: 1-831-232-9063

THANK YOU FROM NORSK LITHIUM

Dear Customer,

We extend our deepest gratitude for choosing Norsk Lithium as your trusted battery provider. Your decision to embrace our products means the world to us. Our dedicated team is relentlessly committed to pioneering cutting-edge lithium battery solutions and ensuring unparalleled service for our valued customers. Your unwavering support and valuable feedback continually inspire us to push the boundaries of excellence. This enables us to offer innovative products, competitive pricing, and an unmatched user experience.

We sincerely appreciate the confidence you have placed in our products. We are genuinely excited about your opportunity to experiencing the advantages of our precision-engineered products. Should you have any questions or require assistance, please don't hesitate to contact us at your convenience.

Sincerely,



Website: <https://www.norsklithium.com>

Email: support@norsklithium.com

Phone: 1-831-232-9063

PRODUCT REGISTRATION (Warranty)

Norsk Lithium is committed to providing warranty coverage for all our batteries. To register your warranty, please register your product on our website at <https://www.norsklithium.com/product-registration>.

We highly recommend registering your product. Product registration provides multiple benefits. By registering your product, you gain access to important features such as warranty protection, recall notifications, and enhanced customer support services. This allows us to inform you of updates or safety concerns regarding your product, ensuring your continued satisfaction and peace of mind. Product registration is not required but is highly recommended. We believe in providing you with the flexibility to decide how you engage with our services, without imposing any unnecessary obligations. Thank you for considering product registration, and we look forward to serving you.

The Warranty section on Page 18 contains important information regarding your coverage. Additional warranty information can be found on our website by visiting: <https://norsklithium.com/warranty/>

TABLE OF CONTENTS

BATTERY SAFETY	6
Norsk Lithium Battery Safety Guarantee	6
Battery Management System	6
Battery Storage and Maintenance	6
Certifications.....	7
CUSTOMER SERVICE	8
Help Center	8
Contact Us	8
Live Chat	9
Phone and Email Support:.....	9
CONNECTING TO BATTERY TERMINALS	10
Required Materials	10
Identify the Terminals	10
Prepare the Battery	10
First, Connect the Positive Terminal	10
Next, Connect the Negative Terminal	10
Verify the Connection	10
Test the Connection	10
Final Checks	10
CHARGING YOUR BATTERY	11
Compatible Chargers	11
Initial Charging	11
Charging Process	11
Charging Temperature	11
Charging Safety.....	11
Storage and Maintenance	11
Disposal.....	11
WIRING YOUR BATTERIES	12
Wiring in Series	12
Charging in Series	13
Wiring in Parallel	13
Charging in Parallel	14
NORSK GUARDIAN APP / BLUETOOTH	15
Norsk Guardian App Features	15
Connecting Multiple Batteries Using the Norsk App	17

TROUBLESHOOTING18

 Battery Not Charging 18

 Battery Not Holding a Charge 18

 Charger Not Compatible 18

NORSK LITHIUM WARRANTY19

BATTERY SAFETY

WARNING

Prior to using or installing your Norsk Lithium battery, we strongly advise reviewing this manual thoroughly. Failure to follow these safety guidelines can result in property damage or personal injury. Norsk Lithium cannot be held liable for any injuries related to the use or installation of its batteries, nor from following the safety guidelines provided in this manual. Mishandling and/or misuse of our products will void the warranty.

If you are unsure about safely performing these tasks, it is recommended to seek assistance from a certified electrician. Here are some critical safety precautions to observe:

- Do **NOT** use if the battery, cables, connections, or charger are damaged
 - If damaged upon arrival, please contact support@norsklithium.com
- Do **NOT** place metal objects near battery terminals or connections
- Do **NOT** operate battery near explosive or flammable materials
- Do **NOT** attempt to disassemble or modify the battery
- Do **NOT** wear any metallic items such as watches, bracelets, etc.
- Do **NOT** overcharge or over-discharge the battery
- Do **NOT** heat over 140°F. (Doing so can cause damage to the case and internal wiring)
- Do **NOT** exceed the max discharge specifications of the battery
- Do **NOT** immerse batteries in water - keep the batteries in a dry environment
- Use compatible charges (see compatible charging list)
- Make sure that the wire gauge size is correct for the application and the length of the wire
- Make sure the terminal bolts are tight

Norsk Lithium Battery Safety Guarantee

Norsk Lithium LiFePO₄ batteries are known for their exceptional safety features, making them a trusted choice in various applications. Our safe products rely on the inherent stability of lithium iron phosphate (LiFePO₄) chemistry, which is less prone to thermal runaway and combustion compared to other lithium-ion chemistries. Additionally, Norsk Lithium employs strict quality control measures throughout the manufacturing process, ensuring consistent performance and reliability. These batteries are engineered with advanced safety mechanisms such as: built-in thermal management systems, short circuit protection, and overcharge/over-discharge safeguards. Norsk Lithium LiFePO₄ batteries undergo rigorous testing and certification to meet international safety standards, providing users with peace of mind regarding their operation in diverse environments. Norsk Lithium LiFePO₄ batteries prioritize safety without compromising performance or longevity.

Battery Management System

Our internal Advanced Battery Management System (BMS) provides protection against common issues such as overcharging, crossed terminals, cell balancing during discharge and charge cycles, low and high voltage cutoff, short circuit protection, and high-temperature protection. These features ensure that your battery is safe, reliable, and has a longer lifespan.

Battery Storage and Maintenance

To prolong the life of your Norsk LiFePO₄ Deep Cycle Battery, it is essential to store it properly. Always store your battery in a cool, dry place away from direct sunlight and heat sources. If you plan to store your battery

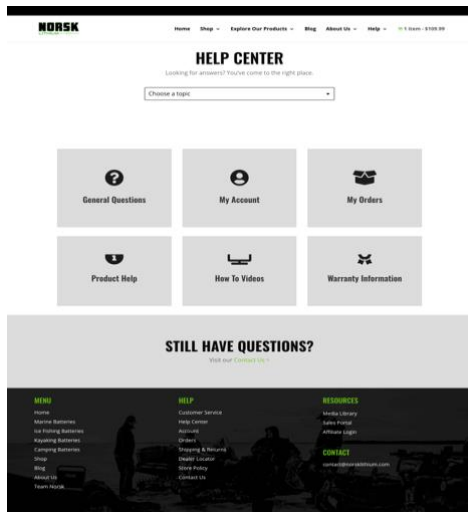
for an extended period, we recommend charging the battery to 100% capacity and disconnecting it from all devices to avoid a parasitic draw and recharge it every 6-12 months.

CUSTOMER SERVICE

We stand behind the quality of our batteries and are committed to providing you with excellent customer service. If you purchased any of our products from a retail location or Amazon, please **DO NOT** return it to the store. Instead, please contact us at support@norsklithium.com and we would be happy to help you resolve any issues you may be experiencing. Here are the following locations you can contact us:

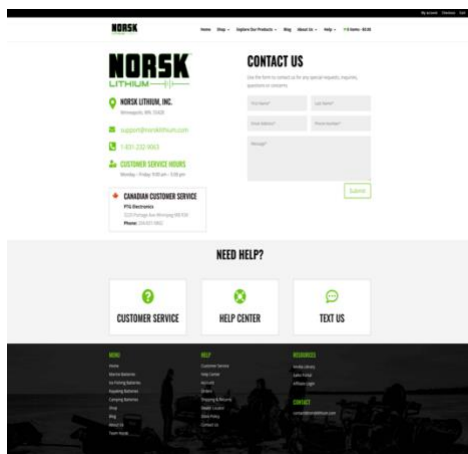
Help Center

If you have any questions or concerns about your Norsk Lithium LiFePO4 Battery, you can visit our Help Center. Here you will find FAQs, How-to-Videos, and more: www.norsklithium.com/help-center



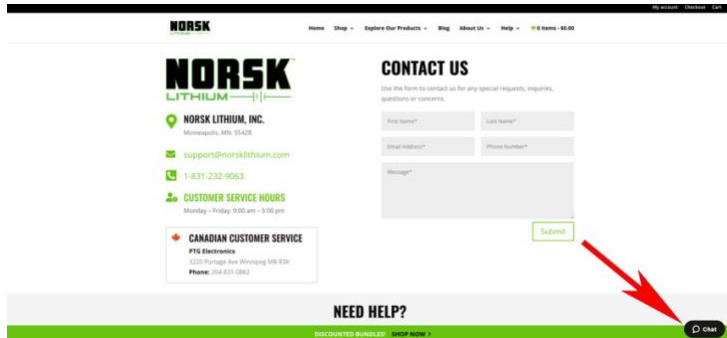
Contact Us

You can also contact our customer support via the contact us page on our website: Contact us: <https://norsklithium.com/contact-us/>



Live Chat

There are two options for Live chat. One is in the Norsk Lithium Guardian App>Settings>Live Chat. You can also access live chat on our website by navigating to the “contact us” page and clicking the help symbol at the bottom right corner of the page: <https://norsklithium.com/contact-us/>.



Phone and Email Support:

Email: support@norsklithium.com

Phone: 1-831-232-9063

CONNECTING TO BATTERY TERMINALS

WARNING

- Always wear appropriate safety gear, such as gloves and eye protection, when handling batteries.
- Ensure the battery is disconnected from any power source before attempting to connect the terminals. - Incorrectly connecting the terminals can result in damage to the battery and the connected equipment. This also increases risk of fire or explosion.

Required Materials

- Lithium battery
- Wrench or screwdriver (depending on terminal type)

Identify the Terminals

- The positive terminal will be marked with a plus sign (+) and is typically red
- The negative terminal is usually marked with a minus sign (-) and is typically black

Prepare the Battery

- Place the battery on a stable, flat surface
- Ensure the battery is in a well-ventilated area

First, Connect the Positive Terminal

- Insert the positive terminal connector onto the positive terminal of the battery
- Tighten the nut to secure the connector to the terminal. Ensure it is tight but do not over-tighten

Next, Connect the Negative Terminal

- Insert the negative terminal connector onto the negative terminal of the battery
- Tighten the nut to secure the connector to the terminal. Ensure it is tight but do not over-tighten

Verify the Connection

- Ensure that the terminal connectors are securely attached to the terminals
- Check for any signs of damage to the terminals or connectors

Test the Connection

- Once the terminals are connected, you can test the connection by gently tugging on the connectors to ensure they are secure
- Do not pull to hard, as this can damage the connectors or terminals

Final Checks

- Double-check that the terminals are connected correctly, with the positive terminal connected to the positive terminal of the battery, and the negative terminal connected to the negative terminal of the battery

CHARGING YOUR BATTERY

To ensure optimal performance, Norsk Lithium batteries require a higher charging voltage than lead-acid batteries, with the ideal range between 14.4 and 14.8 volts. It is recommended to use a lithium-specific battery charger for this purpose.

Lead-acid battery chargers can charge Norsk Lithium batteries, but they typically only reach 60-80% of the battery's full capacity. This limitation arises because a fully charged lead-acid battery operates at a voltage approximately one volt lower than a fully charged lithium battery. Consequently, lead-acid chargers may mistakenly indicate that a lithium battery is fully charged when it reaches the lower voltage associated with a fully charged lead-acid battery.

While lead-acid chargers do not damage Norsk Lithium batteries, they do prevent them from reaching their full capacity and performance potential. It is acceptable to use lithium-specific chargers for Norsk Lithium batteries. However, Norsk Lithium batteries can also be charged with AGM chargers. ***Note*** AGM chargers do not have a lithium wake function. This means that if the battery ever went into "sleep mode," the AGM charger would not be able to wake it up.

The following is a step-by-step guide on how to charge LiFePO₄ batteries from Norsk Lithium:

Compatible Chargers

- Use only chargers recommended by Norsk Lithium for your specific battery model
- Ensure the charger output voltage and current settings match the battery specifications

Initial Charging

- Before the first use, fully charge the battery
- Do not interrupt the charging process once it has begun

Charging Process

- Connect the charger to the battery following the steps listed in "Connecting to Battery Terminals"
- Monitor the charging process closely and disconnect the charger once the battery is fully charged
- Do not overcharge the battery - remove it from the charger promptly when charging is complete

Charging Temperature

- Charge the battery at temperatures between 32°F to 113°F (0°C to 45°C) for optimal performance
- Avoid charging the battery at temperatures below 32°F (0°C) or above 113°F (45°C)

Charging Safety

- Do not attempt to charge damaged or swollen batteries
- If the battery becomes hot during charging, disconnect the charger immediately and allow the battery to cool before resuming charging

Storage and Maintenance

- Store the battery in a cool, dry place when not in use
- Regularly inspect the battery and charger for any signs of damage or wear

Disposal

- Dispose of the battery in accordance with local regulations
- Do not incinerate or expose the battery to high temperatures

WIRING YOUR BATTERIES

WARNING

Incorrect configuration, installation, or usage can cause permanent damage to batteries, connected electrical systems. Please ensure batteries are installed correctly for your specific needs.

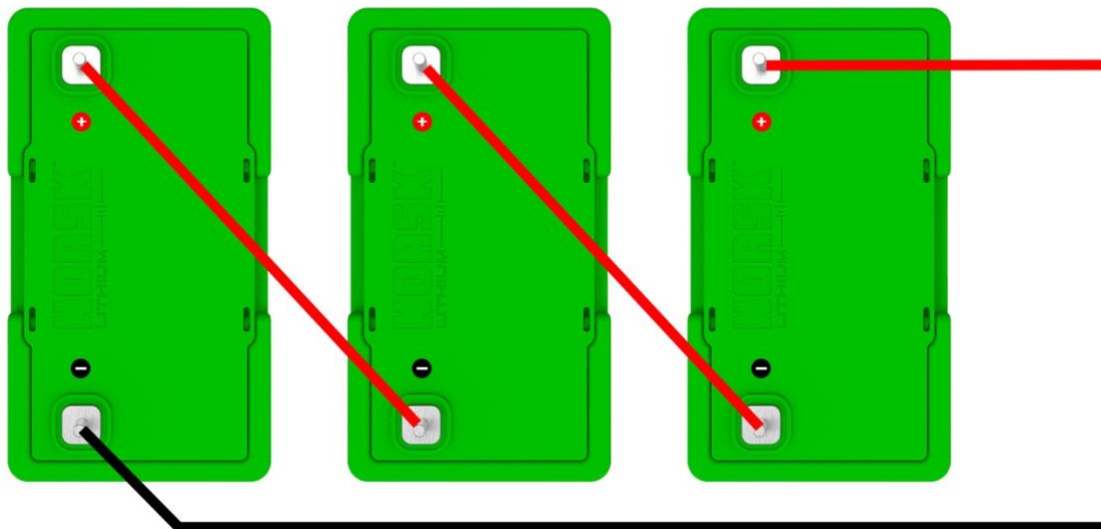
****NOTE**** Only wire matching batteries in series. Never wire batteries with a different voltage or amp hour rating in series. For example, do not wire a 24V 50Ah battery with a 12V 50Ah battery, do not wire a 12V 100Ah in series with a 12V 80Ah, etc.

Wiring in Series

Series configurations are utilized to increase the total system voltage. The figure below is an example of a 3-battery series configuration using three 12V 100Ah batteries to create a 36V 100Ah system. Your configuration may differ depending on additional accessories. This is a basic example for demonstration purposes only.

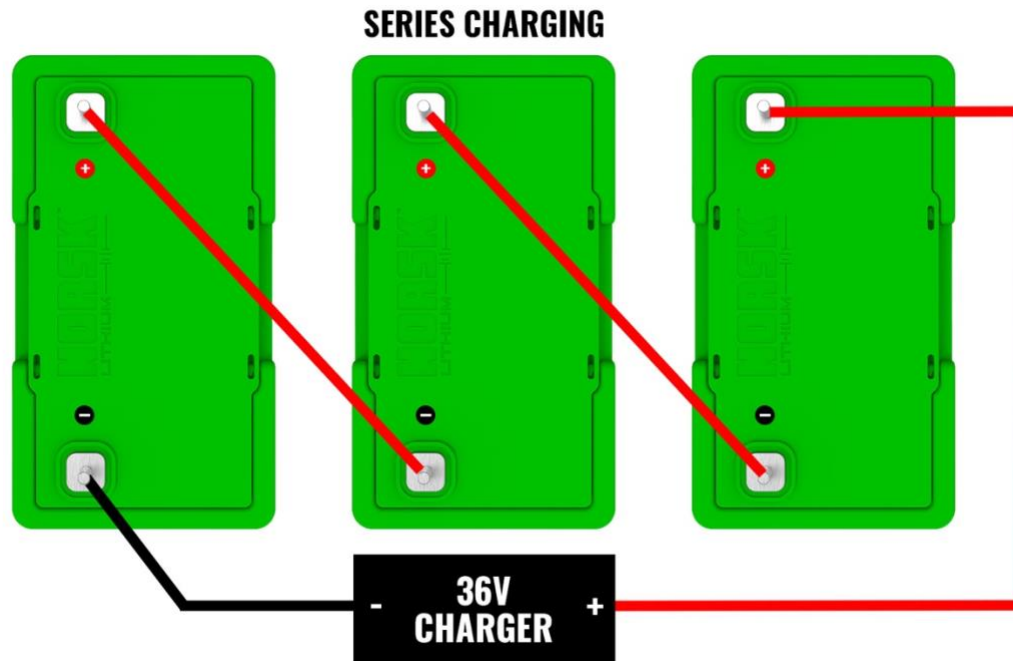
1. Mount the batteries in desired location
2. Connect the positive (+) terminal of your first battery to the negative (-) terminal of your second battery
3. Connect the positive (+) terminal of your second battery to the negative (-) terminal of your third battery
4. Connect the main positive (+) load cable to the positive (+) terminal of the third battery
5. Connect the main negative (-) load cable to the negative (-) terminal of the first battery

SERIES CONNECTION



Charging in Series

To charge in series, attach the positive lead of the charger to the first battery's positive terminal in the series, and connect the negative lead of the charger to the final battery's negative terminal in the series.

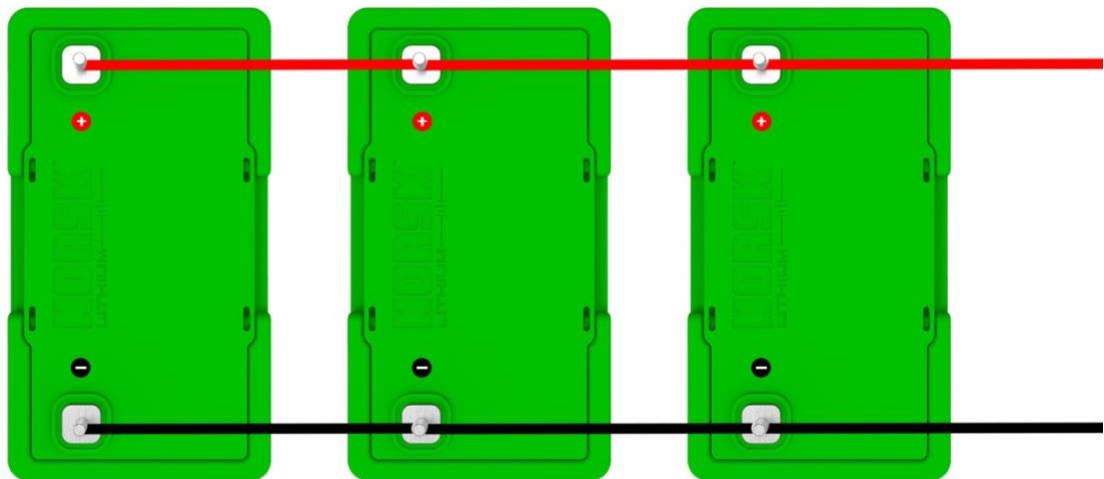


Wiring in Parallel

****NOTE**** Only wire matching batteries in parallel. Never wire batteries with a different voltage or amp hour rating in series. For example, do not wire a 24V 50Ah battery with a 12V 50Ah battery, do not wire a 12V 100Ah in parallel with a 12V 80Ah, etc.

Parallel configurations are used to achieve higher overall system capacity. In the example below, we will illustrate a 3-battery parallel configuration using three 12V 100Ah batteries to create a 12V 300Ah system. Your configuration may differ depending on additional accessories. This is a basic example for demonstration purposes only.

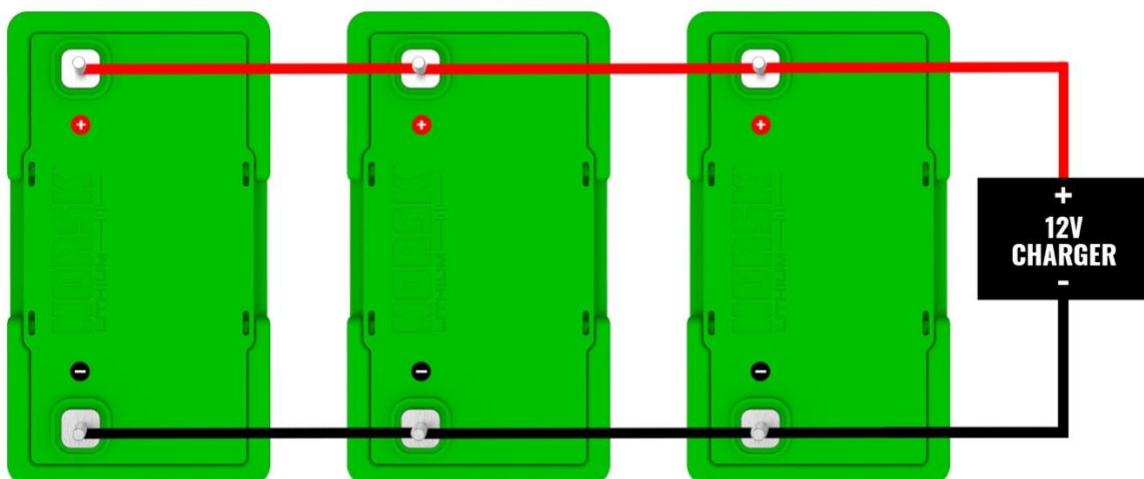
PARALLEL CONNECTION



Charging in Parallel

To charge in parallel, connect the positive (+) terminal of the charger to the positive terminal of one battery and the negative (-) terminal of the charger to the negative terminal of the other battery. This ensures that both batteries receive an equal charge. Monitor the charging process carefully to prevent overcharging and ensure the batteries are charged safely and efficiently.

PARALLEL CHARGING



NORSK GUARDIAN APP / BLUETOOTH

Norsk Lithium LiFePO4 Deep Cycle Batteries are equipped with Bluetooth technology. This enables you to connect to the Norsk Guardian App which is available for free download on the Apple App Store and Google PlayStore. With Norsk Guardian, you can connect to multiple marine batteries simultaneously, create groups with custom names, monitor their health and charging status, and receive real-time alerts to your phone. Download the app today and enjoy complete confidence on and off the water.



Norsk Guardian App Features

All Norsk Guardian App Features can be viewed at the following web address:

<https://norsklithium.com/guardian-app/>

Top App Features

- Connect to multiple batteries simultaneously
- Custom Naming
- Monitor Battery Health
- Monitor Charging Status
- Power Cycle Counter
- Receive Custom Notification
- Intelligent Grouping
- Integrated Troubleshooting Guide
- Integrated User Manuals
- Integrated Live Chat
- Proactive Diagnostics & Warranty
- And more!

Connecting to Norsk Guardian App for the First Time

Open the Norsk Guardian App. You will be prompted with a screen with a button to “Connect to battery.” (fig. 1)

***Note** – Please make sure both Bluetooth and location services are turn on, on your phone.

Once Bluetooth and location services are turned on – click the “Connect to battery” button. (fig. 1)

Norsk Guardian will now scan for your batteries. (fig. 2)

Each of your batteries will now be displayed with the option to “Connect” to each battery. (fig. 3)

Click the “Connect” button next to the battery you would like to connect. (fig. 3)

You will be prompted to “Create Battery Group” – click on this button. (fig. 4)

Click on “Create Battery Group” and name your battery group.

Once you click the “Create” button you will be prompted for “Battery Ownership” (fig. 5) – Click the “Yes” button if you are in fact the owner of the battery (clicking yes will also register your warranty).

You have now connected your first Norsk Lithium Battery to the Norsk Lithium Guardian App.

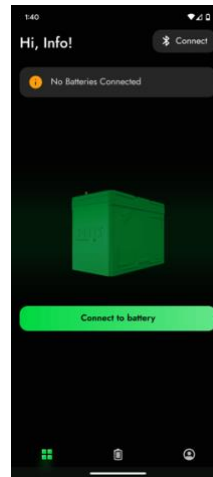


Figure 1

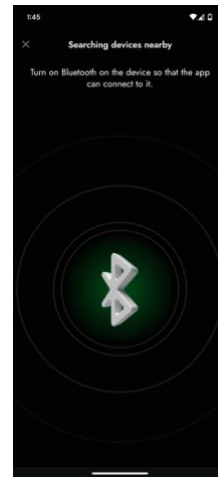


Figure 2

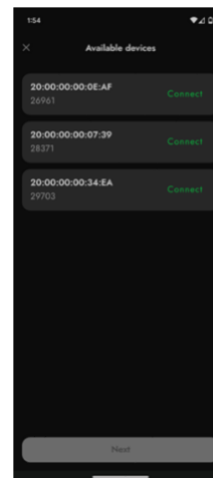


Figure 3

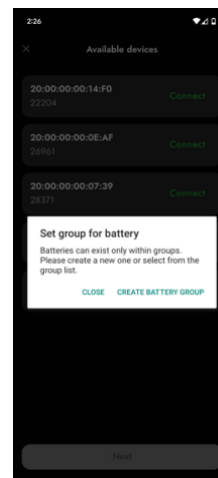


Figure 4

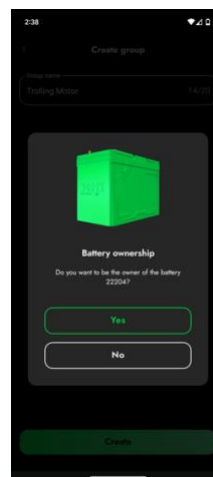


Figure 5

Connecting Multiple Batteries Using the Norsk App

With the Norsk Guardian App you can connect to multiple batteries simultaneously.

After you have completed your first connection – navigate to the “Connect” button in the upper right-hand corner of the screen. (fig. 6)

Next, you will be shown a list of batteries (including the one you have already connected). Select the next battery from the list you would like to add by clicking on the “Connect” button. (fig. 7)

You will be asked to either “Select Battery Group” or “Create a Battery Group.” (fig. 8)

Select “Select Battery Group” if you would like to connect multiple batteries together in either Parallel or Series. (fig. 8)

Select your Battery Group. (fig. 9)

On the Next Page you will select your Connection Type of either “Serial” or “In Parallel” (refer to *Series and Parallel Section of this manual if you are unsure*). Then click the save button.

You have now connected your first Norsk Lithium Battery Group inside of the Norsk Lithium Guardian App.

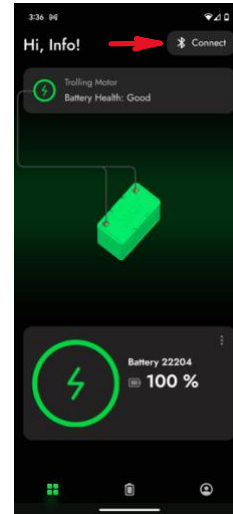


Figure 6

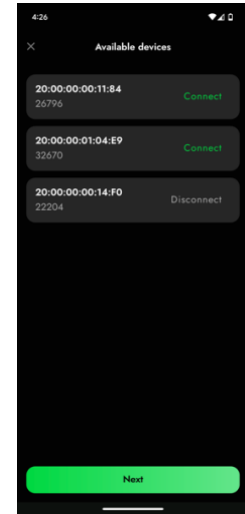


Figure 7

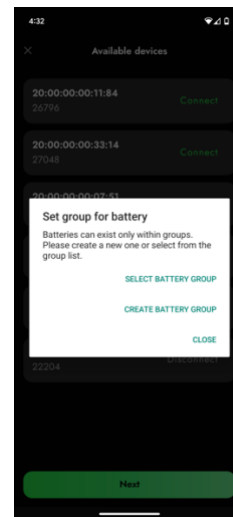


Figure 8



Figure 9

TROUBLESHOOTING

Battery Not Charging

Issue: The battery does not charge when connected to the charger

Troubleshooting Steps:

- Ensure the charger is plugged in properly and the connection to the battery is secure
- Check for visible damage to the charging port on the battery or charger
- Try using a different charger to determine if the issue is with the charger or the battery

Battery Not Holding a Charge

Issue: The battery does not hold a charge or loses charge quickly.

Troubleshooting Steps:

- Ensure the charger is providing the correct voltage and current for the battery
- Ensure nothing is connected to the battery creating a parasitic draw

Charger Not Compatible

Issue: The charger is not compatible with the battery or device.

Troubleshooting Steps:

- Check the voltage and current rating of the charger to ensure compatibility with the battery
- Verify that the charger is designed for use with either AGM or lithium batteries

NORSK LITHIUM WARRANTY

Norsk, Inc. (“Warrantor” or “Norsk”) warrants all Norsk Products sold after July 1, 2024, by Norsk, or any of its authorized dealers, distributors, and Original Equipment Manufacturer (“OEM”) partners to be free of defects as outlined below.

- **Series 1* Batteries:** Ten (10) years from the date of sale as determined by either the customer’s sale receipt, the shipping invoice, serial number, or optional warranty registration with proof of purchase. Purchasers who register their battery through the Norsk Guardian® Application will receive an extended warranty to twelve (12) years. The expected end of life of Norsk Marine Batteries is 4,000 cycles.

Series 1 Batteries include all Norsk LiFePO4 Batteries with a capacity 50Ah and greater. Series 1 Batteries manufactured on or before May 1, 2024, are excluded from this warranty. This exclusion applies to the following model numbers: **23-100, 23-360H, 23-360, 23-125, 23-245H, 23-245.**

- **Series 2* Batteries:** Four (4) years from the date of sale as determined by either the customer’s sale receipt, the shipping invoice, serial number, or optional warranty registration with proof of purchase. Purchasers who register their battery through the Norsk Guardian® Application will receive an extended warranty to six (6) years. The expected end of life of Norsk Portable Sonar Batteries is 1000 cycles.

Series 2 Batteries include all Norsk LiFEPO4 Batteries with a capacity less than 50Ah and all Norsk Lithium NMC batteries. Series 2 Batteries manufactured on or before May 1, 2024, are excluded from this warranty. This exclusion applies to the following model numbers: **20-115C, 23-150C, 14-320C, 14-500C.**

- **Chargers/Adapters:** One (1) year from the date of sale as determined by either the customer’s sale receipt, the shipping invoice, serial number, or optional warranty registration with proof of purchase.
- **Accessories:** One (1) year from the date of sale as determined by either the customer’s sale receipt, the shipping invoice, serial number, or optional warranty registration with proof of purchase.

*If you have questions regarding which warranty is applicable to your battery, please visit www.norsklium.com or reach out to Norsk for additional information.

Warrantor will, in its sole and absolute discretion, credit, replace, or repair (if serviceable) the Battery and/or parts of the Battery based on Warrantor’s investigation and confirmation of an alleged defect.

This Limited Warranty does not cover a battery that has reached its expected end of life due to usage, which may occur before the end of the Warranty Period. Different usages and applications will affect the lifespan of a Norsk battery. The expected useful life of each Norsk battery is outlined above. The Manufacturer reserves the right to deny any warranty claim if the Battery is determined upon inspection to be at its expected end of life, even within the Warranty Period. Please reach out to Norsk if you have any questions regarding the expected useful life and application of a Norsk product.

In order to maximize the useful life of your battery follow all manufacturer recommendations for charging, storage, and use. Additional conditions that are excluded from the Warranty are outlined below.

NORSK GUARDIAN® APPLICATION

Use of the Norsk Guardian® Application entitles Purchasers to extended Warranty coverage as outlined above. Use of the Norsk Guardian® Application is governed by the Terms of Use, Warranty, and other information accessible through the Norsk Guardian® Application or at www.norsklithium.com. The terms of this Warranty are not applicable to the Norsk Guardian® Application or its use. Please refer to the information referenced above for additional details.

NON-TRANSFERRABLE

These Warranties (“Warranty” or “Warranties”) are offered to the original purchaser and are not transferable to any other person or entity. Please contact the original vendor or reach out to Norsk regarding any warranty claim.

EXCLUSIONS

Norsk has no obligation under this Warranty for Product(s) subjected to the following conditions (including but not limited to):

- Damage due to improper handling and/or installation. For example, loose terminal connections, incorrect wire/cable sizing, incorrect connections, or reverse polarity connections.
- Damage caused by physical impact, drop, or collision.
- Environmental damage including (but not limited to) exposure to extreme temperatures outside manufacturer’s recommendations, inappropriate storage conditions (conditions outside manufacturer recommendations), water damage (including submersion), fire, and/or freezing.
- Damage resulting from exposure to saltwater without use of proper dielectric grease and rubber terminal covers.
- Damage caused by improper maintenance or improper repair including (but not limited to) terminal connections affected by corrosion or debris.
- Any attempt to open, modify, or tamper with the battery.
- Damage caused by dirty connections or use of improper charger.
- Damage caused by using the battery for applications outside intended design, including the use of Norsk Lithium batteries not clearly labeled for use as a Starting Battery in applications when the battery receives a charge current directly from an alternator, stator, or generator. Damage caused by storing battery in a low state of charge.
- Damage caused by not charging battery as recommended by manufacturer (check and charge, if necessary, at least once every 3 months)
- Damage caused by battery operation outside of their intended use.

WARRANTY DISCLAIMER

This limited warranty is the sole warranty offered by the Manufacturer and the Manufacturer disclaims and excludes all other express warranties. Manufacturer further limits the duration of all, whether statutory, express, or implied warranties, including, without limitation, any warranty of merchantability or fitness for a particular purpose, to the warranty period. The Manufacturer’s exclusive liability for breach of any contract on the Battery shall be to repair, replace, or credit the

Battery within the warranty period per the terms of this limited warranty. In no event shall Manufacturer be liable for any loss or damages of any other kind, whether direct, incidental, consequential, including lost profits, exemplary, special, or otherwise, including any lost profits or removal, shipping, or installation expenses.

OPTIONAL REGISTRATION

Product registration is not required. Purchases made directly from Norsk will remain on file. Purchases from authorized resellers will be warrantied based on the purchase receipt date. If no purchase receipt is available the manufacturing date will be used.

Purchasers are encouraged to register their products at: <https://norsklithium.com/product-registration>. Registered purchasers will receive:

- Access to additional information and support
- Notification of upcoming products
- Insider News
- Custom Content
- Exclusive/Early Access Communications from Norsk Lithium

LEGAL RIGHTS

Some countries and/or states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitations may not apply to you. This warranty gives you specific legal rights, which may vary from country to country and/or state to state. This warranty shall be governed by and interpreted under the laws of North Dakota. You have the right to bring any action at law or equity to resolve disputes concerning or to enforce the provisions of this warranty. Any such action shall be filed in the courts of Burleigh County, ND, USA. You hereby agree and consent to the exclusive jurisdiction of that court.

This warranty is understood as the exclusive agreement between the parties relating to the subject matter hereof. No employee or representative of the Warrantor is authorized to make any warranty in addition to those made in this agreement.

If the buyer disagrees over either's performance under the terms of this warranty, the buyer may submit the matter for resolution to support@norskpower.com. The buyer shall not be responsible for expenses incurred in submitting a dispute for resolution under the terms of this paragraph. The buyer is required to submit any dispute for resolution under this paragraph before pursuing any legal remedies to which he or she may be entitled.

NON-WARRANTY REPAIRS

If outside of the Warranty period or for damage not covered under warranty, customers may still contact the Manufacturer for battery repairs. Costs may include shipping, parts, and labor. Contact Norsk for more details.

SUBMITTING A WARRANTY CLAIM

To submit a warranty claim, please contact the original place of purchase, Norsk, Inc., or visit <https://norsklithium.com/warranty-request>.