PRODUCT MANUAL

EVO-TEC™ Marine
On-Board Battery Chargers

Read and understand this manual before the use or installation of your Norsk Lithium® battery, charger, or accessory. Refer to the **SAFETY INFORMATION** section for additional information. Save these instructions for future reference.

WARNING: The use of electricity and the installation of batteries and/or electrical equipment or electrical systems present several hazards including electrocution, fire, injury, and death. Norsk Lithium is not liable for property damage, personal injury, or death resulting from using or installing a Norsk Lithium battery, charger, or accessory or from following the actions recommended in this document. Refer to the **SAFETY INFORMATION** section for additional information.

IF YOU DO NOT FEEL SAFE, OR COMFORTABLE, OR ARE NOT QUALIFIED TO PERFORM A BATTERY INSTALLATION OR OTHER ACTION OUTLINED IN THIS MANUAL, CONSULT A QUALIFIED PROFESSIONAL ELECTRICIAN.

THANKS FOR YOUR PURCHASE!

Welcome to the Norsk Lithium family and thank you for purchasing a Norsk Lithium product. This user guide will provide you with essential information on how to use, install, and maintain your battery charger to ensure optimal performance. Please read this user guide in full before using your new Norsk Lithium EVO-TEC™On-Board Battery Charger.

CONNECT WITH US ON SOCIAL MEDIA!

For the latest news and product releases from Norsk Lithium, follow us on Facebook and Instagram **(NorskLithium).**

You can also share your fishing experiences with us by tagging Norsk Lithium and using the hashtag **#NorskLithium** in your post. For the latest product videos, comparison videos, and how-to videos, subscribe to our YouTube Channel:

www.youtube.com/@NorskLithium

NORSK LITHIUM, INC.

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CUSTOMER SERVICE HOURS

Monday–Friday:
9:00 am–5:00 pm

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INCLUDED EQUIPMENT

All Norsk Lithium Marine Battery Chargers include the following:

- Qty. (1) Marine Battery Charger
- Pre-installed fuses on all banks
- User manual

SELECTING AN ON-BOARD CHARGER

One of the most critical components of owning a Norsk Lithium Battery is the selection of a compatible lithium charger.

Norsk Lithium recommends the use of a Norsk Lithium EVO-TEC™ On-Board Charger. While other chargers may be fully or partially compatible with Norsk Lithium Marine Batteries, EVO-TEC™ Chargers have been engineered to optimize the performance and lifespan of Norsk Lithium Batteries while fully supporting advanced features such as Thermal Core Heating Technology (standard on all starting batteries and optional on all deep cycle models), and the ability to reach 100% state of charge due to the optimized charger output voltage profile found in all EVO-TEC™ Chargers.

For a complete list of 3rd party chargers that have been tested and determined to be compatible with Norsk Lithium Marine Batteries, please visit our website at **www.norsklithium.com/compatible-chargers/** where you will find a Battery Charger Compatibility List for each respective marine battery model.

ALWAYS verify charger compatibility before charging.

Norsk Lithium recommends unplugging the on-board battery charger from AC power after the completion of every charge cycle.

EVO-TEC BATTERY CHARGER OUTPUT VOLTAGE

BATTERY VOLTAGE & CHEMISTRY	PEAK VOLTAGE OUTPUT
12V Lithium	**14.20V**
12V Lead-Acid	**14.40V**
12V AGM	**14.60V**
16V Lithium	**17.75V**
24V Lithium	**28.40V**
36V Lithium	**42.60V**

BATTERY CHARGER INSTALLATION

Norsk Lithium **RECOMMENDS** the following when selecting a mounting location for your marine charger:

- **DO NOT** mount your charger immediately above a lead-acid or AGM battery. Gasses vented by the batteries may corrode and damage the charger
- **DO NOT** mount your charger below the waterline in the event the bilge or under-deck area fills with water due to leaky plumbing or rough conditions
- **AVOID** extending the battery charger leads. Doing so may cause undesirable performance, excessive heat generation due to the increased resistance caused by the longer leads, and may significantly shorten your charger's lifespan
- **ALLOW** for visual monitoring of the charger when in operation
- **MAINTAIN** easy access to the MODE buttons located on the top of the charger in the event charge output settings need to be adjusted
- **PROVIDE** additional space around your charger to allow for cooling of the charger body during a charge cycle
-
- **USE** stainless steel fasteners to install the charger using the pre-drilled mounting holes found in the side flanges of each charger
- **INSPECT** the backside of the selected mounting position to ensure the fasteners will not puncture the hull, livewell, baitwell, or wiring installed **BEHIND** the selected mounting location
- **CHECK** the charger installation regularly to ensure the charger remains properly mounted and all fasteners are properly secured and corrosion-free
- **VERIFY** your charger and the selected charge profile are appropriate for the desired use prior to installation and use

PROGRAMMING YOUR CHARGER

Once the charger has been securely installed and before plugging the charger into an outlet, remove the fuse from the positive (+) lead from each bank on the charger.

After the fuse from the positive (+) lead from each bank on the charger has been removed, plug the charger into an outlet.

To program your charger, press the **MODE** button for each battery bank to select the proper charge output profile to match the chemistry and/or voltage of the battery to be charged. **VERIFY** all output profiles match the battery before use.

Once you have each bank of the charger programmed to the proper charge output profile to match the chemistry and/or voltage of EACH battery, connect the battery charger terminals from each battery bank to the appropriate battery to be charged based on chemistry and/or voltage. Once all connections have been made, reinstall the fuse(s) removed from the positive (+) lead from each bank on the charger.

NOTE: Your Norsk Lithium EVO-TEC charger will recall the charge output profile setting(s) selected during programming if the charger is disconnected from the wall outlet power the next time the charger is plugged into an outlet.

HOW TO CONNECT TO THE BATTERY TERMINALS

When connecting a charger to a battery, connect the positive lead to the positive (+) terminal and the negative lead to the negative (-) terminal. Reverse polarity connection of leads to the battery terminals

may cause a short and may cause significant and irreparable damage to the battery charger and the battery. **Damage of this type is NOT covered by warranty**.

Make sure all connections are in full contact with the battery terminals and a max torque force of 10ft-lbs is applied. If the max torque force of 10ft-lbs is exceeded, the terminal may be damaged. Loose connections will result in significant heating due to the increased resistance caused by the loose connection and can result in permanent damage to the battery charger or battery.

It is recommended to put DIELECTRIC GREASE on the outer exposed surfaces of your terminals after the connection is complete. DIELECTRIC GREASE stops air and moisture from corroding exposed metal parts of your connections.

DO NOT put DIELECTRIC GREASE in between the primary contact points of your electrically conducting components.

Install protective terminal covers on all battery terminals prior to use.

CHARGING BATTERIES WIRED IN SERIES OR PARALLEL

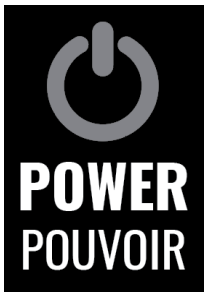
When charging multiple batteries connected in series, each battery must be charged by a **SEPARATE DEDICATED BANK** on the charger that provides an output voltage and charge profile that matches the requirements of each **INDIVIDUAL** battery being charged.

For example, three (3) 12V batteries wired in series to produce 36V output would be charged by a three (3) bank charger with each bank of the charger outputting the appropriate 12V output voltage and charge profile for each battery connected in series.

As a further example, two (2) 24V batteries wired in series to produce 48V output would be charged by a two (2) bank charger with each bank of the charger outputting the appropriate 24V output voltage and charge profile for each battery connected in series.

WARNING: Use of a charger that does not provide the appropriate output voltage and charge profile for the battery to be charged by each battery bank may result in undesirable outcomes or dangerous conditions such as, but not limited to, over-charging, incomplete charging, over-voltage warnings, BMS shutdown of the battery to protect the cells, over-heating, and fire. Norsk Lithium **IS NOT** responsible for any property damage or personal injury caused by charging batteries that are not compatible with the output voltage and charge profile provided by the charger.

UNDERSTANDING LED INDICATORS

	Red LED Light(s) Indicate the Current State of Charge 1 LED=0~25%, 2 LED=26%~50%, 3 LED=51~75%, 4 LED=76~100% Green LED Light Indicates Full Charge
	POWER indicator backlight is ON when AC power is connected POWER indicator backlight is OFF when AC power is disconnected
	Short press to SELECT the battery chemistry and/or voltage output for each bank For lithium batteries in Shut-Down mode, LONG PRESS for 3-5 seconds until selected Chemistry and/or Voltage SELECTION starts to FLASH to wake the battery and charge

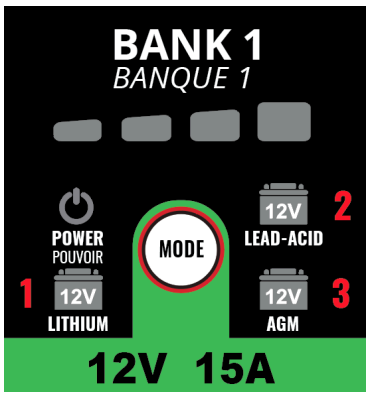
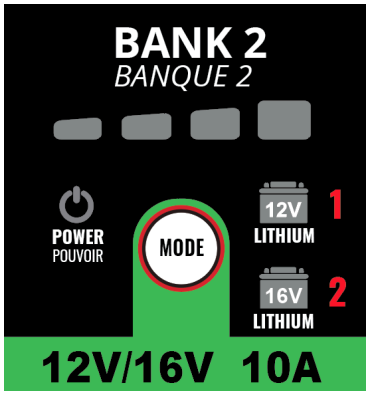
UNDERSTANDING OUTPUT PROFILES & VOLTAGE

Norsk Lithium EVO-TEC Chargers have the ability to charge batteries of various chemistries and voltages with a single charger. It is critically important to understand the various output voltage and charge profiles offered by an EVO-TEC charger and how to select the correct output voltage and charge profiles for the battery or batteries to be charged.

When the charger is plugged into an AC wall outlet, the MODE button can be pressed to change the selected output voltage and charge profile with each press of the MODE button moving the SELECTION clockwise around the MODE button. It is important to make this selection prior to connecting each charger bank to the battery to be charged.

The label around the MODE button for each battery bank shows the chemistry (Lithium, Lead-Acid, or AGM) **AND/OR** the output voltage provided by each setting.

NOTE: Not all EVO-TEC charger banks provide selectable output voltage and charge profiles required for a single battery charger bank to support multiple chemistries - Lithium, Lead-Acid, and AGM. This capability is found on select models and is clearly indicated on the label around the MODE button for each battery charger bank. **VERIFY** your charger and the selected charge profile are appropriate for the desired use prior to installation and use.

	In this example, Bank 1 offers output voltage and charge profiles for 12V Lithium (**1**), 12V Lead Acid (**2**), and 12V AGM (**3**). No other voltage batteries are supported by this battery bank. For example, the 12V Lithium setting **CANNOT** be used to charge 16V, 24V, or 36V Lithium batteries.
	In this example, Bank 2 offers output voltage and charge profiles for 12V Lithium (**1**), and 16V Lithium (**2**), **ONLY**. This charger bank **DOES NOT** offer output voltage and charge profiles required to charge Lead-Acid or AGM chemistry batteries.

WARNING: Failure to select the appropriate output voltage and charge profile for the battery to be charged by each battery bank may result in undesirable outcomes or dangerous conditions such as, but not limited to, over-charging, incomplete charging, over-voltage warnings, BMS shutdown of the battery to protect the cells, over-heating, and fire. Norsk Lithium **IS NOT** responsible for any property damage or personal injury caused by, or undesirable performance associated with, the selection of an output voltage and charge profile that doesn't match both the chemistry and voltage of the battery being charged.

HOW TO WAKE A NORSK BATTERY FROM SHUTDOWN MODE

Shut-Down Mode is a protective mode found on Norsk Lithium batteries that protects the battery from being over-discharged. In the event that a battery is discharged to its **LOWER LIMIT** voltage cut-off (shown in the table below), the battery's BMS will stop further discharge from taking place and the battery will enter Shut-Down Mode to protect the battery from damage caused by over-discharge of the battery's cells.

BATTERY	RATED VOLTAGE	LOWER LIMIT
12V	12.8V	10V
16V	16V	12.5V
24V	25.6V	20.0V
36V	38.4V	30.0V

When the battery is in Shut-Down Mode, there will be no voltage at the terminals and the user will **NOT** be able to connect to the battery via Bluetooth.

TO WAKE YOUR BATTERY FROM SHUT-DOWN MODE, plug a Norsk Lithium EVO-TEC™ Charger with an output voltage and charge profile compatible with the battery in Shut-Down Mode into an electrical outlet. If the appropriate output voltage and charge profile have not been previously set, use the MODE button to select the appropriate output voltage and charge profile of the charger bank to be connected to the battery in Shut-Down Mode. The selected output voltage and charge profile are indicated by the **RED** indicator light that will illuminate the current selection.

Once the compatible output voltage and charge profile have been selected on the charger, connect the battery.

Once the battery is connected to the charger, PUSH AND HOLD the MODE button on the charger for the charger bank that is connected to the battery until the desired selection on the LED Indicator Panel starts to flash. You may also hear a soft clicking sound as the LED Indicator flashes - this is normal. Your Norsk Lithium Marine Battery will wake from Shut-Down Mode within a few seconds.

NOTE: As soon as the battery wakes from Shut-Down Mode, the SOC indicator panel on a Gen3 Norsk Lithium Marine Battery will illuminate 4 LED indicator lights two (2) times before the charging process begins normally. It is HIGHLY recommended that the user fully charge the battery prior to the first use. Failure to fully charge the battery prior to use will result in significantly reduced runtimes when compared to a fully charged battery.

WATERPROOF RATING

All Norsk Lithium EVO-TEC Battery Chargers have an IP67 Rating and all internal components are fully potted in epoxy to ensure EVO-TEC Chargers are suitable for use in extreme conditions. The IP67 Rating indicates the charger is protected against damage caused by water intrusion into the charger case to a depth of 1.5m / 4.9’ for 30 minutes. Despite the IP67 Rating and the protection it provides, Norsk Lithium EVO-TEC Chargers should **NEVER** be intentionally submerged in water. If a charger is submerged in water, the user should **NOT** attempt to use the charger.

If a charger is accidentally submerged in water the charger should be removed from the water as soon as it is safe to do so and carefully inspected for signs of damage caused by water intrusion or unusual behavior before the charger is put back into service. If the charger shows signs of damage caused by

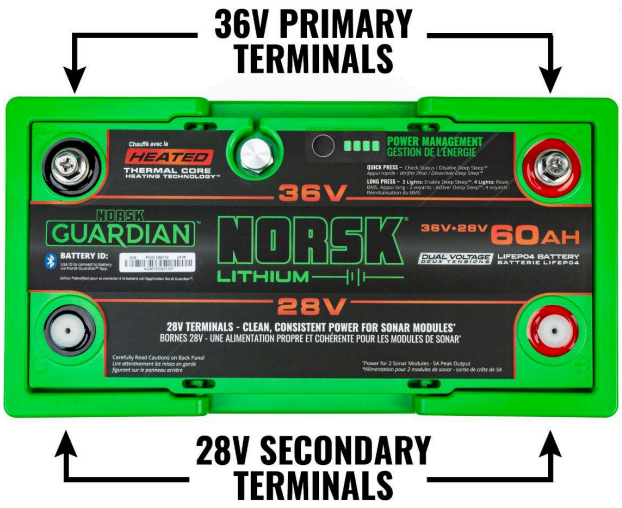
water intrusion, discontinue the use of the charger immediately and contact Norsk Lithium customer service for further instructions.

USE OF A BATTERY MAINTAINER

The use of a battery charge maintainer, often referred to as a “float charger”, is **NOT RECOMMENDED** by Norsk Lithium for use with lithium batteries. Using a maintainer that constantly tops off a battery’s SOC can cause metal plating within the cells that will significantly reduce the lifespan of the lithium battery. Because Norsk Lithium Marine Batteries have an incredibly low passive-discharge rate (<3% per month in normal operation mode) a battery maintainer for long-term storage is unnecessary. **Any damage caused by the use of a battery charge maintainer IS NOT covered by warranty**.

CHARGING DUAL VOLTAGE BATTERY MODELS

Norsk Lithium offers Dual Voltage output capability on select Deep Cycle Marine Battery models, such as the 36V+28V Dual Voltage Marine Deep Cycle.



Dual Voltage Batteries offer two sets of terminals that are clearly marked to show the output voltage of each set of terminals. **ALWAYS** verify the operating voltage range of the device to be connected to either set of terminals on a dual voltage battery is compatible with the output voltage provided by the set of terminals to be connected to the device.

WARNING: **NEVER** attempt to charge your Dual Voltage Battery through the secondary 28V terminals. **ALWAYS** charge a Norsk Lithium Dual Voltage Battery through the primary terminals using a compatible 36V charger. Incorrect charging can result in damage to the battery, charger, and/or components and can result in personal injury or fire.

WARRANTY

Norsk Lithium offers a limited 2-year Warranty on all EVO-TEC Battery Chargers. The warranty coverage begins on the date of purchase as shown on the original purchase receipt.

This warranty covers manufacturing defects and does not cover damage caused by charging incompatible batteries, misuse, abuse, or neglect. Please visit the warranty page on our website at **www.norsklithium.com/warranty/** for more information on our warranty terms and conditions.

WARRANTY REGISTRATION

Owners of a Norsk Lithium product are encouraged to maintain the required documentation for warranty coverage or register their product for warranty coverage using one of the three methods described below:

- Save a copy of your receipt showing the model and purchase date for submission to Norsk Lithium Customer Service in the event warranty coverage is needed.
- Register the product for warranty online at norsklithium.com by creating an account and filling out a Product Registration form found at **www.norsklithium.com/product-registration/.**
- Owners that register their chargers online can check the status of their warranty registration at **www.norsklithium.com/product-registration/.**

CUSTOMER SERVICE

We stand behind the quality of our products and are committed to providing you with excellent customer service. If you purchased your product from a retail location or Amazon and have any questions or concerns 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.

HELP CENTER

If you have any questions about your Norsk Lithium product, you can also visit our Help Center on our website. There you will find FAQs, How-to-Videos and Warranty Information:

www.norsklithium.com/help-center

You can also contact our customer support team via email or phone, and we will be happy to assist you.

ADDITIONAL RESOURCES

User Manuals for Norsk Lithium products are available for download online at

www.norsklithium.com/manuals/

- Norsk Guardian App
- EVO-TEC™ Multi-Bank and Single Bank Marine Chargers
- EVO-TEC™ DC-to-DC Chargers
- 16.4V Regulator
- Portable Sonar Batteries

SAFETY INFORMATION

Lithium batteries can present a fire and explosion hazard. To minimize these hazards use and install Norsk Lithium products only as directed and, where appropriate, seek qualified, professional assistance. During installation and use:

- Consider all battery terminals and connections live
- **DO NOT** place items on the battery or charger

- Inspect the battery, charger, and connections prior to installation and before each use. Do not use or install if the battery, charger, or battery connections are faulty or damaged.
- **DO NOT** short-circuit the battery or charger.
- Use insulated tools
- Avoid wearing metal, metallic, or other conductive jewelry or watches when working with the battery, charger, or other electrical components.
- Verify the wire gauge is correct for the application and the length of the wire.
- Verify terminal connectors are tight and that wiring has an adequate surface connection on the terminals.
- **DO NOT** wire batteries with different voltages or chemistries in series or parallel.
- **VERIFY** your charger and the selected charge profile are appropriate for the desired use prior to installation and use.

IN THE EVENT OF A FIRE YOU MUST USE A TYPE D, FOAM, OR CO2 FIRE EXTINGUISHER. DO NOT ATTEMPT TO EXTINGUISH A LITHIUM BATTERY FIRE WITH WATER. Norsk Lithium recommends keeping a suitable fire extinguisher on hand during installation and use.

PRECAUTIONS

Norsk Lithium can't list every possible scenario or safety precaution. Use common sense. Follow manufacturer recommendations. If you are unqualified or do not feel comfortable, seek qualified professional help.

Below is a non-exhaustive list of precautions to take during the use and installation of your Norsk Lithium battery or charger. Failure to follow these precautions may result in fire, property damage, personal injury, and/or death.

Use **ONLY** Norsk Lithium Chargers and charging components. **DO NOT** overcharge the battery. The Battery Management System (BMS) will turn the battery off in case of overcharging, but repeated overcharging may damage the battery.

DO NOT charge the battery unattended. See the **Charging Procedure** section of your battery manual for more information.

DO NOT charge or operate a battery or charger that is visibly damaged, dented, bulging, punctured, or otherwise in an inoperable condition.

DO NOT short-circuit lithium batteries or chargers. Doing so can damage your battery or charger, and may cause high temperatures or currents which can cause fire, personal injury, or death.

DO NOT heat over 140°F (60°C). Doing so may cause damage to the battery, housing, or charger.

DO NOT exceed max discharge specifications for the battery.

DO NOT submerge the battery in water. Keep the battery in a dry environment. Norsk Lithium recommends the use of a battery box for use in marine applications or environments where the battery may get wet.

DO NOT store batteries, chargers, or accessories near heat sources, in direct sunlight, or near high-temperature sources or gas emitters such as fire, heaters, propane tanks, generators, fuel storage, etc.… Follow all other charging and storage guidance.

DO NOT store batteries, chargers, or accessories with other metal or metallic objects, batteries, or electronic devices. Failure to follow this precaution could result in inadvertent terminal connection and fire and/or explosion.

DO NOT dispose of lithium batteries in the trash. **DO NOT** dispose of the battery by crushing, cutting, or exposing it to fire, or high temperatures, as an explosion can result. Follow all local, state, and/or federal laws and regulations related to the disposal and recycling of batteries. Seek assistance if necessary.

HAZARDS

Norsk Lithium batteries are not hazardous when used according to the manufacturer's recommendations. In cases of abuse, damage, or destruction of the battery or battery cells there are hazards of rupture, fire, heat, and leakage of internal components which may lead to exposure to hazardous chemicals. Contact us at **support@norsklithium.com** if you have questions about uses or applications for Norsk Lithium batteries.

Internal battery cells contain hazardous materials. **NEVER** try to open or dismantle the battery or battery cells. **DO NOT** puncture the battery case, or cells, disassemble the battery, or expose it to fire or high heat. Damage to the battery or battery cells may result in fire, explosion, and/or burns.

Exposure to internal components may result in exposure to hazardous materials including Graphite, Copper, Aluminium, Nickel, and Lithium hexafluorophosphate.

In case of rupture, avoid contact with skin, eyes, or clothing, and avoid breathing any fumes.

If EYE exposure occurs, flush your eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids.

If SKIN exposure occurs, remove contaminated clothes and rinse skin with plenty of water or shower for at least 15 minutes. Seek medical attention if necessary.

If INHALED, remove from exposure and move to fresh air immediately. Use oxygen if necessary and available.

If INGESTION occurs, **Seek medical attention if you feel unwell.** Do **NOT** induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Get medical advice/attention if you feel unwell.

In all instances, symptoms may be delayed. In case of an accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Refer to Norsk Lithium Battery Safety Data Sheets for additional safety information. Safety Data Sheets can be found at: **www.norsklithium.com**.

FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference., and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna

—Increase the separation between the equipment and the receiver

—Connect the equipment to an outlet on a circuit different from that to which the receiver is connected

—Consult the dealer or an experienced radio/TV technician for help

Industry Canada Statement: CAN RSS-GEN/CNR-GEN

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science, and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions: (1) this device may not cause interference. (2) This device must accept any interference, including interference that may cause undesired operation of the device.

ADDITIONAL FCC/ISED STATEMENTS FOR NORSK GUARDIAN-ENABLED DEVICES:

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This equipment complies with FCC/IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Industry Canada: CAN RSS-GEN/CNR-GEN

Under Industry Canada's regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p) is not more than that necessary for successful communication.