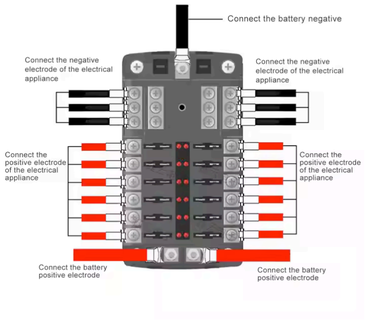
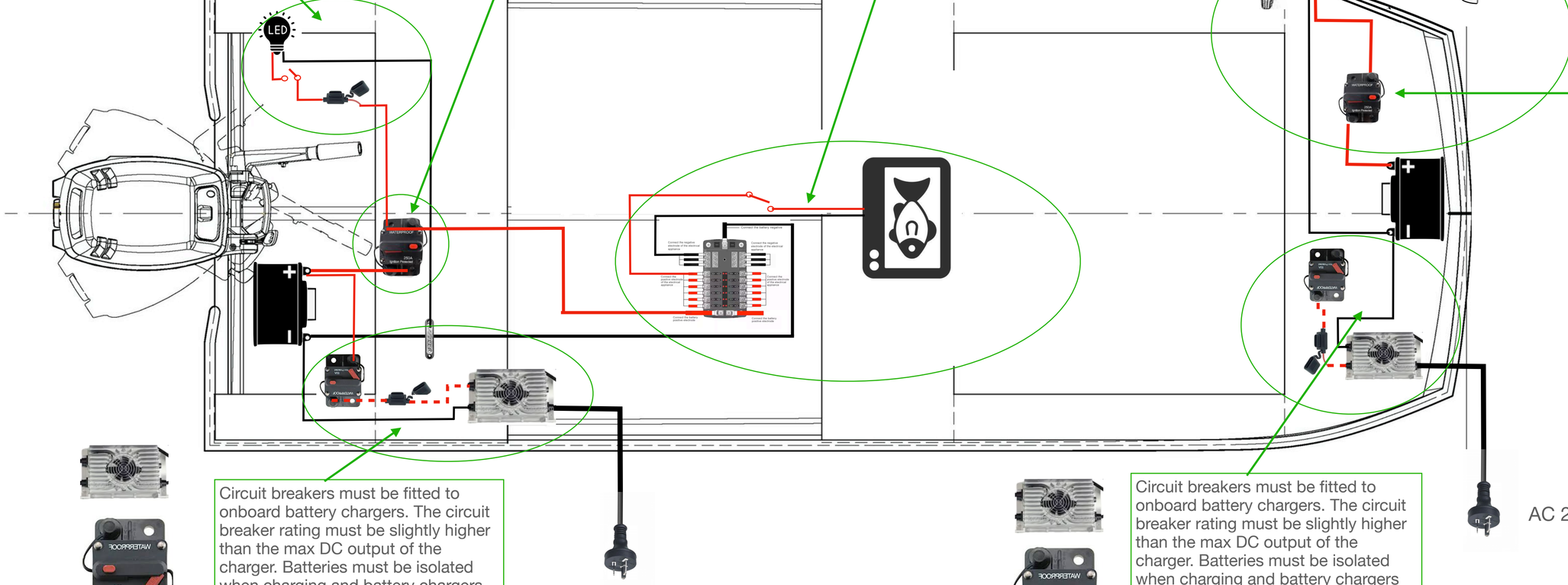
ONBOARD CHARGING SYSTEM - LITHIUM INSTALLATION

Appliances utilising an inline fuse should be connected after the circuit breaker to ensure they can be isolated from the battery during charging. The correct setup involves; battery - cable - circuit breaker (close to battery) - cable - fuse (close to appliance)

Circuit Breakers are required to protect cables and appliances such as trolling motors. Fuses protect appliances. The circuit breaker rating must be slightly higher than the total amp/ current draw on the circuit. Circuit breakers can be used to isolate circuits and chargers from lithium batteries



Fuses protect appliances. The fuse rating must be slightly higher than the total amp/ current draw on the appliance



Circuit breakers must be fitted to Trolling motors. Circuit breaker rating must be slightly higher than the total amp/ current draw of the trolling motor. Trolling motors must be isolated from the battery when in storage as trolling motor standby power (GPS, etc) will flatten and unbalance lithium batteries

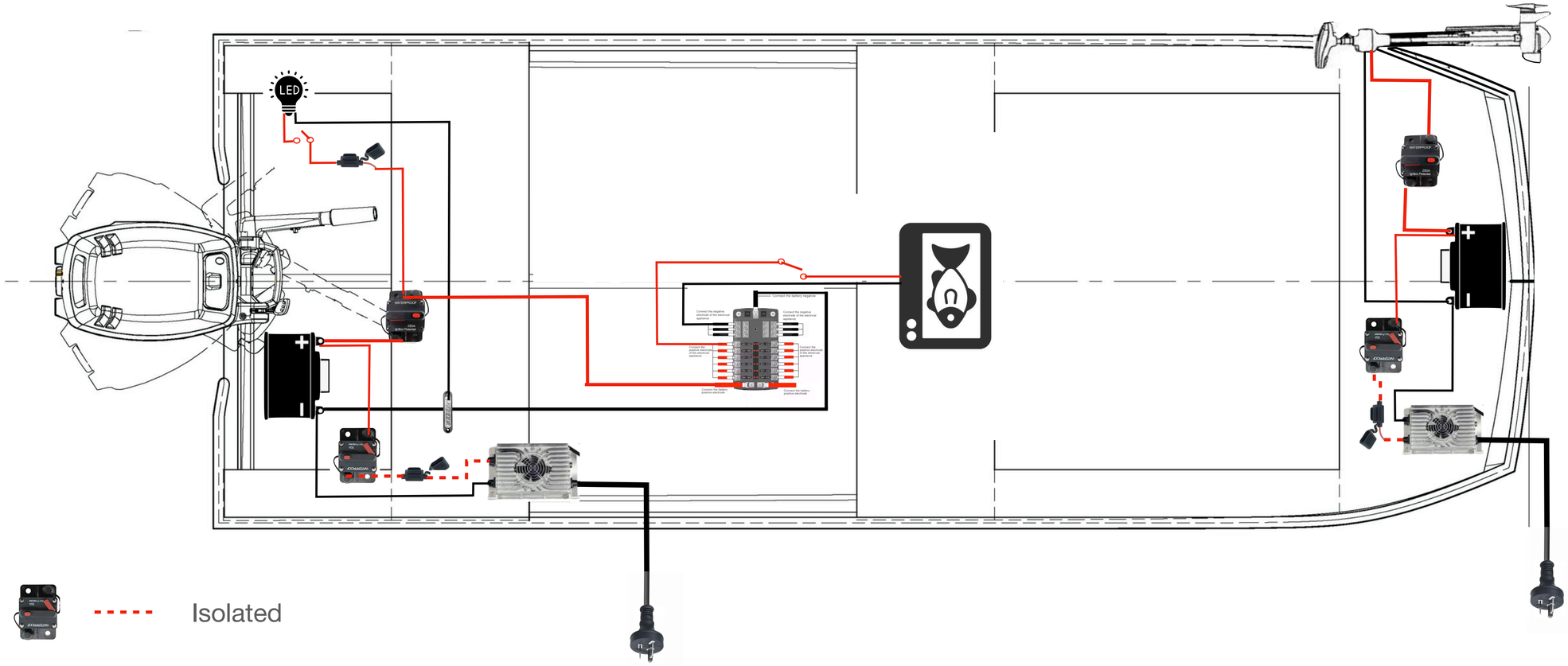
Circuit breakers must be fitted to onboard battery chargers. The circuit breaker rating must be slightly higher than the max DC output of the charger. Batteries must be isolated when charging and battery chargers must be isolated when in storage. LED lights and screens i.e standby power flattens and unbalance lithium batteries. Fuses are recommended to be installed to protect against incorrect connection.

AC 240V Mains Power

Circuit breakers must be fitted to onboard battery chargers. The circuit breaker rating must be slightly higher than the max DC output of the charger. Batteries must be isolated when charging and battery chargers must be isolated when in storage. LED lights and screens i.e standby power flattens and unbalance lithium batteries. Fuses are recommended to be installed to protect against incorrect connection.

AC 240V Mains Power

OPERATIONAL
Batteries non isolated and connected to appliances.
Battery Chargers isolated

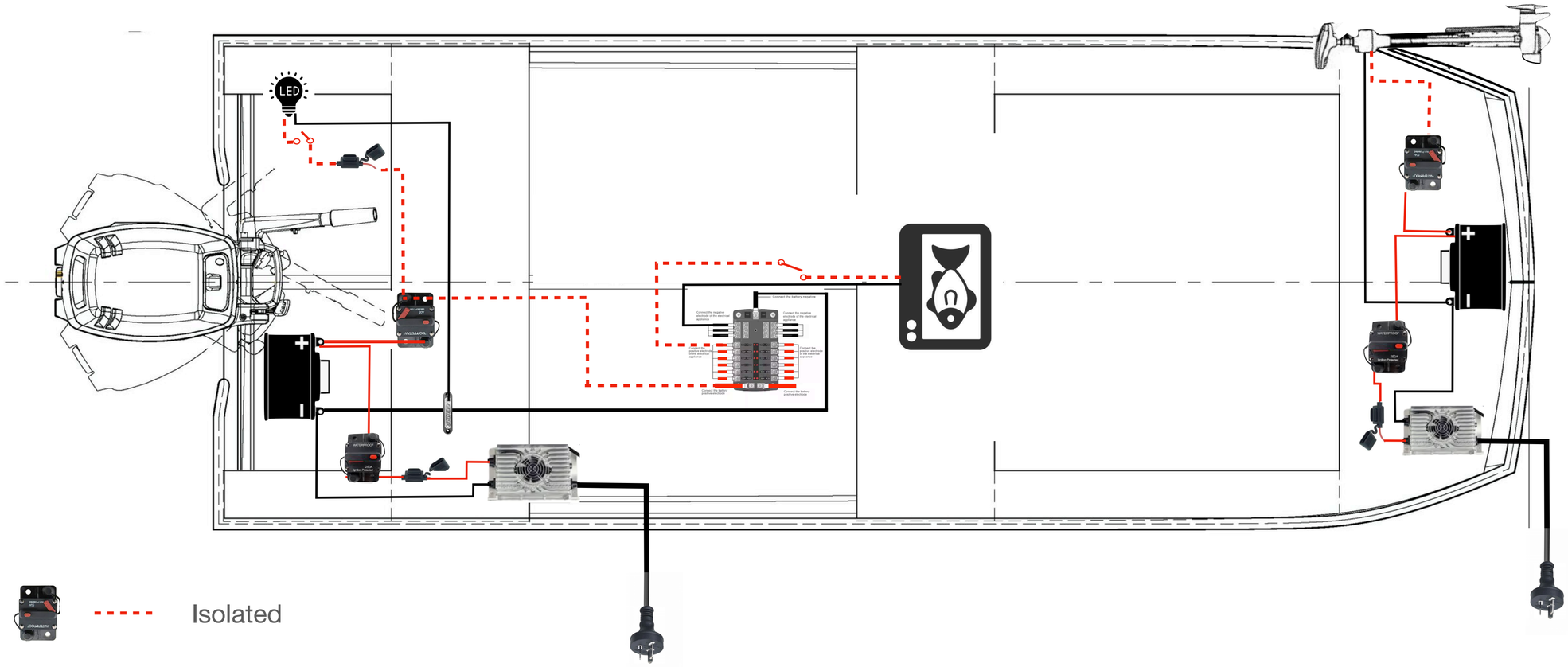


Isolated

Connect (non isolated)

AC 240V Mains Power

CHARGING
Batteries isolated from appliances.
Battery Chargers non isolated and charging batteries

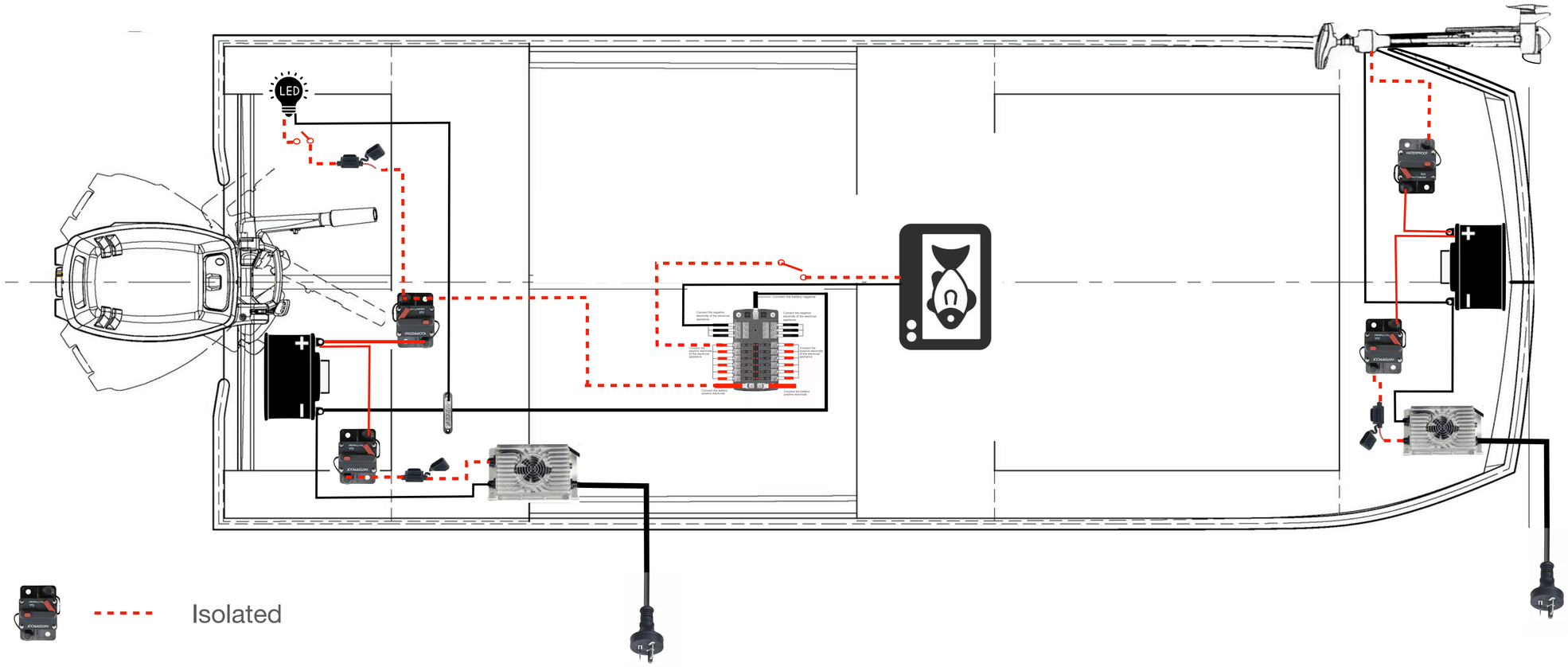


Isolated

Connect (non isolated)

AC 240V Mains Power

STORAGE
Batteries isolated from appliances
Battery Chargers isolated and charging batteries



Isolated

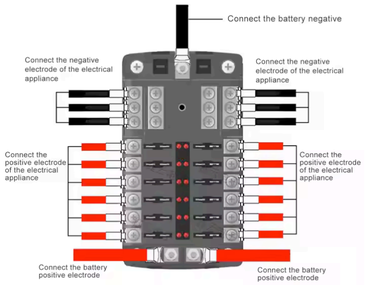
Connect (non isolated)

AC 240V Mains Power

PORTABLE (non onboard) CHARGING SYSTEM LITHIUM INSTALLATION

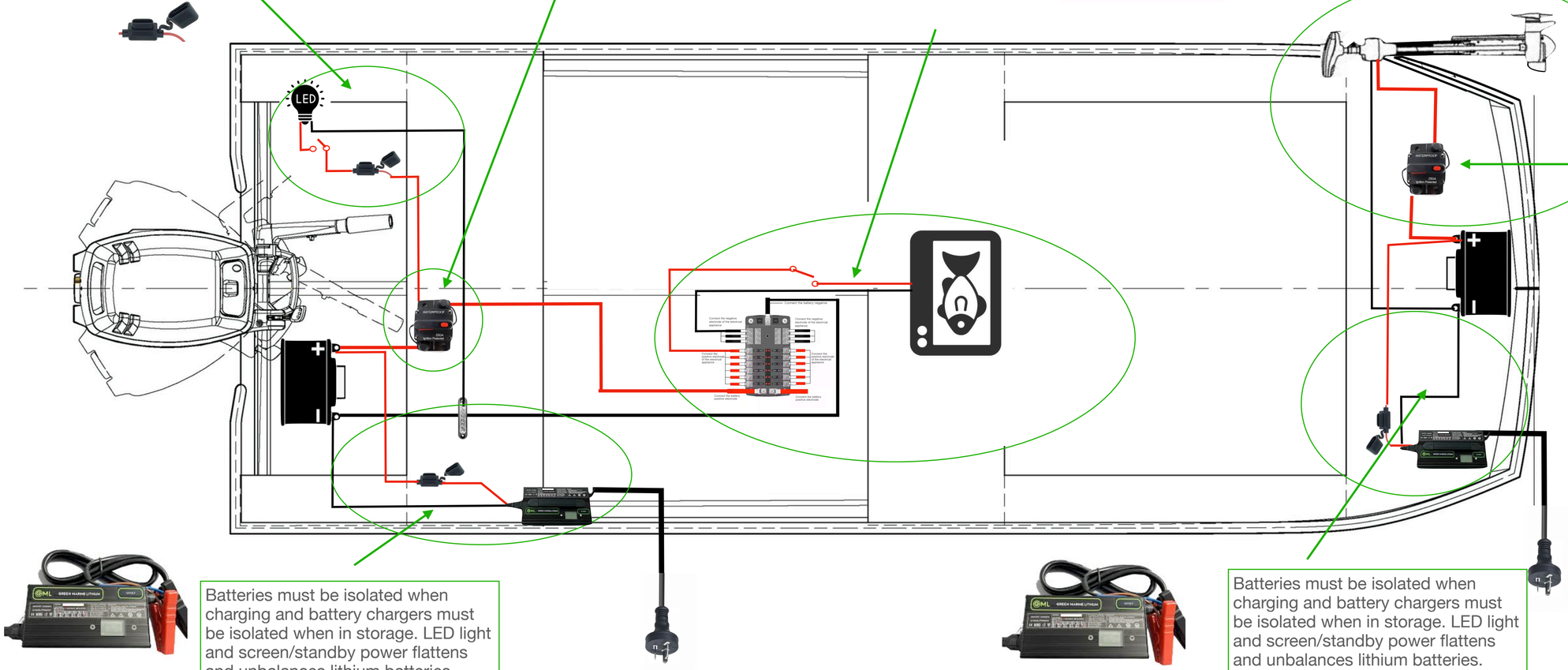
Appliances utilising an inline fuse should be connected after the circuit breaker to ensure they can be isolated from the battery during charging. The correct setup involves; battery - cable - circuit breaker (close to battery) - cable - fuse (close to appliance)

Circuit Breakers are required to protect cables and appliances such as trolling motors. Fuses protect appliances. Circuit breaker rating must be slightly higher than the total amp/ current draw on the circuit. Circuit breakers can be used to isolate circuits and chargers from lithium batteries



Fuses protect appliances. The fuse rating must be slightly higher than the total amp/ current draw on the appliance.

Circuit breakers must be fitted to Trolling motors. Circuit breaker rating must be slightly higher than the total amp/ current draw of the trolling motor. Trolling motors must be isolated from the battery when in storage as trolling motor standby power (GPS, etc) will flatten and unbalance lithium batteries



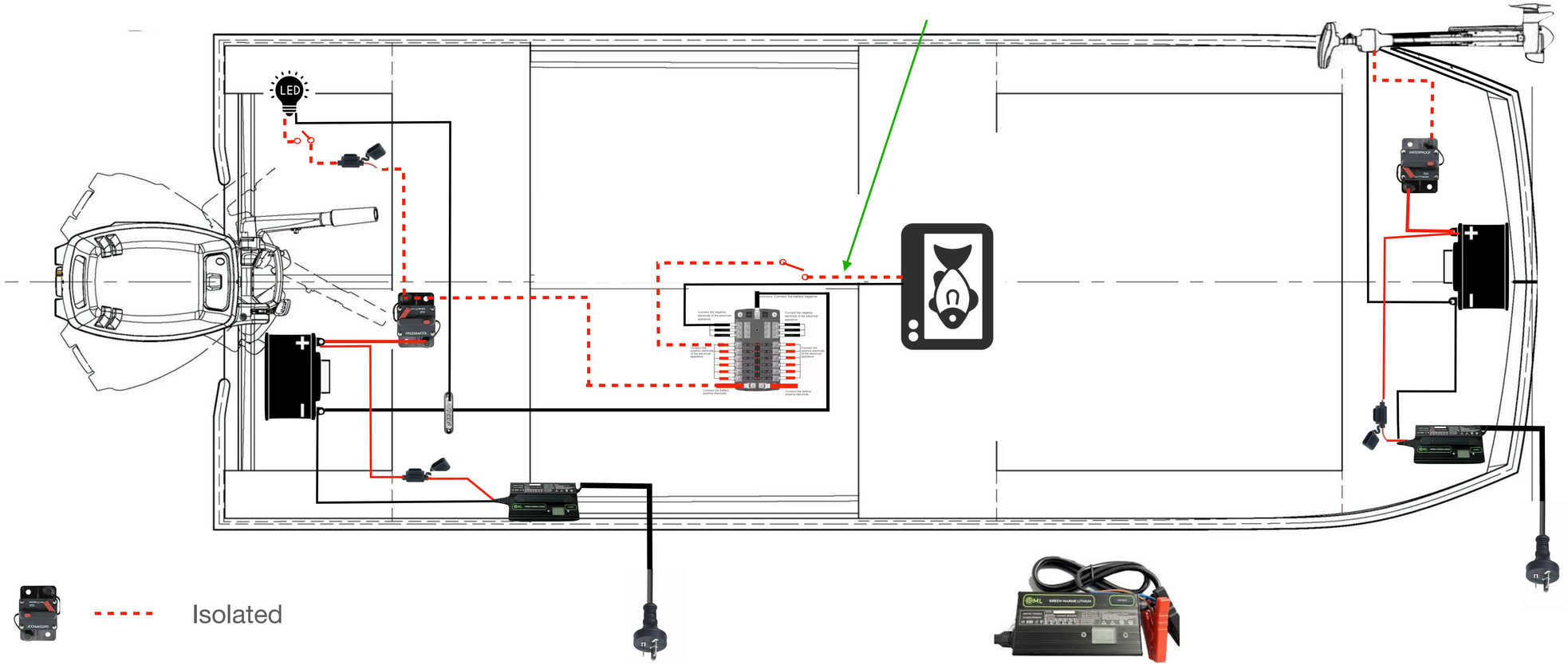
Batteries must be isolated when charging and battery chargers must be isolated when in storage. LED light and screen/standby power flattens and unbalances lithium batteries. Install fuses to protect against incorrect connections such as; polarity

AC 240V Mains Power

Batteries must be isolated when charging and battery chargers must be isolated when in storage. LED light and screen/standby power flattens and unbalances lithium batteries. Install fuses to protect against incorrect connections such as; polarity

AC 240V Mains Power

PORTABLE (non onboard) CHARGING SYSTEM LITHIUM Installation



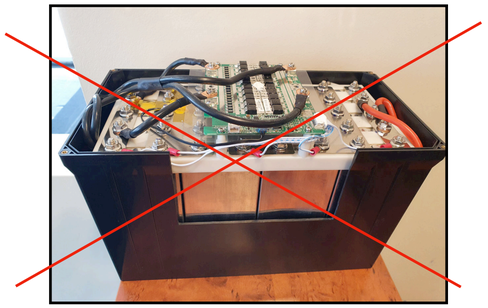
Isolated

Connect (non isolated)

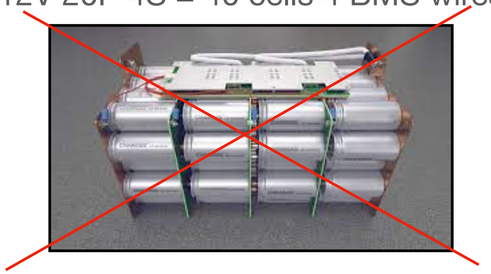
AC 240V Mains Power

AC 240V Mains Power

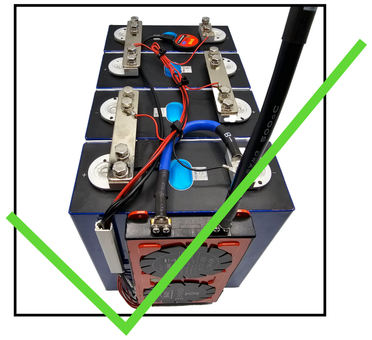
12V 5P 4S = 20 cells 4 BMS wires



12V 20P 4S = 40 cells 4 BMS wires



12V 4S = 4 cells 4 BMS wires



Dangerous Mistakes

- Not installing the correct isolator between the battery and your system to protect cables and allow safe isolation.
- Not using the right fuse to protect your appliances.
- Not using the correct gauge cables. NOTE - Only use tinned copper multi-strand cables for marine applications and use online wire sizing calculators to choose the right gauge.
- Using Anderson plugs as permanent connections. These are designed only for temporary use and can cause poor connections that trigger the lithium battery BMS protection shutdown.
- Installing non-waterproof batteries, chargers, switches, or protection devices in marine environments.
- Failing to isolate lithium batteries during charging and when not in use. Devices like fridges, trolling motors, and sounders draw low current that can flatten batteries and unbalance cells over time.
- Choosing lithium batteries that cannot be installed in compliance with Australian/New Zealand standards AS/NZS 3004.2:2014 for marine electrical installations. Ensure each cell is managed by the BMS and has individual temperature sensors. Cell configurations should be:
  12V: 4S
  24V: 8S
  36V: 12S
- Incorrectly connecting common earths or negatives between systems. Mixing voltages can cause voltage mismatch and serious issues. For example, connecting a 12V lithium battery (15.2V full) to a lead-acid battery (12.5V full) can cause damage or fire.
- Installing circuit breakers more than 200mm from the battery terminals.
- Letting lithium batteries sit uncharged. Deep discharge below minimum voltage can trigger thermal runaway. Overcharging above maximum voltage can do the same.
- Using lithium batteries without proper internal series and parallel cell configurations, such as 4S4P for 12V or 8S8P for 24V systems.

Need help with installation?
Visit our Support page for wiring diagrams, guides, and FAQs:
🌐 greenmarinelithium.com/support

Scan to Access Our Support Resources:

BMS APP Downloads

Deep Cycle Battery APP

IOS Android

Video instructions on how to download BMS

Cranking Battery APP

FAQs

GML Wiring Health Check

GML Lithium Battery Care Guide

GML Lithium Safe Install & Storage Guide

GML Safety Data Sheet