



NOCO 

genius[®]

GX Series

User Guide



DANGER



PRIOR TO USE, READ AND UNDERSTAND PRODUCT SAFETY INFORMATION.

Failure to follow the instructions may result in ELECTRICAL SHOCK, EXPLOSION, or FIRE, which may result in SERIOUS INJURY, DEATH, DAMAGE TO DEVICE or PROPERTY. Do not discard this information.

Welcome. Thank you for buying a NOCO Genius[®] GX Series Smart Charger. Read and understand the User Guide before operating the charger. For questions regarding our chargers, view our comprehensive support information at www.no.co/support. To contact NOCO for personalized support (not available in all areas), visit www.no.co/connect.

What's In The Box.

- GX Series Smart Charger
- AC Cable
- User Guide
- Information Guide and Warranty



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About GX Series Chargers. The NOCO Genius® GX Series of chargers represents some of the most innovative and advanced technology on the market, making each charge simple and easy. The GX is designed for charging all types of 24V, 36V or 48V lead-acid and lithium-ion battery systems, including Wet (Flooded), Gel, MF (Maintenance-Free), CA (Calcium), EFB (Enhanced Flooded Battery), AGM (Absorption Glass Mat), and LIB (Lithium Ion) batteries. It is suitable for charging battery capacities from 25 to 500 Amp-Hours and maintaining all battery sizes.

Getting Started. Before using the charger, carefully read the battery manufacturer's specific precautions and recommended rates of charge for the battery. Make sure to determine the voltage and chemistry of the battery by referring to your battery owner's manual prior to charging.

Mounting. The GX Series Chargers have four (4) external holes for mounting. Make sure there are no obstructions behind the mounting surface. It is important to keep in mind the distance to the battery. Allow for 12-inches (304mm) of slack in cables between connections.

Charging Modes. The GX Series Chargers have seven (7) modes: Standby, NORM, COLD/AGM, AGM+, LI-ION, REPAIR and SUPPLY. Some charge modes must be pressed and held for three (3) seconds to enter the mode. These "Press and Hold" modes are advanced charging modes that require your full attention before selecting. It is important to understand the differences and purpose of each charge mode. Do not operate the charger until you confirm the appropriate charge mode for your battery. Below is a brief description:

Basic Charging Modes

Voltage and current depend on model of charger. Specifications for each model are listed below.

Mode	Explanation
Standby	In Standby mode, the charger is not charging or providing any power to the battery. Energy Save is activated during this mode, drawing microscopic power from the electrical outlet. When selected, an orange LED will illuminate.
	No Power
NORM	For charging Wet Cell, Gel Cell, Enhanced Flooded, Maintenance-Free and Calcium batteries. When selected, a white LED will illuminate.
	GX2440 28.8V ± 0.3V 40A ± 1A
	GX3626 43.2 +/- 0.45V 26A ± 1A
	GX4820 57.6V +/- 0.6V 20A ± 1A
COLD/ AGM	For charging batteries in cold temperatures below 50°F (10°C) or AGM batteries. When selected, a blue LED will illuminate.
	GX2440 29.4V ± 0.3V 40A ± 1A
	GX3626 44.1V +/-0.45V 26A ± 1A
	GX4820 58.8V +/-0.6V 20A ± 1A

CAUTION:

ALWAYS VERIFY THE VOLTAGE OF A BATTERY SYSTEM BEFORE ATTEMPTING TO CHARGE. ONLY USE THE GX SERIES CHARGER THAT IS DESIGNED FOR THE SAME VOLTAGE AS YOUR BATTERY SYSTEM.

Advanced Charging Modes

IMPORTANT: Advanced Charge Modes are modes that require the users full attention when selecting.

Mode	Explanation
AGM+ Press & Hold	For charging advanced AGM batteries, which requires a higher than normal charging voltage. When selected, a blue LED will illuminate.
GX2440	31.2V ± 0.3V 40A ± 1A
GX3626	46.8V +/- 0.4V 26A ± 1A
GX4820	62.4V +/-0.6V 20A ± 1A
LI-ION Press & Hold	For charging lithium-ion batteries, including lithium iron phosphate. When selected, a blue LED will illuminate.
GX2440	29.2V ± 0.3V 40A ± 1A
GX3626	43.8V +/-0.45V 26A ± 1A
GX4820	58.4V +/- 0.6V 20A ± 1A
REPAIR Press & Hold	An advanced battery recovery mode for repairing and storing, old, idle, damaged, stratified or sulfated batteries. When selected, a red LED will illuminate and flash.
GX2440	32V ± 0.3V 5A ± 1A
GX3626	48V +/-0.45V 5A ± 1A
GX4820	64V +/-0.6V 5A ± 1A
SUPPLY Press & Hold	Converts to a DC power supply. When selected, a red LED will illuminate.
GX2440	27.2V ± 0.3V 20A ± 1A
GX3626	40.8V +/-0.45V 13A ± 1A
GX4820	54.4V +/-0.6V 10A ± 1A

Using AGM+. [Press & Hold]

AGM+ charge mode is designed for advanced AGM batteries only. Advanced AGM batteries are a new battery technology. These batteries accept a higher than normal charging voltage. AGM+ charge mode is NOT suitable for traditional AGM batteries. Consult the battery manufacturer before using this mode.

CAUTION. USE THIS MODE WITH CARE. THIS MODE IS FOR LEAD-ACID ADVANCED AGM BATTERIES ONLY. THIS MODE USES A HIGH CHARGING VOLTAGE AND MAY CAUSE SOME WATER LOSS IN WET (FLOODED) CELL BATTERIES OR OVERCHARGE IN SOME BATTERIES.

Using LI-ION. [Press & Hold]

LI-ION charge mode is for lithium-ion batteries only, including lithium iron phosphate batteries.

CAUTION. THIS MODE IS FOR LITHIUM BATTERIES ONLY. LITHIUM-ION BATTERIES ARE MADE AND CONSTRUCTED IN DIFFERENT WAYS AND SOME MAY OR MAY NOT CONTAIN A BATTERY MANAGEMENT SYSTEM (BMS). CONSULT THE LITHIUM BATTERY MANUFACTURER BEFORE CHARGING AND ASK FOR RECOMMENDED CHARGING RATES AND VOLTAGES. SOME LITHIUM-ION BATTERIES MAY BE UNSTABLE AND UNSUITABLE FOR CHARGING.

Using Repair. [Press & Hold]

Repair is an advanced battery recovery mode for repairing and storing, old, idle, damaged, stratified or sulfated batteries. Not all batteries can be recovered. Batteries tend to become damaged if kept at a low charge and/or never given the opportunity to receive a full charge. The most common battery problems are battery sulfation and stratification. Both battery sulfation and stratification will artificially raise the open circuit voltage of the battery, causing the battery to appear fully charged, while providing low capacity. Use Repair in attempt to reverse these problems. For optimal results, take the battery through a full charge cycle, bringing the battery to full charge, before using this mode. Repair can

take up to four (4) hours to complete the recovery process and will return to Standby when completed.

CAUTION. USE THIS MODE WITH CARE. THIS MODE IS FOR LEAD-ACID BATTERIES ONLY. THIS MODE USES A HIGH CHARGING VOLTAGE AND MAY CAUSE SOME WATER LOSS IN WET (FLOODED) CELL BATTERIES. BE ADVISED, SOME BATTERIES AND ELECTRONICS MAY BE SENSITIVE TO HIGH CHARGING VOLTAGES. TO MINIMIZE RISKS TO ELECTRONICS, DISCONNECT THE BATTERY BEFORE USING THIS MODE.

Using Supply. [Press & Hold]

Supply converts the charger to a constant current, constant voltage DC power supply. To enter Supply Mode, the charger must not be connected to the battery.

CAUTION. THIS MODE IS FOR LEAD-ACID BATTERIES ONLY. PRIOR TO USE, READ YOUR DEVICE MANUAL TO DETERMINE IF IT IS SUITABLE FOR USE WITH THIS MODE. BOTH THE SPARK PROOF AND REVERSE POLARITY SAFETY FEATURES ARE DISABLED IN THIS MODE. DO NOT ALLOW THE POSITIVE AND NEGATIVE BATTERY CLAMP OR EYELET TERMINAL CONNECTORS TO TOUCH OR CONNECT TO EACH OTHER AS THE CHARGER COULD GENERATE SPARKS. CHECK THE POLARITY OF THE BATTERY TERMINALS BEFORE USING THIS MODE.

Cable Connections

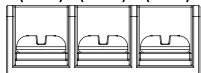
The GX Series Chargers have AC and DC connection ports that are designed to allow the user to choose custom cables to fit the desired application. Both the AC and DC connection ports are labeled to inform the user the proper way to install custom cables.

AC Input Connection Port

The AC Input Connection Port requires line (black), return (white) and ground (green) connections. The unit must be grounded for safe operation. 16AWG minimum wire gauge is required. Make sure all connections are securely tightened and insulated from each other before operation. To increase the charger's waterproofing, completely seal the entire connection with electric sealant.

AC Input Connection Port

Line (Black) Ground (Green) Return (White)



DC Output Connection Port

The DC Out Connection Port requires positive (red), and negative (black) connections. 10AWG minimum wire gauge is required. Make sure all connections are securely tightened and insulated from each other before operation. To increase the charger's waterproofing, completely seal the entire connection with electric sealant.

Inhibit Port (Optional For Operation)

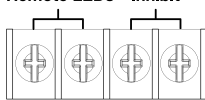
The Inhibit Port contains a Relay rated at 20A. When the Charger has AC power, the relay will close allowing current flow. When the charger is removed from AC power, it takes approximately 15 seconds for the capacitors to discharge and the relay to open.

Remote LEDs Port (Optional For Operation)

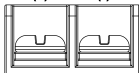
The Remote LEDs Port can be used to connect LEDs for easy monitoring when the charger's LEDs are not accessible. The port supports two LEDs, reversing polarity to change from "Charging" to "Charged."

DC Output Connection Port

Remote LEDs Inhibit



Positive (+) Negative (-)



Connecting to the Battery.

Do not connect the AC power plug until all other connections are made. Identify the correct polarity of the battery terminals on the battery. The positive battery terminal is typically marked by these letters or symbol (POS,P,+). The negative battery terminal is typically marked by these letters or symbol (NEG,N,-). Do not make any connections to the carburetor, fuel lines, or thin, sheet metal parts. The below instructions are for a negative ground system (most common). If your vehicle is a positive ground system (very uncommon), follow the below instructions in reverse order.

- 1.) Connect the positive (red) battery clamp or eyelet terminal connector to the positive (POS,P,+) battery terminal.
- 2.) Connect the negative (black) battery clamp or eyelet terminal connector to the negative (NEG,N,-) battery terminal or vehicle chassis.
- 3.) Connect the battery charger's AC power plug into a suitable electrical outlet. Do not face the battery when making this connection.
- 4.) When disconnecting the battery charger, disconnect in the reverse sequence, removing the negative first (or positive first for positive ground systems).

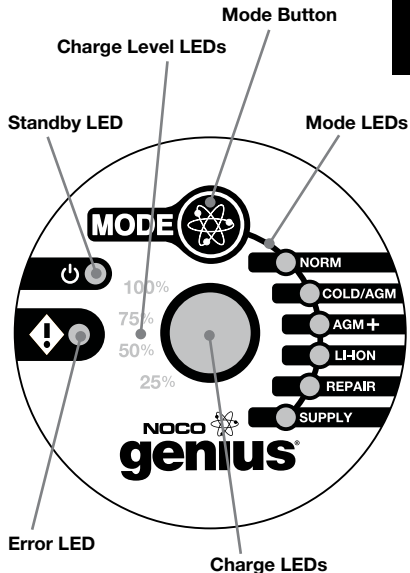
Begin Charging.

- 1.) Verify the voltage and chemistry of the battery.
- 2.) Confirm that you have connected the battery clamps or eyelet terminal connectors properly and the AC power plug is plugged into an electrical outlet.
- 3.) The charger will begin in Standby mode, indicated by an orange LED. In Standby, the charger is not providing any power.
- 4.) Press the mode button to toggle to the appropriate charge mode (press and hold for three seconds to enter an advanced charge mode) for the voltage and chemistry of your battery.
- 5.) The mode LED will illuminate the selected charge mode

and the Charge LEDs will illuminate (depending on the health of the battery) indicating the charging process has started.

- 6.) The charger can now be left connected to the battery at all times to provide maintenance charging.

User Interface



Understanding Charge LEDs.

The charger has four (4) Charge LEDs per bank - 25%, 50%, 75% and 100%. These Charge LEDs indicate the connected battery(s) state-of-charge (SOC). See the explanation below:

LED	Explanation
25% LED	The 25% Charge LED will be "on" when the battery is less than 25% fully charged. The RED charging LEDs will "spin" indicating the unit is charging.
50% LED	The 50% Charge LED will be "on" when the battery is less than 50% fully charged. The RED charging LEDs will "spin" indicating the unit is charging.
75% LED	The 75% Charge LED will be "on" when the battery is less than 75% fully charged. The RED charging LEDs will "spin" indicating the unit is charging.
100% LED	The 100% Charge LED will be "on" when the battery is less than 100% fully charged. The GREEN LED will illuminate solid indicating the battery is fully charged.

The RED LEDs will gradually spin slower as the battery charges.

Understanding Advanced Diagnostics.

Advanced Diagnostics is used when displaying Error Conditions. It will display a series of blink sequences that help you identify the cause of the error and potential solutions.

All Error Conditions are displayed with the Error LED and Standby LED flashing back and forth. The number of flashes between each pulse denotes a potential Error Condition (except reverse polarity and low-voltage battery).

Error	Reason/Solution
Single Flash	Battery will not hold a charge. Have battery checked by a professional.
Double Flash	Possible battery short. Have battery checked by a professional.
Triple Flash	Battery voltage is too high for the selected charge mode. Check the battery and charge mode.
Quadruple Flash	Abnormal AC grid power: VAC <85V or >250V, or Frequency <45Hz or >65Hz.
Error LED Solid Red	Reverse polarity. Reverse the battery connections.
Standby Solid Orange	Battery voltage is too low for charger to detect. Verify connection and mode selection, if still not working use Supply Mode to raise battery voltage.



Memory

Returns to last selected mode when restarted



Interactive

Alters the charging process based on organic battery feedback



Recovery

Applies a high-voltage pulse charge when low-voltage, sulfation or lost capacity is detected



Safe

Protects against reverse polarity, sparks, overcharging, overcurrent, open-circuits, short-circuits and overheating



Fast

Charges two times faster than traditional battery chargers



Compensation

Adjusts for varying A/C line voltage for consistent charging



Rugged

Dirt, water, UV, impact and crush resistant



Compact

High-frequency energy conversion for ultra-compact, lightweight and portable charger



Start-Stop

Counteracts increased cyclic energy demands placed on batteries in micro-hybrid vehicles



Firewall

Multi-level safety barrier that prevents abnormal and unsafe conditions



Optimization

Stabilizes internal battery chemistry for increased performance and longevity



Maintenance Plus

Keeps the battery fully charged without overcharging allowing the charger to be safely connected indefinitely



Energy Save

Minimizes energy consumption when full power is not needed



Load Tracking

Charge LEDs dynamically track the batteries state-of-charge when a load outpaces the charge current



Diagnostics

Intuitive visual diagnostic tool for detecting reverse polarity, low-voltage or damaged batteries



Thermal Monitor

Internal temperature sensors adjust charge based on ambient climate



Opportunity Charging

Designed to rapidly charge batteries in applications where charging is intermittent between use

Charging Steps.



Step 1 & 2: **Analyze & Diagnose**

Checks the battery's initial condition, including voltage, state-of-charge and health, to determine if the battery is stable before charging.

Step 3: **Recovery**

Initializes the Recovery desulfation process (if needed) for deeply discharged or sulfated batteries by pulsing small amounts of current.

Step 4: **Initialize**

Starts the charging process with a gentle (soft) charge.

Step 5 & 6: **Opportunity & Bulk**

Begins with opportunity charging at a high current, then steps down to the Bulk charging process based on the condition of the battery and returns 80% of the battery's capacity.

Step 7: **Absorption**

Brings the charge level to 90% by delivering small amounts of current to provide a safe, efficient charge. This limits battery gassing and is essential to prolonging battery life.

Step 8: **Optimization**

Finalizes the charging process and brings the battery to maximum capacity. In this step, the charger utilizes multi-layered charging profiles to fully recapture capacity and optimize the specific gravity of the battery for increased run time and performance. The charger will switch to Maintenance if the battery tells the charger that more current is needed.

Step 9: **Maintenance**

Continuously monitors the battery to determine when a maintenance charge should be initiated. If the battery voltage falls below its target threshold, the charger will restart the Maintenance cycle until voltage reaches its optimal state and then discontinues the charge cycle. The cycle between Optimization and Maintenance is repeated indefinitely to keep the battery at full charge. The battery charger can be safely left connected indefinitely without the risk of overcharging.

Technical Specifications.

Input Voltage AC:	110-240 VAC, 50-60Hz
Working Voltage AC:	85-240 VAC, 50-60Hz
Efficiency:	90% Approx.
Power:	960W Max
Back Current Drain:	<5mA
Operating Temperature:	-20°C to +50°C
Storage Temperature:	-40°C to +70°C
Charger Type:	9 Step, Smart Charger
Battery Chemistries:	Wet, Gel, MF, CA, EFB, AGM & LIB
Battery Capacity:	55-425Ah, Maintains All Battery Sizes
Housing Protection:	IP66
Cooling:	Natural Convection
Power Factor Full Load:	>0.96
Max. AC Current Full Load:	12A @ 105VAC
Dimensions:	30.4 x 21.6 x 10.3 cm
Weight:	6kg (13.2lbs)

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