



Lithionics Battery Internal Heater Kit (available on GT and GTX Series only)

Type 1 vs Type 2 Lithium-Ion Battery Heater Kit Options:

Type 1 Pricing: \$479.44

Type 2 Pricing: \$588.24

Type 1 Available on the Advanced Series BMS per Note 1* or the Standard Series BMS per Note 2**

- The Type 1 heater kit uses a thermostat built into the BMS (internal or external models).
- The heater kit uses battery-negative for ground (internally) thus requiring the user to bring a 12 Volt positive connection to pin number 4 on the AMPSEAL connector* (Advanced Series BMS). **On the Standard Series BMS, heater power positive is via a Delphi Weatherpack Single/Positive connector.
- The battery is required to be in the ON position for the heater kit to function.
- The Type 1 heater kit is best for users who will continuously use the battery and has availability for shore power to maintain the battery temperature for immediate use.

Type 2 Available on the Advanced Series or Standard Series BMS

- This version uses a separate solid-state thermostat that is located adjacent to the lithium core and is separate from the BMS thermostat, this there is an upcharge for this version.
- The module (external BMS model) or battery (internal BMS model) will have a 2-pin Delphi Weatherpack connector or "dongle" exiting the case. There are 2 ways to power the thermostat and heater kit:
 1. Bring the positive and negative connection points back to the DC common bus. Thus, if DC power sources are available, the thermostat is powered. Use this feature when using the batteries.
 2. The Type 2 kit affords the user the ability to turn the battery off, placing it into storage and to use an AC to DC power supply (example attached on the PDF) to bring a simple extension cord from an AC plug and power the thermostat in "storage mode" through the winter season. You may purchase the power supply from Lithionics Battery (click here for the power supply PDF) but if you choose to purchase your own, size it for a 90 Watt surge followed by a 70 Watt continuous output. The heater kit operates 50% duty cycle per hour thus about 30 Watts per hour power consumption net.



Theory of Operation:

The heater kit is a convecting type heating system internal to the battery or module that applies an average of 15 to 30 watts per hour (at -4F/-20C continuous ambient temperatures) and is controlled by an automatic thermostat. The thermostat maintains the lithium cell/core to a temperature between 35 and 40 degrees faranheight. This permits sub-freezing charging operation as well as a safe and durable storage condition in winter months.

Factory-Installed Inside a Module

-A solid-state thermostat and switching circuit is located adjacent to the lithium core.

-A proprietary silicone convection heating element is installed directly to the lithium cell surfaces.

-The module will have a 2-pin Delphi Weatherpack connector or “dongle” exiting the case. There are 2 ways to power the thermostat and heater kit:

1. Bring the positive and negative connection points back to the DC common bus. Thus, if DC power sources are available, the thermostat is powered. Use this feature when batteries are ON and in-use.

2. The module-based heater kit affords the user the ability to turn the battery off, placing it into storage mode, using an AC to DC power supply (available from Lithionics Battery) to bring a simple extension cord from an AC outlet to power the thermostat in “storage mode” through the winter season. You may purchase the power supply from Lithionics Battery but if you choose to purchase your own, size it for a 90 watt surge followed by a 70 watt continuous output. The heater kit operates 50% duty cycle per hour thus about 30 watts per hour power consumption net.

3. The purpose of a heater kit internal to a module is to permit future expansion of additional modules using our Plug and Play Comber Box expansion system

Factory Installed Inside an Internal BMS Battery (PN Example: GTX12V315A-E2017-CS200)

-All batteries with an internal BMS with a suffix of “-CS200” have a full thermostat and heater pad internal and is always battery-powered. There is no exterior connection for the heater power as there is with a module.

-The battery must be ON for heater power to be available. In the event that no shore power or solar power is available, the battery will self-power and self-heat for a certain number of days or weeks and then the battery management system will power off when the battery is depleted.

-Always be sure to monitor your battery voltage and ensure that depleted batteries are re-charged.

All batteries have natural self-discharge of the raw cells and thus a depleted battery can be harmed if left in the depleted state and not properly maintained. For storage procedures and advice, go to our website to locate the correct user guide for storage.



Internal Cold-Weather Heating Kit

Heater Setup:

- Proprietary heating kit is installed internally to the Lithium Battery module
- A solid-state thermostat device controls the heaters on at 35F and off at 40F
- The heating kit requires 12V DC (24V option available) to power the heating element

Separate cable leads are provided on the battery module for the heating kit to allow you to connect battery power or a supplemental 12V DC power source (e.g. 12V chassis/alternator power, AC-DC converter from shore power, DC-DC converter from higher battery voltage). Please contact Lithionics Battery® for recommendations on wiring and powering the heater kit.

Heater Performance:

- Max heater consumption is 80W
- Typical duty cycle to maintain the lithium core between 35-40F is approximately 55W at subfreezing temperatures, which is much more efficient than an external heating element. Additional note: This assumes the battery is sitting unused and idle. Any additional charge or discharge loads will cause the battery to self-heat and the required duty cycle of the internal heaters would become less.

Available on the Following Models:

GTR Models	GT 12V Models	GT 24V Models	GT 48V & 51V Models
GTR12V150A-30H-Module	GT12V150A-G31EXT-Module	GT24V75A-G31EXT-Module	GT48/51V75A-GC2E-Module
GTR12V300A-5D-Module	GT12V300A-GC2E-Module	GT24V150A-GC2E-Module	GT48/51V150A-8DR-Module
GTR12V450A-F39-Module	GT12V450A-8DR-Module	GT24V300A-8DR-Module	GT48/51V150A-F24-Module
GTR12V600A-F39-Module	GT12V525A-8DR-Module	GT24V300A-F24-Module	
	GT12V600A-8DR-Module		
	GT12V600A-F24-Module		

(Not available on internal BMS models - only battery modules requiring an external BMS)

Note: Contact Master Tech RV and Custom Coach for availability on other models or custom solutions.