

OPTIMA[®] ORANGETOP™

Q31M series

LITHIUM IRON PHOSPHATE BATTERY

User Manual



This User Manual contains important information on safety, installation, charging, operation, troubleshooting and maintenance. You should read the entire manual before installing your battery and save it for future reference.

For customer service contact us at:

**(888) 8OPTIMA
(888) 867-8462**

**<https://www.optimabatteries.com/contact-us>
info@optimabatteries.com**

**5757 N. Green Bay Ave
P.O. Box 591
Glendale, WI 53201**

Say Hello to The Ultimate Power Source!

Congratulations on your purchase of an OPTIMA® Batteries ORANGETOP™ with HYPERCORE LITHIUM TECHNOLOGY™, one of the world's most sophisticated lithium GR31 batteries. OPTIMA is a division of Clarios, the world's largest supplier of OE 12V lithium battery systems. Our industry leading team has Engineered the Quit Out of Your Battery, so you can be confident it'll start when you need it.

Your new battery includes many innovative features such as a sophisticated Battery Management System (BMS) that continuously monitors battery charging and discharging, short circuit protection and current management to provide better performance and safety for you. The OPTIMA Bluetooth app provides real-time battery status and usage information. If you are interested in learning more about the technology of your new battery, please visit our web site at www.optimabatteries.com

In order for you to benefit from these performance and safety features it is necessary that you familiarize yourself with the proper way to install, charge, operate, care for and store your battery as described in this manual. It is important that you read and understand everything in this manual. Your safety and satisfaction depend on it!

If you have questions or are uncertain about anything having to do with your new battery or any of the information in this manual please contact our customer service department by phone at **(888) 8OPTIMA / (888) 867-8462**, by email at info@optimabatteries.com or on the web at <https://www.optimabatteries.com/contact-us>.

Sincerely,

The *OPTIMA* Team

Important Safety Information

Safe and effective use of your new OPTIMA battery requires that you make yourself aware of your responsibilities for selecting the right battery for your application, preparing for and installing your battery and the proper charging, use and care of your battery. The OPTIMA Battery has been designed to minimize the risk of personal injury and equipment damage arising from the intended use or foreseeable misuse of this battery. However, this is a battery and therefore it is a source of energy that, if not used properly, could lead to personal injury or vehicle damage.

Throughout this User Manual the following signal words and/or symbols will be used to call your attention to specific information as described below.

	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.
	WARNING indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	NOTICE indicates information considered important, but not hazard-related.

The following symbols are used to call your attention to specific safety measures you should follow.



Read User Manual. This message refers not only to this User Manual, but also your vehicle and battery charger User Manuals.



No sparks, fire or smoking. It is important that you minimize the presence of ignition sources and extreme heat near your battery and your internal combustion engine.



Use protective eyewear. You should always wear goggles or safety glasses as well as gloves when working on or near batteries and any boat or vehicle equipment.

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Selecting the Right Battery

The OPTIMA dual purpose lithium battery (Q31M-DP120) is intended to be a combination starter and deep cycle battery for a variety of boats, RVs or other vehicles.

The OPTIMA deep cycle lithium battery (Q31M-DC150) is intended to be used as a deep cycle battery, as would be used for trolling motors or RV “house battery” applications.

OPTIMA lithium batteries are not intended to be used as a power source for propulsion of electric or hybrid vehicles.

Before proceeding with the installation and use of this battery you need to make sure that this battery is appropriate for your intended use. See section “Protection Limits” in this manual or on our website at www.optimabatteries.com

Battery Overview

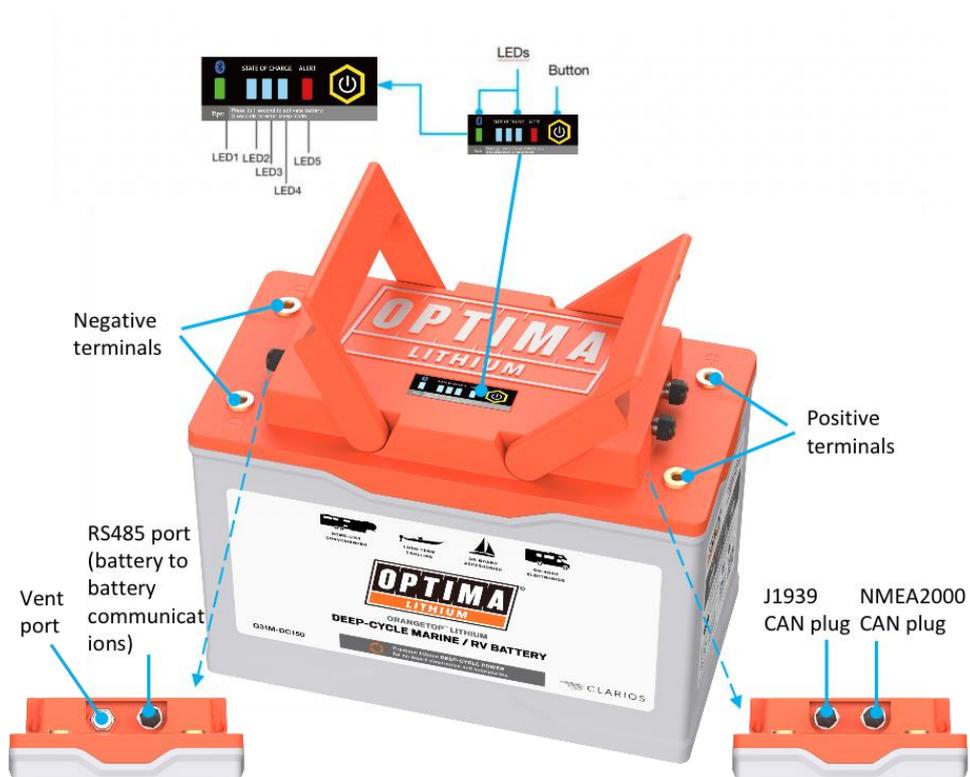


Figure #1

Table 1: LED, Control and Technical Specifications

LEDs						
Battery State of Charge	LED 1	LED2	LED3	LED4	LED5	
		Green	Blue	Blue	Blue	Red
	Bluetooth (BT)		State of Charge			Alert
60-100%	n/a	On	On	On	n/a	
20-60%	n/a	Off	On	On	n/a	
0-20%	n/a	Off	Off	Flashing, 1s on/off	n/a	
Fault or Error	n/a	n/a	n/a	n/a	See 'Alert indication'	
Energy saving mode	n/a		Flashing, 5s off, 0.25s on			
Primary Battery (multi-battery)	BT connected	Flashing, 2s on,3s off	n/a	n/a	n/a	n/a
	BT disconnected	On, Constant	n/a	n/a	n/a	n/a
Secondary Battery	BT connected	Flashing - 1s on/off	n/a	n/a	n/a	n/a
	BT disconnected	Off	n/a	n/a	n/a	n/a
Power Off	Off		Off	Off	Off	Off
Button Controls						
Short press(1Sec): Activate battery from energy saving mode or sleep mode						
Long press(3Sec): Enter sleep mode						
Long press(5Sec): Clear BMS fault and red alert LED, start self-test						
Press 10 sec - Enter setup mode, to establish which battery is "primary" for multi-battery systems						
Alert indication						
BMS protection	LED5	Indication				
Over charge	Red	2 fast, 1 slow				
Over current	Red	3 fast, 1 slow				
Over temperature	Red	4 fast, 1 slow				
Under temperature	Red	5 fast, 1 slow				
Self-Test Failure	Red	Constant				
Multiple failures	Red	1 fast, 1 slow				
Technical Specification						
	Q31M-DP120			Q31M-DC150		
Capacity, Nominal (Ah)	120			150		
Operating/Discharge Temp Limits	-4F to 131F (-20°C to 55°C)			-4F to 131F (-20°C to 55°C)		
Charging Temp Limits	32F to 113F (0°C to 45°C)			-22F to 113F (-30°C to 45°C)		
Recommended Storage Temperature	32°F to 77°F (0°C to 25°C)					
Recommended Storage Voltage	13.2V to 13.4V					
Charging Voltage - Max	14.6V					
Voltage at 100% Charge	14.4V					
Max Charging Current, continuous (A)	120A			150A		
Max Current	1200A (10 sec)			450A (5 sec)		
Max discharge current, continuous (A)	200A			150A		
Length - inch (mm)	12.99 (330)					
Width- inch (mm)	6.81 (173)					
Height- inch (mm)	9.45 (240)					
Weight lb (kg)	43.2(19.6)			38.4 (17.4)		

OPTIMA Lithium Bluetooth App

The OPTIMA Lithium Bluetooth app is necessary to take advantage of the enhanced functionality it provides. The OPTIMA Lithium Bluetooth app can be downloaded for free from the Apple app store and Google Play store by searching for “OPTIMA LITHIUM BLUETOOTH”.

To connect a battery, confirm only the battery you want to pair with is active. Blue LED or LEDs illuminated on top of the battery confirm the battery is active. Within the app, add the selected battery to the system. If you have multiple batteries in the application, continue activating and adding one battery at a time. Where multiple batteries are installed, an individual battery can be checked by clicking the '+' icon on the Basic Info page. Up to 4 batteries may be added, but the information for only 1 battery at a time can be displayed.

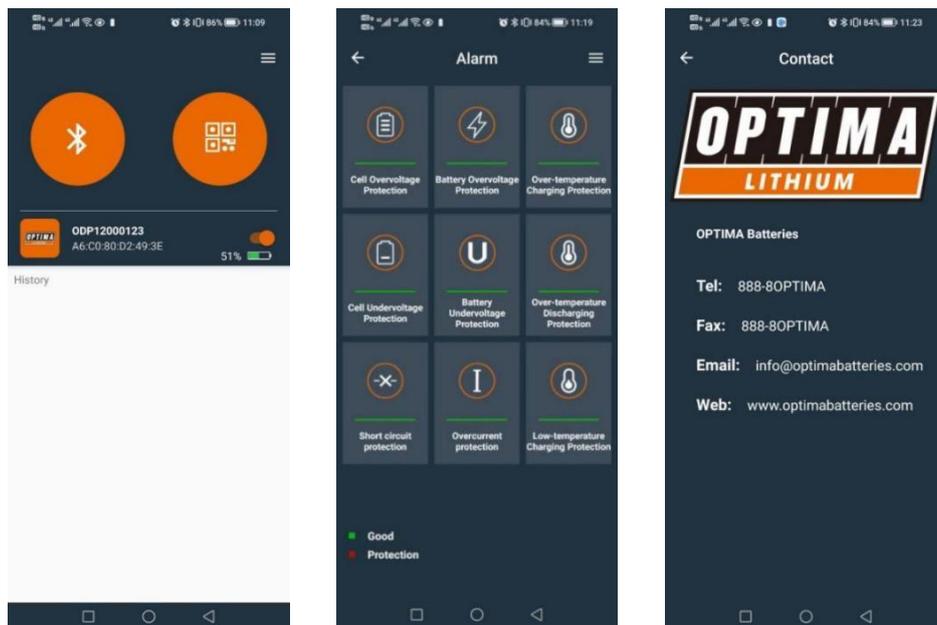


Figure #2

Unpacking Your Battery

Inspect your battery to make sure that it was not damaged during shipping. Confirm the battery case is not damaged or misshapen in anyway. There should not be anything leaking from the battery. If you see signs of damage or have reason to believe the battery has been dropped, do not use it. Contact OPTIMA customer service at 888-8OPTIMA or info@optimabatteries.com

When received, your battery should be in “sleep/storage” mode, and no LEDs on top of the battery will be illuminated. If the battery is not in sleep mode, you can go to the next step. To activate the battery, hold the yellow button located on top of the battery for three (3) seconds.

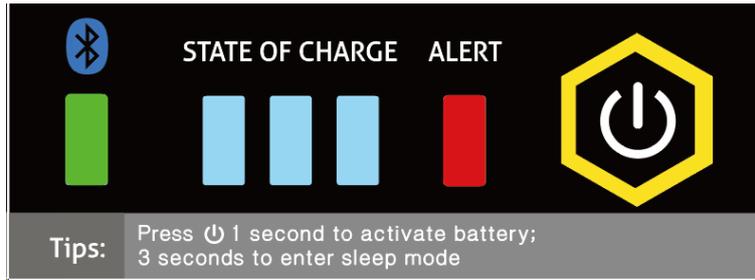


Figure #3

An illuminated or flashing LED on top of the battery means that the battery has been activated.

Before Installing Your Battery

	<p>Wear goggles or safety glasses as well as gloves at all times when working on or near batteries and any automotive equipment.</p>
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	<p>Read User Manuals. This message refers not only to this User Manual, but also your vehicle and battery charger User Manuals.</p>
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Check your vehicle charging system

A qualified technician must test your vehicle charging system before installation of your Optima battery. Testing should be done with the engine running, both with a battery connected and disconnected, throughout the engine’s RPM range. During this test the output voltage from the vehicle charging system must never exceed 15V, with 14.4V being a typical/expected measurement. OEM-style solid state voltage regulators are strongly recommended for older vehicles (generally, pre-1995). Damage due to a defective or malfunctioning charging system is not covered by warranty.

<p>NOTICE</p>	<p>For any application where charging is via the vehicle’s charging system, a DC-to-DC charger installed between the alternator and the battery is recommended to ensure the best performance and life. DC-to-DC chargers (sold separately) can be programmed to configure multi-stage charging of your batteries that will provide control of charging voltage and current to the batteries.</p>
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When the battery is being charged in an application other than your vehicle, you may use a DC-to-DC charger.

 WARNING	A failed or defective charging system can cause your battery to be dangerously overcharged. Failure to check and maintain your charging system can result in fire, explosion or damage to property.
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Charging Your Battery

	Lithium-enabled OPTIMA Chargers were designed to function as a system with OPTIMA lithium batteries to ensure maximum safety, service life, performance, functionality and convenience.
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 WARNING	Lead acid chargers or charge profiles are not optimized for charging lithium batteries and could result in subpar performance, reduced battery life, fire or property damage. Always use a lithium-enabled charger.
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Do not use:

- Lead acid battery charging profiles.
- Chargers/charge profiles for flooded/SLI batteries, AGM or gel batteries.
- Chargers/profiles with a desulfation/antisulfation/reconditioning mode or function.

Your battery may not be fully charged when received. You must fully charge the battery before use if connecting multiple batteries or if the indicated state of charge is less than 60%. Use only chargers or profiles for 12V lithium iron phosphate (aka LFP or LiFePO4) batteries.

The battery balancing function ensures equal state of charge for all cells

See “Technical Specifications” for charging parameters.

The battery will only charge/discharge within the specified temperature ranges. Never charge a battery that is frozen.

Ensure adequate alternator airflow and cooling, do not idle or run engine at low RPM excessively.

NOTICE	Use a charger (not the alternator) to recharge deeply discharged batteries. Failure to do so could damage the alternator.
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Stop charging and contact support if at any time the battery emits odors, gases or smoke, gets hot or swells/deforms.

The battery will automatically wake from sleep/storage mode if an OPTIMA lithium enabled charger is used. If using a different charger, if the battery does not wake up on its own, you must manually “wake” the battery using the button on the top of the battery, or the OPTIMA Lithium Bluetooth app.

NOTICE

Lithium batteries do not have a “memory effect,” fully discharging before initial charging or periodically discharging is not necessary and could reduce overall life.

Installing Your Battery

1. **Remove old battery**, disconnecting the ground terminal first.
2. **If utilized, install the CAN/NEMA2000 “Y” cable** on the battery. NOTE: There are 3 plugs on the battery, labeled for their function (CAN, NEMA, RS485). Communications cables must be connected to the correct plug to work properly.
3. **Put the battery in place**, check to make sure that there isn’t movement in any direction, and that the top of the battery/terminals have adequate clearance when installed.
4. **Temporarily place the CAN/NEMA Y-cable** out of the way, so that it will not interfere with the battery cable connections.
5. **Reconnect battery cables**. Do not exceed 106 in-lb (12 NM) when tightening the terminals. Replace included covers on unused terminals. Anti-corrosion spray is recommended for the terminals, especially in damp or salty environments.
6. **Reinstall the battery hold-down**. The battery must always be securely mounted with a proper hold-down. The battery should never be secured only by the connections at the terminals.

Route and interconnect the CAN/NEMA cables, using Figures #4 - #5 below as a reference. Ensure that the cables are away from excessive sources of heat or water intrusion (reinstall the rubber plugs in the CAN/NMEA plugs when not in use), will not be pinched or damaged when the vehicle is in use and do not interfere with operation of the vehicle or controls. NOTE: There are 3 plugs on the battery, all of which are labeled for their specific function. The CAN or NEMA cables must be connected to the correct plug on the battery to work properly.

Multi Battery Systems

OPTIMA Q31M-DP120 and Q31M-DC150 can be connected up to 4 in series and 4 in parallel (also known as 4S4P). Interconnected batteries must be the same size, type and age.

Before connecting, fully charge all batteries to ensure the same state of charge.

Your OPTIMA Q31M series batteries are capable of battery-to-battery communications, enabling increased performance and life by establishing a “primary” battery which will provide oversight and help ensure consistent charge and discharge of all batteries in a multi-battery system. Please use the included Y cable to connect batteries in a multi-battery system. This RS485 cable is not used for single battery systems. Please reference the images below in Figures #5 & #7 for examples of various battery configurations and how to connect the communications cables in your multi-battery system. NOTE: There are 3 plugs on the battery, all of which are labeled for their specific function. The battery-to-battery communications cables must be connected to the port labeled “RS485” for parallel connection and the port labeled “CAN” for series connection.

After making all cable connections, the next step is to designate the “primary” battery for the string. When batteries are interconnected, the first battery you connect becomes primary. To designate the primary battery, hold the button on this battery for 10 seconds. Any other batteries in the system will automatically be designated as “secondary”.

To manually toggle between active mode/sleep mode, long press the button on the primary battery in the system for 3 seconds. Where multiple batteries are connected in a series and/or parallel string, all batteries will enter/exit sleep mode together.

Below illustrate some common installation options. Consult the manual for your vehicle or other application for additional information or specific instructions.

Figure #4: NMEA 2000 rigging for series (24v, 36v, 48V) battery connections

1. Using a NMEA cable (not included), connect the plug labeled “NMEA” on battery #1 to the NMEA backbone. This will be the “primary” battery.
2. Connect the Y-cable (included) plug labeled “CAN/485” to the battery plug labeled “CAN” on each battery in the string. The Y-cables will provide both NMEA2000 and battery-to-battery communication.
3. Interconnect the Y-cables on each battery, connecting the plug on the y-cable labeled “out” of battery 1 to the plug labeled “in” of battery 2. Connect additional/secondary batteries in the string similarly, “out” of battery 2 to “in” of battery 3, etc.
4. Install NMEA termination resistors on the open Y cable plugs on the first and last batteries of the string.
5. After all NMEA and battery terminal connections are complete, hold the button on battery #1 for 10 seconds to assign the primary battery on the NMEA network. This

allows the primary battery to manage and communicate the information for all secondary batteries to the NMEA network.

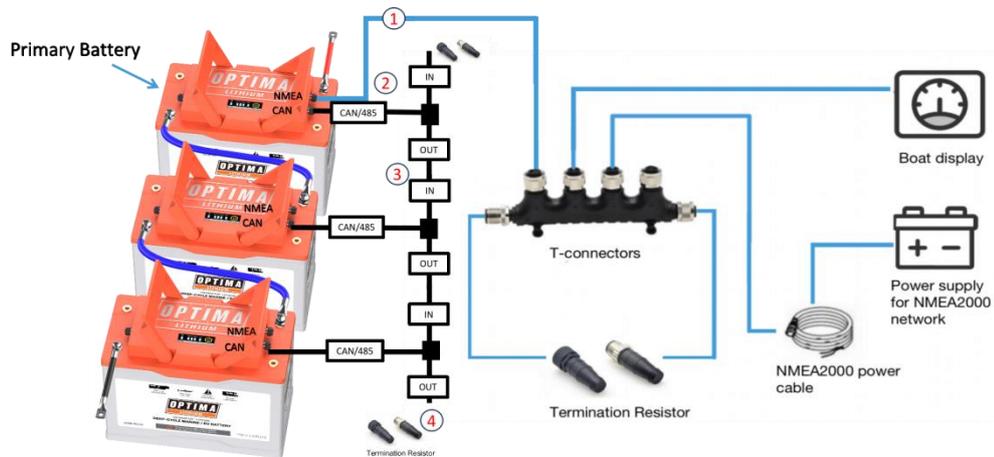
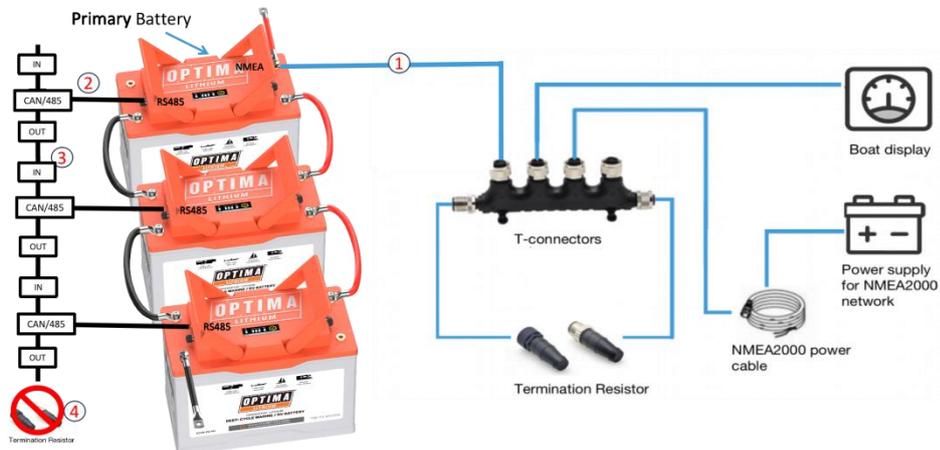


Figure #4

Figure #5: NMEA 2000 rigging for parallel (12v) battery connections

1. Using a NMEA cable (not included), connect the plug labeled “NMEA” on battery #1 to the NMEA backbone. This will be the “primary” battery.
2. Connect the Y-cable (included) plug labeled “CAN/485” to the battery plug labeled “RS485” on each battery in the string. The Y-cables will provide both NMEA2000 and battery-to-battery communication.
3. Interconnect the Y-cables on each battery, connecting the plug on the y-cable labeled “out” of battery 1 to the plug labeled “in” of battery 2. Connect additional batteries in the string similarly, “out” of battery 2 to “in” of battery 3, etc. The Y-cables provide both NMEA2000 and battery-to-battery communication.
4. For batteries connected in parallel, DO NOT Install NMEA termination resistors on the open Y cable plugs on the first and last batteries of the string.
5. After all NMEA and battery terminal connections are complete, hold the button on battery #1 for 10 seconds to assign the primary battery on the NMEA network. This allows the primary battery to manage and communicate the information for all secondary batteries to the NMEA network.



This allows the primary battery to manage and communicate the information for all secondary batteries to the NMEA network.

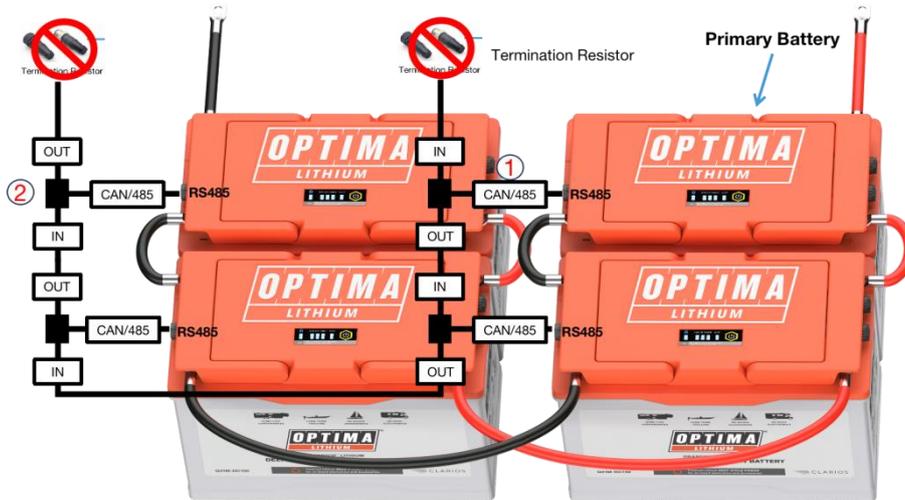


Figure #7

	<p>The battery should be installed so that it is not exposed to excessive heat (above 140°F/60°C) such as next to an exhaust manifold.</p>
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Lithium batteries weigh substantially less than the lead acid batteries they replace. Some vehicles and equipment may be designed to utilize the original battery weight to achieve the manufacturer’s intended weight distribution.

	<p>Users and installers must understand the possible consequences of changing the weight distribution, balance or stability of the vehicle or equipment and assume all responsibility and liability for damages, injury or accidents that may result.</p>
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	<p>Parallel and Series connections should only be done with batteries of the same size, type/technology and age, or reduced service life and performance will result. Parallel connections must be made with the batteries at equal levels of charge or sparks or explosion could occur. All connections must have appropriate circuit protection via fuses, circuit breakers or similar current protection devices. Do not connect more than 4 batteries in series and/or 4 batteries in parallel (max 4S4P).</p>
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Protection Limits

As shown in the table below, OPTIMA Lithium batteries are designed to automatically shut down under various excessive conditions to prevent damage to the battery and connected equipment. In most applications this will only result in a loss of power from the battery.

NOTICE	You must take precautions to ensure that sudden loss of electrical power from the battery does not result in hazardous system behavior of your vehicle.
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Control Item		Shutdown Limit/Condition	Reactivation Condition	Notes
Over voltage		$V \geq 14.8V$, 3 seconds	$V \leq 13.8V$	
Under voltage		$V \leq 8V$, 3 seconds	$V \geq 10V$	
		$V \leq 7.2V$		
Over current	Charge	Deep Cycle - $>180A$ for 5sec Dual Purpose - $>300A$ for 5sec	Charge current not exceeding rating	Battery will disconnect for 5 seconds, checking charge current for 3 seconds. After 3 faults, the fault must be manually cleared by holding the button 5 seconds
		Deep Cycle and Dual Purpose - $\geq 450A$ for 0.5 sec		Must be manually cleared by holding the button 5 seconds.
	Discharge	Deep Cycle - $>450A$ for 5sec Dual Purpose - $>1200A$ for 10sec	After 3 seconds	Battery will disconnect for (DC: 5S & DP for 10S), checking discharge current for 3 seconds. After 3 faults, the fault will automatically clear after 10 minutes or may be manually cleared by holding the button 5 seconds
Short Circuit		$I >$ short circuit current for 200us	Automatically clear after 10mins	Remove the short circuit, and fault will automatically clear after 10 minutes or may be manually cleared by holding the button 5 seconds
Over Temp	Charge	131F (55°C)	113F (45°C)	
	Discharge	140F (60°C)	131F (55°C)	
Under Temp	Charge	32F (0°C)	41F (5°C)	DC150 heater can expand the charging temp to 22F (-30°C)
	Discharge	-4F (-20°C)	5F (-15°C)	
Energy saving mode		Enter: Charge or discharge current below 1A for 72hrs	Exit : Press the button for 1S or charge/discharge battery	
Activation		Press button	Press the button for 3S	
		Charging	If battery is not active, charger voltage must be 1.2V higher than battery voltage to activate	

Troubleshooting

See Table 1 for LED, control and technical specifications

New Battery

Upon receipt, check the state of charge of your battery to determine whether additional charging is necessary. Your battery should arrive in “Sleep/Storage” mode, to minimize discharge in transit and distribution. To activate the battery, hold the yellow button located on top of the battery for three (3) seconds.

An illuminated or flashing LED on top of the battery means that the battery has been activated.

“Dead” battery.

Blue LEDs on top of the battery indicate state of charge. If the battery is “dead” or deeply discharged, connect a charger to fully charge the battery as soon as possible. Please see section “Charging Your Battery” for more information.

The vehicle electrical charging system is not intended to be used to charge a “dead” or deeply discharged battery, doing so will damage or reduce the life of your vehicle’s charging system components, including but not limited to the alternator and voltage regulator.

See section “Charging Your Battery” for more information.

Cold-Weather Alert

Please note that as with all batteries, cold temperatures will result in reduced performance. When temperatures are below 32°F/0°C, applying a load to the battery will cause the internal temperature to increase slightly and can improve performance. Successive starting attempts may have more power than the initial attempt for this reason. Turning on lights or other high powered electrical loads for up to five (5) minutes will often increase internal temperature enough to be beneficial. Cold-weather performance is best when the battery is fully charged. See section “Protection Limits” for temperature limits and more information.

The Q31M-DC150 is equipped with cell heaters, which expand the range at which charging can begin to as low as -22F(-30C). At temperatures where the cell heaters are activated, power from the connected charger will first be used to supply power to the heaters (50W max) until the cells are sufficiently warmed, with any excess power being used to charge the battery.

Battery is Unexpectedly Discharged

Over-discharge or unexpected battery discharge is the number one complaint for seasonal-use vehicles.

Depending on battery size/capacity, storage temperature and initial charge, OPTIMA lithium batteries can be stored up to three (3) years in sleep/storage mode. If the battery is discharging at a high rate, it likely is due to power drawn from the vehicle even when the key is off, by things such as alarms, control modules or aftermarket accessories.

Not Charging

When using an OPTIMA lithium-enabled charger, charging will automatically activate the battery from sleep/storage mode. If the battery does not automatically activate from charging, hold the yellow button on the top of the battery for three (3) seconds. The LED on top of the battery will flash to indicate activation.

Gassing/smell/bowing/bulging

If at any time the battery emits gases, fluids, flames, smoke, unusual smells, or the sides bulge, discontinue vehicle/battery use or charging immediately, and contact OPTIMA.

Always confirm that an appropriate lithium-enabled charger was used. See section “Charging Your Battery” for more information on charging.

CAN/NMEA communications errors

If at any time the communications functions do not work, confirm that the communication cabling is connected properly and not damaged. If the cabling is connected and not damaged, please contact OPTIMA.

Using OPTIMA lithium batteries with POWER-POLE CHARGE

If the OPTIMA lithium batteries are in sleep mode when the POWER-POLE CHARGE is powered, it will trigger a fault on the charger.

OPTIMA Lithium GR31 batteries will automatically enter sleep mode after 3 days of non-use or charging.

If the batteries are activated after this charger fault has been triggered, the charger may not automatically recognize that the batteries are powered and clear the fault.

To manually clear the fault, it is required to interrupt power between the charger and 12v battery bank.

A “soft reset” of the charger (by holding the orange charger button) will not clear the fault, the fault can only be manually cleared by interrupting 12V power to the charger.

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Warranty and Warranty Restrictions

Product Registration: Please register your purchase at www.optimabatteries.com, at the “Register Battery” link.

Every OPTIMA® Lithium battery we make has safeguards. However, please be aware that if you leave the battery in a deeply discharged state for an extended period, the battery could stop working permanently due to over-discharge. Over-discharge is not a defect covered by warranty; it is product abuse.

OPTIMA® Lithium Technical and Warranty Support

- In the event you need technical or warranty support, please call OPTIMA® Batteries customer service at 1-888-867-8462 between 9 a.m.-5 p.m. (CST) Monday through Friday, or via email at info@optimabatteries.com
- All batteries returned to OPTIMA® must first be authorized by OPTIMA®. Units returned without an RMA# may be misplaced or delayed.

LIMITED WARRANTY - OPTIMA® (the “Manufacturer”) warrants this battery (the “product”) for two years from the date of original purchase at retail against defects in material or workmanship that may occur under normal use and care.

If the product is not free from defects in material or workmanship, the Manufacturer’s obligation under this warranty is solely to repair or replace your product with a new or reconditioned product, at the option of the Manufacturer. It is your obligation to send the product, along with a copy of the original purchase receipt, postage prepaid to the Manufacturer, in order for repair or replacement to occur. Hand-written receipts will not be accepted. This limited warranty is not transferable to subsequent purchasers.

THIS LIMITED WARRANTY IS VOID IF THE PRODUCT OR INCLUDED ACCESSORIES ARE MISUSED, ABUSED, SUBJECTED TO CARELESS HANDLING, OPENED, REPAIRED, ALTERED, MODIFIED, OR IF THIS PRODUCT IS RESOLD THROUGH AN UNAUTHORIZED RETAILER OR THIRD-PARTY. FOR EXAMPLE:

- Changes to internal resistance or capacity due to aging, cycling or normal wear/use
- Batteries used in deep cycling, electric vehicles (such as electric bikes, go-karts, forklifts, golf carts, ride-on toys), “total loss” or other motive power applications or systems
- Incidental or other damage due to defective or inadequate vehicle/system voltage regulation, wiring errors such as arcing, short circuit, etc. or electrical issues caused by the vehicle
- Cosmetic damage

- Damage occurring during shipping or mishandling. Shipping damage is the responsibility of the shipping company and should be addressed through them (UPS, FedEx, etc.)
- Physical damage arising from drop, impact, puncture, cracks, or heat/melting from an external heat source
- Exceeding temperature, voltage or current specifications outlined in User Manual
- Corrosion or environmental damage such as exposure to liquids or corrosive environments, fire, chemicals, fuel, salt water, dirt or debris. This includes exposure or damage resulting from improper maintenance or cleaning of the battery.
- Batteries used with a battery charger or charging profile that does not meet specifications outlined in User Manual. Do not use battery chargers, maintainers or charging profiles for lead acid batteries.
- Improper installation such as loose, over-torqued or incorrect terminal connections; improper or inadequate cable gauge; improperly securing the battery; incorrectly installing fitment spacers; exposure to excessive heat or inadequate air flow; improper use or installation via POWERLINK plug or connectors.
- Leaving the battery in a deeply discharged state (below 8 volts) for an extended period resulting in over-discharge.

Manufacturer does not provide any warranty for any accessories used with this product that are not manufactured by OPTIMA® and approved for use with this product. This product is not intended for commercial use, and such use will void your warranty.

WARRANTY DISCLAIMER: OTHER THAN THE LIMITED WARRANTY EXPRESSLY STATED HEREIN, MANUFACTURER MAKES NO OTHER WARRANTIES OF ANY KIND AS TO THE PRODUCT SOLD TO CUSTOMER, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Limitation of Liability: Further, manufacturer shall not be liable for any incidental, special or consequential damage claims incurred by purchasers, users or others associated with this product, including, but not limited to, property damage, lost profits, revenues, anticipated sales, business opportunities, goodwill, business interruption and any other injury or damage. Any and all such warranties, other than the limited warranty included herein, are hereby expressly disclaimed and excluded.

THIS LIMITED WARRANTY IS THE ONLY EXPRESS LIMITED WARRANTY, AND MANUFACTURER NEITHER ASSUMES OR AUTHORIZES ANYONE TO ASSUME OR MAKE ANY OTHER OBLIGATION TOWARDS THE PRODUCT OTHER THAN THIS WARRANTY