# Current Surge Limiter (CSL 500) Quick Guide: The CSL 500 is designed to protect the BattleBorn batteries from the initial current spike found in Inverter/Chargers (4kW or greater) when initially connected or after a long period of disconnect due to battery drain.

How it works:

When large Inverter/Converters are initially connected to Battleborn LiFePO$_4$ batteries (or after a long period of disconnect due to battery drain), the large initial current needed to charge the capacitors can cause the Battleborn Battery Management System to block any connection to the Inverter/Charger. The *Current Surge Limiter* acts as a soft-start for the Inverter/Charger, reducing the startup current requirement and allowing the Inverter/Charger to connect successfully the the BattleBorn Batteries. During other times of operation, the CSL 500 has a low resistance, increasing the efficiency of the system and reducing heat loss as compared to other current limiting solutions.

Connection Explanation:

The *Current Surge Limiter* sits in series between the Inverter/Charger negative terminal and the battery bank negative terminal. This connection scheme allows the CSL 500 to soften the initial current spike. The CSL 500 monitors the positive terminal of the inverter to know when the capacitors are charged. The Battery Bank Negative Terminal is connected to ground. The Inverter/Charger Negative Terminal is NOT CONNECTED to Ground. If BOTH the Battery Bank Negative Terminal and the Inverter/Charger Negative Terminal are Grounded, the current will bypass the CSL 500 and the system will be unregulated. Also, DO NOT Ground the Metal outer casing of the CSL 500. A connection diagram is illustrated below:

- The **INV-** Terminal is connected to the Inverter/Charger Negative Terminal.
- The **Bat-** Terminal is connected to the Battery Bank Negative Terminal.
- The **INV+** Terminal is connected to the positive Terminal of the Inverter/Charger.
- The Battery Bank Positive Terminal is connected to the Inverter/Charger Positive Terminal.
- The Battery Bank Negative Terminal is connected to ground.
- The Inverter/Charger Negative Terminal is **NOT CONNECTED** to Ground.



4kW or Greater Inverter/ Charger

*Fuse Size Dependent on Application*

Do NOT Ground Metal Outer Casing of CSL 500

INV-   INV+   BAT-

Battery

Battery

Battery

Battery

NOT Connected to Ground