



# 12V ESSENTIAL Li<sup>®</sup> QUICK START GUIDE

Part# US12VG24



**WARNING!** Lithium-ion batteries can be dangerous if mishandled and/or abused. This Quick Start Guide will provide basic info. on functionality of the battery but to ensure maximum safety, please review the U.S. Battery Lithium-Ion User Manual in full prior to installation and use.



**WARNING!** This battery is not designed for engine starting purposes and should only be used to power small electric loads within the designed electrical specification limits. Use in engine starting or other non-suitable applications can result in loss of warranty, damage to the battery, and/or damage connected systems. Lithium-Ion batteries can be dangerous, please consult U.S. Battery, trained personnel, or an approved U.S. Battery dealer.

## TURNING ON

To turn on battery, press and hold the power button located on the top of the battery for 5 seconds. LEDs will light up indicating the state of charge (SOC) and battery status.



When the battery is on and there are no faults/errors, the battery is in "RUN" mode. This mode is identified by the blinking of the "RUN" LED. In this mode, the battery is ready to be used and voltage is present at the terminals.

## TURNING OFF

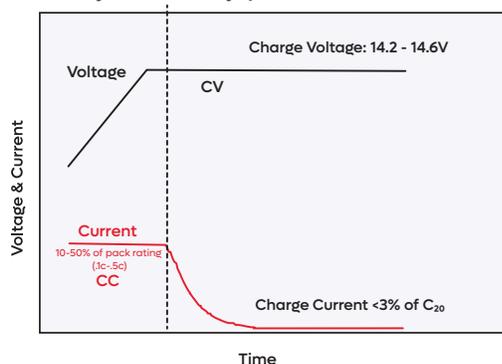
To turn it off, press and hold the button for approximately 5 seconds. Once off, the RUN LED should no longer be blinking.

Batteries should be turned off while in storage to prevent an over-discharged condition. Batteries should not be stored for more than 6 months without charging and never stored in a fully discharged state.

Batteries will enter a sleep mode after 24 Hours of inactivity.

## CHARGING

It is important to only use chargers programmed and set for lithium iron phosphate chemistry batteries! Use of improper chargers can result in loss of warranty. Contact the charger manufacturer for information on available battery chemistry profiles.



Check your charger's current output (A) and voltage (V) settings. If an AGM or Lithium Iron Phosphate (LFP) setting is available, choose these settings as long as they are within the specified ranges below. Many AGM profiles are within the specified ranges, but it is always best to contact the charger manufacturer about each profile's settings before setting up. Again, it is best to have a trained professional install and set-up the charging system.

- **Maximum Charging Current\*:** 100A (per battery) \*Note that repeated high current charging periods can impact cycle life and/or warranty. Stay within the recommended charging currents below to achieve the expected cycle life. The maximum value is intended to allow occasional or short term, fast charging periods.
- **Recommended Charging Current\*:** 10A - 50A \*Or less. Also known as "Bulk Current"
- **Recommended Charging Voltage\*:** 14.2V - 14.6V \*Also known as "Absorption Voltage"
- **Maximum Continuous Discharging Current:** 100A (per battery)
- **End of Discharge Voltage:** 11.2V
- **Float/Trickle/Maintain Charge:** Not recommended
- **Normal Operating Temperature Range\*:** 0 - 50°C (32 - 122°F) \*Cannot be charged outside this range.
- **Discharge Temperature Limits:** -20 - 55°C (-4 - 131°F)
- **Protection Features:** Over charge, Over discharge, Over temperature, Low Temperature, Over Current, Short circuit.

## OPTIONAL HEATER

If purchasing the US12VG24 with the heater option, the heater will enable under the following conditions to allow charging. The heating element (HE) will be turned on when the battery temperature is below 0°C (32°F) and an external charging voltage is applied. Please note that the charging power needs to be greater than 100W, otherwise the heating will be turned off again.



## ALARM/FAULTS

When warnings or faults (condition outside of BMS safety parameters) are active, the ALARM LED will illuminate red. When in ALARM mode, use of the battery may be restricted to prevent any damage or unsafe conditions. To determine the specific fault(s) that is active, open the mobile app and locate the event log on the upper right-hand corner of the home screen.

**\*\*See User Manual for specific faults and solutions.\*\***

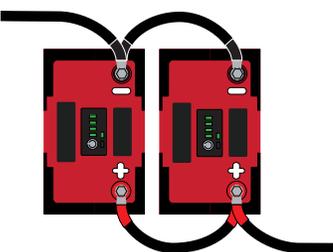
## CABLING AND HARDWARE INSTALLATION

Cable size has a direct influence on the voltage drop across the system. A trained professional should verify that your system's cables are correctly sized and installed. Exceeding rated capacities of cables and/or connections can cause unsafe operating conditions.

During installation and handling, ensure that terminals are covered with supplied terminal protectors and only remove when ready to attach cables. It is recommended that cables be installed while the battery is turned off. Only use supplied hardware and torque to 90 in.-lbs.

## 12V ACCESSORIES

Never connect accessories directly to the battery. 12V accessories should be tied into the power system of the vehicle. Installing accessories directly to the battery can cause unexpected power drain, resulting in a drained or damaged battery. Accessories should be installed in a way that they do not drain the batteries while not in use. Please consult your U.S. Battery dealer when installing accessories on vehicles using lithium-ion batteries.



Parallel Connection

## CONNECTIONS

Never install multiple batteries in parallel or series without first checking the state of charge on the display. The best way to ensure batteries are matched is by fully charging each

battery prior to installation. Another way would be to check each battery voltage prior to installation. Always install the batteries in the "Off" state and verify all connections prior to turning "On".

**Series:** If connected in series each battery must be charged individually.

**\*\*See User Manual for illustration of Series connection.\*\***

**\*\*Do not connect more than four(4) 12V batteries in series or parallel\*\***

**\*\*Do not connect in parallel and series at same time\*\***

## MOBILE APP

The US12VG24 battery communicates via wireless mobile applications available on most major smartphones. To download the app, scan the correct QR code for your device below, or search "Essential Li" in your application store.

Apple Phones



Android Phones



Each battery has an ID on the top of the battery that will correspond to an available connection on the app. If battery cannot be found, ensure that battery is on and that the application is up to date.

## WARRANTY

U.S. Battery offers a limited liability, 4-year warranty for Essential Li<sup>®</sup> US12VG24 Lithium-Ion batteries. Please visit the link below to register your products and review the warranty specifics.

**For additional information please visit the U.S. Battery Essential Li<sup>®</sup> landing page at the website listed below or scan the QR code with your mobile device.**

<https://www.usbattery.com/essentialli-owner/>

