



# Hybrid On-Board Power Systems



# Introduction

## Highly Efficient On-Board Power Systems

Powering on-board appliances, tools, media and amenities is a vital part of the design for boat builders whose customers are looking to run increasing technology, work equipment and mobile comfort even when their generators or engines are not running. Whether it is a recreational or commercial vessel, efficient and effective power solutions are a key element for owners looking to increase their available power with reduced generator runtime and lower emissions.



Energy Solutions have been the UK's number one Victron distributor since 2006.



# Lithium Vs Gel

## Why Lithium?

Lithium battery systems provide a significant improvement on existing power technologies in a number of ways.

- The systems allow boat builders to provide more power from a smaller battery footprint meaning more space on-board and longer periods of power use.
- Lithium batteries offer much greater efficiency – the battery can be recharged to 90% in just one to three hours\* so the system can be brought back to full power ready for work.
- The batteries will last almost twice as long as a gel battery, so they will not need to be replaced as quickly, increasing the cost efficiency of the system.

We have developed a fully scalable lithium battery system for vessels – it delivers fast & efficient power whilst taking up the least amount of space and saving weight. The system offers truly independent power that can easily be recharged from the engine, generator or shore connection when needed.



### Silent Nights

The system works autonomously alongside the generator and can provide silent power overnight.

Our hybrid on-board power systems have been designed to include all the elements required for installation from battery monitoring to shore connection; and our technical team can help with specific projects adapting & scaling the system to fit your exact needs.

*\*depending on system components*

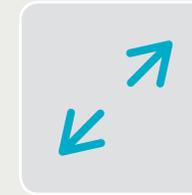
## Lithium vs Gel Batteries

The numerous advantages of Lithium battery technology include:



80%

lighter than gel batteries (for same usable capacity)



33%

less bulky  
takes up a third less space



99%

efficient at converting charge  
energy to charge source



longer service life  
2000 - 3000 cycles



no sulphating - can be left  
discharged without damage



low self-discharge rate

# L1 Hybrid Marine System

## Silent Power – Anywhere, Anytime

Ideal for vessels that wish to run a small number of key on-board appliances, but do not want to lose valuable on-board space.

## Standard L1 System Components

- Victron MultiPlus 12/2000 - 80
- Victron 16A Isolation Transformer
- Victron BMV 712 Battery Monitor
- Victron 90Ah Lithium Batteries x 2
- Victron Battery Management System
- Victron Cyrix Li-charge 12/24 120A
- Ratio 16 Amp shore inlet
- Victron Color Control GX
- Victron Battery Protect 12/24 - 100
- Fuses x 5
- Battery Isolator Switch
- Victron Smart MPPT 75/15
- Gioco Flexible Solar Panel
- Optima Starter Battery
- Balmar Alternator

## System Specifications

- AC loads up to 1600 Watts
- 2.16 kWh total battery storage – 1.7 kWh usable storage
- 16 Amp mains connection

## Options

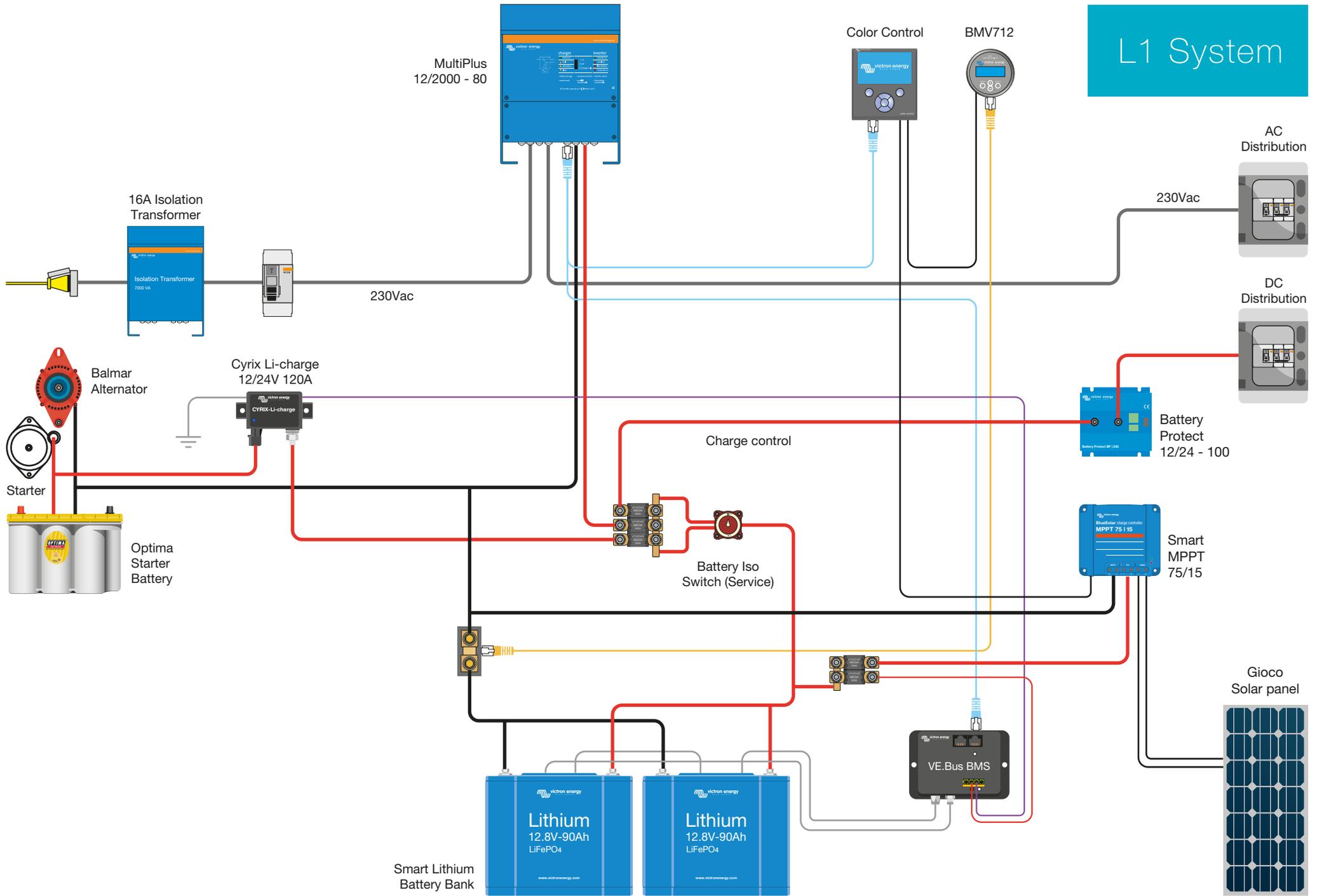
- Northern Lights Generator



## Lithium vs Gel Batteries - weight saving and charge time saving



# L1 System



# L2 Hybrid Marine System

## Working Power

Ideal for vessels working and running a large number of on-board systems, facilities and appliances.

## Standard L1 System Components

- Northern Lights M673L3 Generator
- Victron Quattro 12/3000 - 120
- Victron 16A Isolation Transformer
- Victron BMV 712 Battery Monitor
- Victron 200Ah Lithium Batteries x 2
- Victron Battery Management System
- Victron Cyrix Li-charge 12/24 230A
- Ratio 16 Amp shore inlet
- Victron Color Control GX
- Victron Battery Protect 12/24 - 220
- Fuses x 5
- Battery Isolator Switch
- Victron Smart MPPT 75/15
- Gioco Flexible Solar Panel
- Optima Starter Battery
- Balmar Alternator

## System Specifications

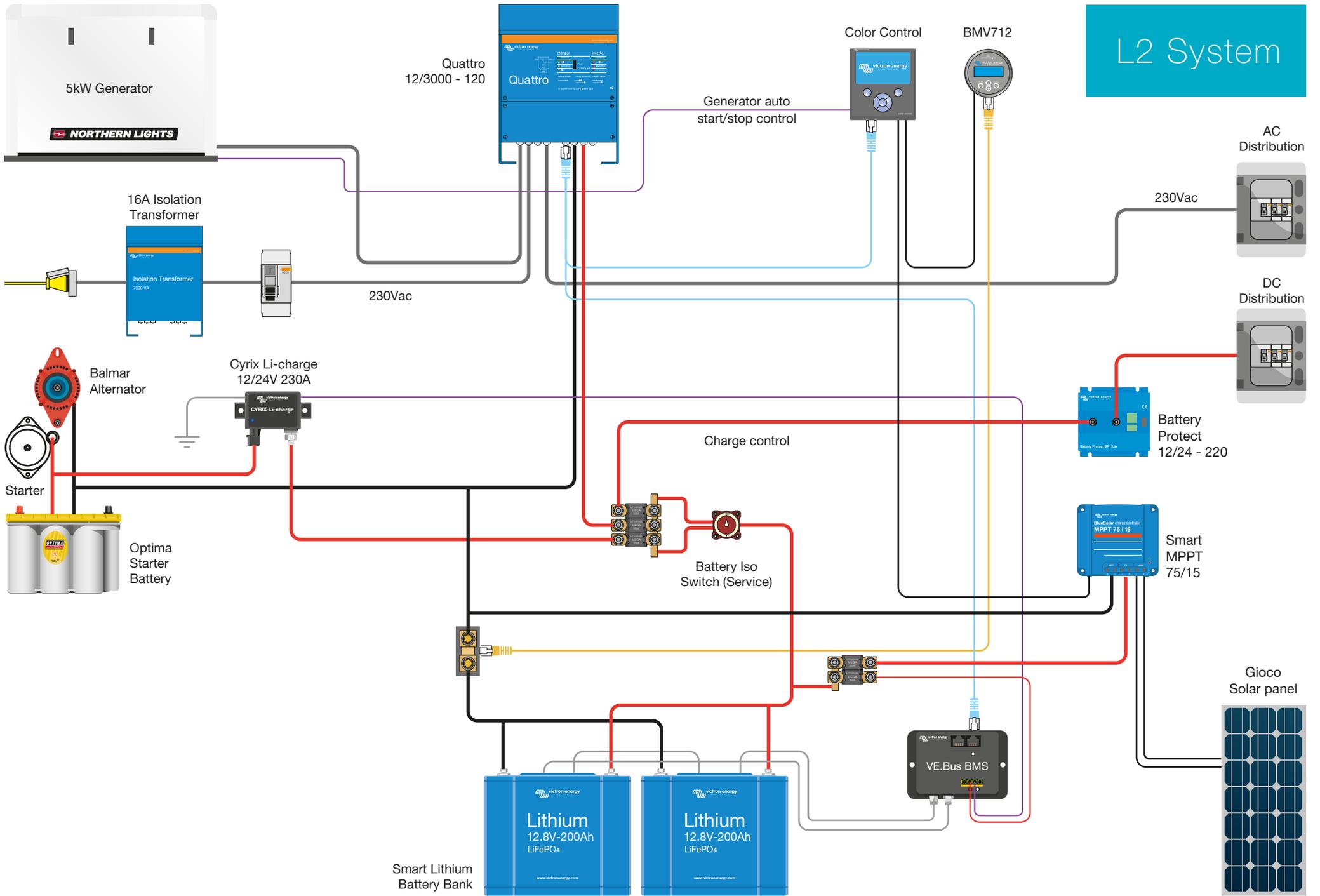
- AC loads up to 2400 Watts
- 4.8 kWh total battery storage – 3.8 kWh usable storage
- 16 Amp mains connection



## Lithium vs Gel Batteries - weight saving and charge time saving



# L2 System



# L3 Hybrid Marine System

## Delivering Power for Comfort and Luxury

The L3 boasts a large battery bank and is designed to provide power for vessels needing a wide range of on-board facilities and amenities. Ideal for owners looking for a high level of power for luxury living with silent power overnight.

## Standard L1 System Components

- Northern Lights M843NW3 Generator
- Victron Quattro 12/5000 - 220
- Victron 32A Isolation Transformer
- Victron BMV 712 Battery Monitor
- Victron 300Ah Lithium Batteries x 2
- Victron Battery Management System
- Victron Cyrix Li-charge 12/24 230A x 2
- Ratio 32 Amp shore inlet
- Victron Color Control GX
- Victron Battery Protect 12/24 - 220
- Fuses x 6
- Battery Isolator Switch
- Victron Smart MPPT 100/30
- Gioco Flexible Solar Panel x 2
- Optima Starter Battery x 2

## System Specifications

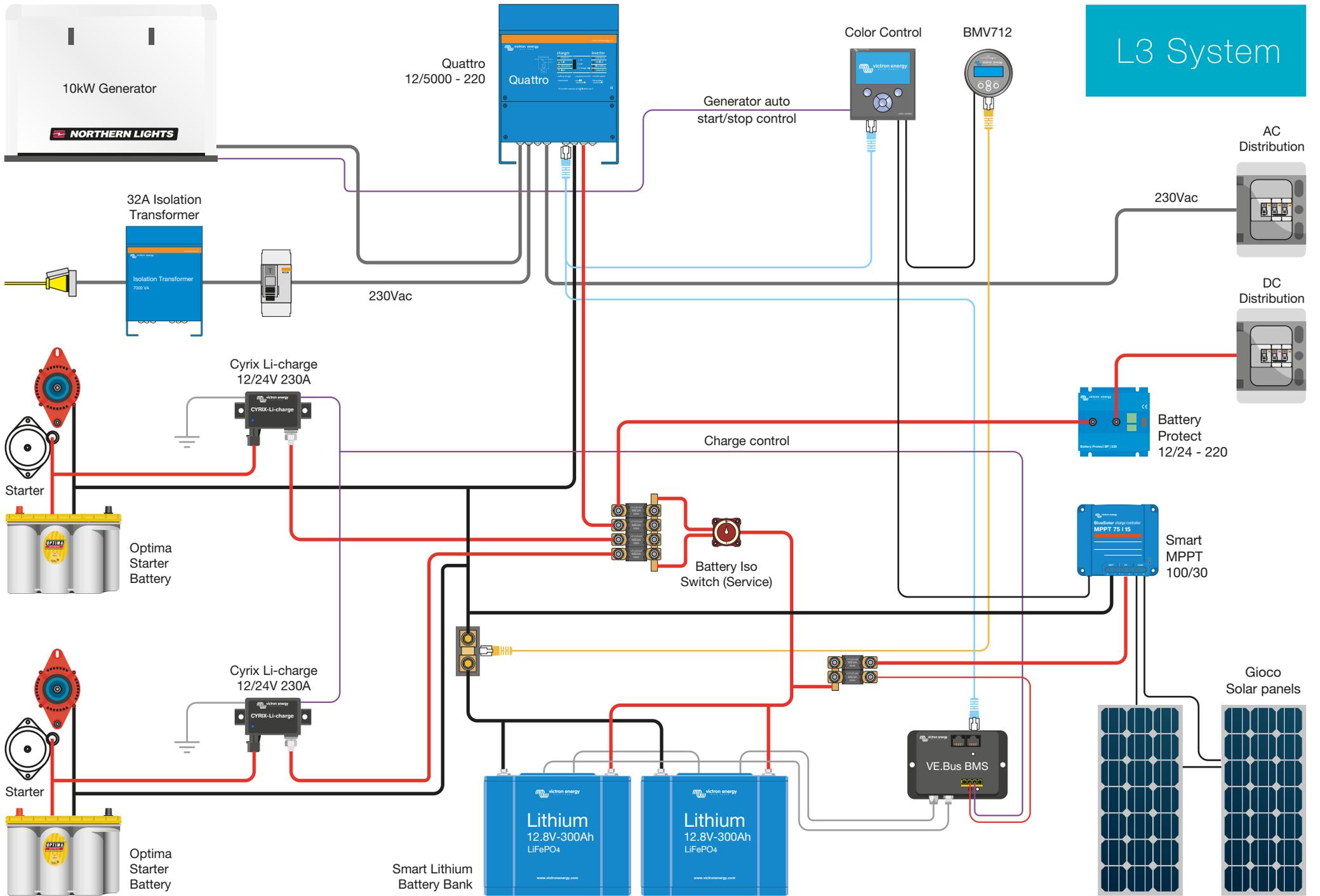
- AC loads up to 4000 Watts
- 7.2 kWh total battery storage – 5.7 kWh usable storage
- 32 Amp mains connection



## Lithium vs Gel Batteries - weight saving and charge time saving



# L3 System





More information and  
product videos

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This is a single line drawing and not an installation drawing, please follow manufacturer installation instructions and manuals at all times.