

NOCO[®]

LITHIUM

NLX



DANGER



READ AND UNDERSTAND ALL SAFETY INFORMATION BEFORE USING THIS PRODUCT.

Failure to follow these safety instructions may result in **ELECTRICAL SHOCK, EXPLOSION, FIRE, which may result in a SERIOUS INJURY, DEATH, or PROPERTY DAMAGE.**



Electrical Shock. Product is an electrical device that can shock and cause serious injury. Do not submerge in water.



Explosion. Never short-circuit the battery terminals. Do not use with an incompatible charging device. Do not attempt to jump start, charge, or discharge the battery if damaged. Never charge or discharge the product outside its operating temperatures. Never over-charge or over-discharge the battery. Never exceed the maximum charging currents of the battery. Never incinerate.



Fire. The product is an electrical storage device that can emit heat. Do not cover product or place objects on top of the product. Keep the product away from combustible materials.



Eye Injury. Wear eye protection when operating product. Batteries can explode and cause flying debris. In the case of contamination of eyes or skin, flush affected area with running clean water and contact poison control immediately.

User Guide & Warranty



**For more information
and support visit:**

www.no.co/support

Important Safety Warnings

Proposition 65.  **WARNING:** This product can expose you to chemicals including lead and exhaust fumes, which are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov. **Personal Precaution.** Only use the product as intended. In case of an emergency, have someone nearby while using this product. Wear complete eye protection and protective clothing while working near a battery. Always wash hands after handling batteries and related materials. Do not handle or wear any metal objects when working with batteries, including; tools, watches, or jewelry. If metal is dropped onto the battery, it may spark or create a short-circuit resulting in electrical shock, fire, explosion, which may result in injury, death, or property damage. **Minors.** If the product is intended by Purchaser to be used by a minor, the purchasing adult agrees to provide detailed instructions and warnings to any minor before use. The Purchaser agrees to indemnify NOCO for any unintended use or misuse by a minor. **Choking Hazard.** Accessories for the product may present a choking hazard to children. Do not leave children unattended with the product or any accessory. The product is not a toy. **Handling.** Handle the product with care. The product can become damaged if impacted. Do not use a damaged product, including, but not limited to, cracks to the casing. Do not handle products or any electrical components near any liquid. Store product in dry locations. If the product is already operating and becomes wet, discontinue use immediately. **Modifications.** Do not attempt to alter, modify, or repair any part of the product. Disassembling the product may cause injury, death, or damage to property. If the product becomes damaged, malfunctions or comes in contact with any liquid, discontinue use, and contact NOCO. Never disable the internal battery management system (BMS) for any reason. Any modifications to the product void your warranty. **WARNING:** Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. **Operating.** The operating temperature range is -4°F (-20°C) to 122°F (50°C). The charging temperature range is 14°F (-10°C) to 122°F (50°C). Do not operate outside of the recommended temperature ranges. **Storage.** The recommended storage temperature range is -4°F (-20°C) to 122°F (50°C). Never exceed 140°F (60°C) under any circumstances. For optimal longevity, store at 77°F (25°C) and a state-of-charge (SOC) higher than seventy-percent (70%). The storage self-discharge rate is less than five-percent (5%) per month. It is not recommended to store the battery for more than 6 months without charging. **Ventilation.** The product does not release gas during regular use, so there are no specific ventilation requirements. However, it is crucial to minimize temperature extremes or restricting airflow to the product. A minimum of 0.50 inch (12.7 mm) of space should be kept around the product to allow for adequate airflow. **Disposal.** The product must be recycled or disposed of separately from household waste. Disposal of the product in household trash is unlawful under state and federal environmental laws and regulations. Always take the product to your local battery recycling center. **Retrofit.** Lithium-ion batteries weigh substantially less than lead-acid batteries of comparable capacity. Some equipment is designed to utilize the weight of lead-acid batteries to achieve weight distribution. Using the product as a replacement battery could impact the weight distribution of the equipment. Understand the consequences of modified weight distribution and ensure safe weight distribution. You assume all responsibility and liability for any damages, injuries, or accidents that may occur due to degraded stability. **Charging.** The product is a 12-volt lithium-ion battery. Do not use a charger that utilizes a pulse charge or a desulfation feature. For optimal performance, we recommend only using the 12-volt lithium mode on NOCO Genius chargers. If using a third-party charger, it must be compatible with 12-volt Lithium Iron Phosphate (LiFePO4) batteries with a charging voltage of 14.4 volts to 14.6 volts, and be certified under one or more of the following standards: IEC60601, UL1236, RCM, PSE or CE (LVD, EMC). Be cautious of using low-quality chargers, as they may present a

severe electrical risk that can result in injury to person and property, as well as shorten the life of the product and cause the product to malfunction. NOCO is not responsible for the user's safety when using accessories or chargers that are not approved by NOCO. During charging, if the battery becomes excessively warm, deforms, swells, or emits smoke or odor, discontinue use immediately and contact support. **Connections.** Make sure all connections to the product are secure. Use the correct tool and inch-pounds of torque to secure the connections properly according to the Installation section of the user guide. Loose connections may cause reduced performance and increased heat due to resistance that may cause the melting of the enclosure or potentially a fire. **Medical Devices.** Product contains magnetic components that may emit electromagnetic fields, which may interfere with pacemakers, defibrillators, or other medical devices. Consult with your physician before use if you have any medical device. If you suspect the product is interfering with a medical device, stop using the product immediately, and consult your physician. **Cleaning.** Disconnect and remove the product before cleaning. Immediately dry the product if it comes in contact with liquid or any contaminant. Use a soft, lint-free (microfiber) cloth. Do not use a pressure washer to clean the battery. **Explosive Atmospheres.** Obey all signs and instructions. Do not operate the product in any area with a potentially explosive atmosphere, including fueling areas or areas which contain chemicals or particles such as grain, dust, or metal powders. **High-Consequence Activities.** Do not use the product where the failure of the product could lead to injury, death, or severe environmental damage. **Radio Frequency Interference.** This product complies with regulations governing radio frequency emissions. Such emissions from the product may negatively affect the operation of other electronic equipment, possibly causing them to malfunction. **NOTE:** 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: (a) Reorient or relocate the receiving antenna. (b) Increase the separation between the equipment and receiver. (c) Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. (d) Consult the dealer or an experienced radio/ TV technician for help.

Installation

Before installing the product, make sure it's fully charged. Visually inspect the product for any signs of damage (e.g., cracks, dents). Make sure the battery terminals are free from dirt, oxidation, or corrosion. Install the product in any horizontal or vertical orientation, except with the terminals facing downward. Follow the below steps for the installation process:

1. Remove the original battery following the manufacturer's guidelines.
2. Securely fasten the NLX battery to the battery tray/box, making sure the battery cables reach both battery terminals.
3. Using the included fastening hardware, attach the positive (+) battery cable to the positive (+) battery terminal and the negative (-) battery cable to the negative (-) battery terminal. Make sure the battery cables connect to the correct polarity.

- Securely fasten to the battery by referencing the Torque section on the next page for the correct hardware and torque. Do not overtighten.
- Ensure there is adequate clearance between the battery terminals and metal parts such as a mounting bracket to prevent the possibility of shorting.

Terminals and Hardware.

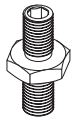
The NLX Battery handle is removable. In order to connect to the middle terminals, the handle must be removed. To remove the handle from the battery, unscrew the caps. Interchangeable terminals are provided to suit various applications. Install the terminals that match the application's specifications.



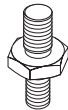
3/8"-24 x 9/16"
Terminal Bolt



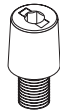
1/4"-20 x 7/16"
Terminal Bolt



3/8"-24 Threaded
Terminal



3/8"-24 x 5/16"-24
Threaded Terminal



Positive and Negative
SAE Terminals



3/8"-24
Nut



5/16"-24
Nut

Model	Hardware	Recommended Torque			Tool
All Models	3/8"-24 x 9/16" Terminal Bolt	84in-lbs	7.0ft-lbs	9.5N*m	7/32" Hex
NLXU1	1/4"-20 x 7/16" Terminal Bolt	28in-lbs	2.3ft-lbs	3.2N*m	5/32" Hex
NLX24 NLX27 NLX31	3/8"-24 Threaded Terminal	66in-lbs	5.5ft-lbs	7.5N*m	5/32" Hex
		180in-lbs	15.0ft-lbs	20.3N*m	11/16" Socket
	3/8"-24 x 5/16"-24 Threaded Terminal	180in-lbs	15.0ft-lbs	20.3N*m	11/16" Socket
	Positive and Negative SAE Terminals	84in-lbs	7.0ft-lbs	9.5N*m	7/32" Hex
	3/8"-24 Nut	180in-lbs	15.0ft-lbs	20.3N*m	9/16" Socket
	5/16"-24 Nut	67in-lbs	5.6ft-lbs	7.6N*m	1/2" Socket

NLX Batteries in Parallel

Up to four 12-volt NLX batteries may be connected in parallel. Batteries connected in parallel must be the same model. Do not connect NOCO NLX batteries in parallel with batteries from other manufacturers. Batteries connected in parallel must be at the same voltage, otherwise sparking and high currents may occur. NOCO recommends fully charging each battery individually with the same 12-volt charger before connecting them in parallel. Batteries intended to be connected in parallel should be purchased at the same time.

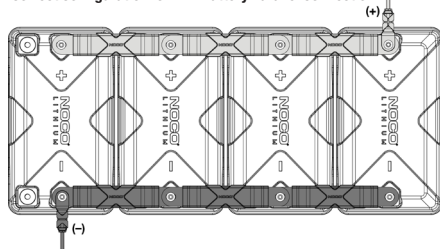
Connecting NLX Batteries in Parallel.

Parallel groups of NLX batteries are capable of high currents. Make sure that battery cables are sized appropriately for the application current. Clean all battery terminals and cable connection points before installation. NOCO Bus Bars are recommended for making battery-to-battery connections. Ensure all connections are tightened to the appropriate torque. Excessively hot cables or battery terminals during use are a sign of poor connections or inadequate cable size. Clean and check all connections for the correct torque and ensure that cables are sized appropriately. Batteries connected in parallel must be wired correctly to ensure that they share current evenly. Failure to wire the batteries correctly will result in reduced battery performance.

Charging NLX Batteries in Parallel.

NLX batteries in parallel should be charged using 12-volt lithium chargers. Always use a lithium charger with the correct voltage and current ratings. NOCO GENIUS Smart Chargers are recommended for charging NLX batteries.

Correct Configuration for NLX Battery Parallel Connection.



NLX Batteries in Series

Up to four 12-volt NLX batteries may be connected in series to support up to 48V applications. Batteries connected in series must be the same model. Do not connect NOCO NLX batteries in series with batteries from other manufacturers. Connecting more than four in series can damage the batteries. Batteries connected in series must be at the same State-of-Charge. NOCO recommends fully charging each battery individually with the same 12-volt charger before connecting them in series. Batteries intended to be connected in series should be purchased at the same time.

Connecting NLX Batteries in Series.

Make sure that battery cables are sized appropriately for the application current. NOCO Bus Bars are recommended for making battery-to-battery connections. Clean all battery terminals and cable connection points before installation. Ensure all connections are tightened to the appropriate torque. Excessively hot cables or battery terminals during use are a sign of poor connections or inadequate cable size. In this case, clean and check all connections for proper torque and ensure that cables are sized appropriately.

Charging NLX Batteries in Series.

Always use a lithium charger with the correct voltage and current ratings. NLX batteries in series can be charged individually using 12-volt lithium chargers. Chargers used in this way must be electrically isolated for safety. NLX Batteries in series can be charged together using a single lithium charger of the appropriate voltage. NOCO GENIUS Smart Chargers are recommended for charging NLX batteries.

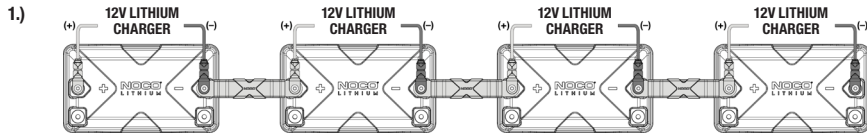
Connecting Series NLX Batteries to a Load.

The load should always be connected across the entire string of series batteries to ensure that each battery is discharged at the same rate. Failure to do this can cause battery imbalance and reduced system performance.

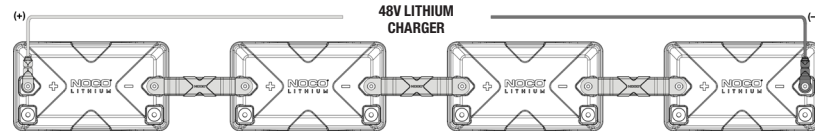
Maintenance for Series Batteries.

Periodically measure the voltage of each battery connected in series to ensure they are balanced. It is normal for batteries in series to show some imbalance immediately after charging, or after discharging under heavy load. For accurate results do not measure battery voltage while charging or within 12 hours of charging. Best results are obtained by measuring with a light load at a midway state-of-charge. If the battery voltages are out of balance by more than 200mV, or if system performance is beginning to degrade, disconnect from the load and fully charge each battery individually using the same 12-volt charger.

Correct Configuration for NLX Battery Series Connection.



2.)



Charging

To recharge the product, connect a compatible lithium-ion charger to the positive (+) and negative (–) battery terminals. The recommended charging voltage is 14.6-volts. The product uses advanced lithium-ion technology that allows for the rapid charging of the internal lithium-ion cells. This is a table of the charging times, based on 100% depth-of-discharge (DOD), using recommended NOCO Genius Smart Battery Chargers:

Recharge Times Using NOCO GENIUS Chargers.

	GENIUS5	GENIUS10	GENIUSPRO25	GENIUSPRO50	GENIUSPRO25 (24V mode)	GENIUSPRO50 (24V mode)	GX2440	GX3626	GX4820
QUANTITY IN SERIES	1	1	1	1	2	2	2	3	4
NLXU1	8hr	4hr	1.6hr	48min	3.2hr	1.6hr	1.5hr	2.2hr	3hr
NLX24	-	9hr	3.6hr	1.8hr	7.2hr	3.6hr	3.3hr	5hr	6.7hr
NLX27	-	10hr	4hr	2hr	8hr	4hr	3.7hr	5.6hr	7.5hr
NLX31	-	12hr	4.8hr	2.4hr	9.6hr	4.8hr	4.4hr	6.7hr	9hr

For batteries in parallel, the charge time is the time for one battery multiplied by the number of batteries in parallel. For example, one NLX31 battery takes 2.4 hours to charge with a GENIUSPRO50. Four NLX31's in parallel would take (4 x 2.4 hours) = 9.6 hours to charge.

Technical Specifications

	NLXU1	NLX24	NLX27	NLX31
BCI Group	U1	24	27	31
Type	Lithium - Ion			
Chemistry	Lithium Iron Phosphate (LiFePO4)			
Nominal Voltage	12.8V			
Amp-Hours	40Ah	90Ah	100Ah	120Ah
Watt-Hours	512Wh	1152Wh	1280Wh	1536Wh
Starting Current	600A	1200A	1400A	1600A
Continuous Current	75A	150A	175A	200A
Charging Voltage	14.6V			
Charging Current	40A	90A	100A	120A
Operating Temperature	-4°F to 122°F (-20°C to 50°C)			
Charging Temperature	14°F to 122°F (-10°C to 50°C)			
Storage Temperature	-4°F to 122°F (-20°C to 50°C), Recommended Temperature 77°F (25°C)			
Housing Protection	IP66			
Dimensions (W x D x H)	7.76 x 5.20 x 6.69in (19.7 x 13.2 x 17.0 cm)	10.24 x 6.81 x 8.03in (26.0 x 17.3 x 20.4 cm)	12.05 x 6.81 x 8.03in (30.6 x 17.3 x 20.4 cm)	12.99 x 6.81 x 8.58in (33.0 x 17.3 x 21.8 cm)
Weight	12 lbs (5.44 kg)	24 lbs (10.89 kg)	28 lbs (12.70 kg)	33 lbs (14.97 kg)

Troubleshooting

Dynamic BMS.The product utilizes a dynamic Battery Management System (BMS) that monitors the internal lithium-ion cells and disconnects them if a fault occurs. The BMS protects against over-charge, over-discharge, over-current, short-circuit, over-temperature, and under-temperature fault conditions. The BMS also includes cell balancing to maintain voltage balance between individual cells to ensure optimal battery performance. The BMS automatically recovers from fault conditions without user intervention.

In extremely cold temperatures, the battery may be slow to provide power initially. If this occurs, attempt to start the equipment again or connect a light load to the battery. Repeated attempts will self-heat the lithium cells and allow them to provide sufficient power. In order to protect the lithium cells, the BMS will not allow charging below 14.0°F (-10°C). Once the battery temperature reaches 14.0°F (-10°C) or higher, charging will be allowed.

In order to protect the lithium cells, the BMS will not allow charging or discharging when the battery temperature reaches 140°F (60°C). This situation can occur with high ambient temperature and repeated starting attempts or prolonged high current discharge, which self-heats the battery. Once the battery cools the BMS will allow charging and discharging.

Protection	Recovery Process
Over-Charge	Recovers when an external load is applied or when the charger is removed and the voltage returns to an acceptable range.
Over-Discharge	Recovers when a charger is applied or when load is removed and voltage returns to an acceptable range.
Over-Current	Recovers when an external load is removed.
Short-Circuit	Recovers when an external load is removed.
Over-Temperature	Recovers when returning to its operating temperature range.
Under-Temperature	Recovers when returning to its operating temperature range.

NOCO Five (5) Year Limited Warranty.

IMPORTANT: BY USING THIS PRODUCT, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THE NOCO FIVE (5) YEAR LIMITED WARRANTY (WARRANTY) AS SET OUT BELOW. DO NOT USE THE PRODUCT UNTIL YOU HAVE READ THE TERMS OF THE WARRANTY. IF YOU DO NOT AGREE TO THE TERMS OF THE WARRANTY, DO NOT USE THE PRODUCT AND RETURN IT.