

ES Lithium Ion LiFePO_4

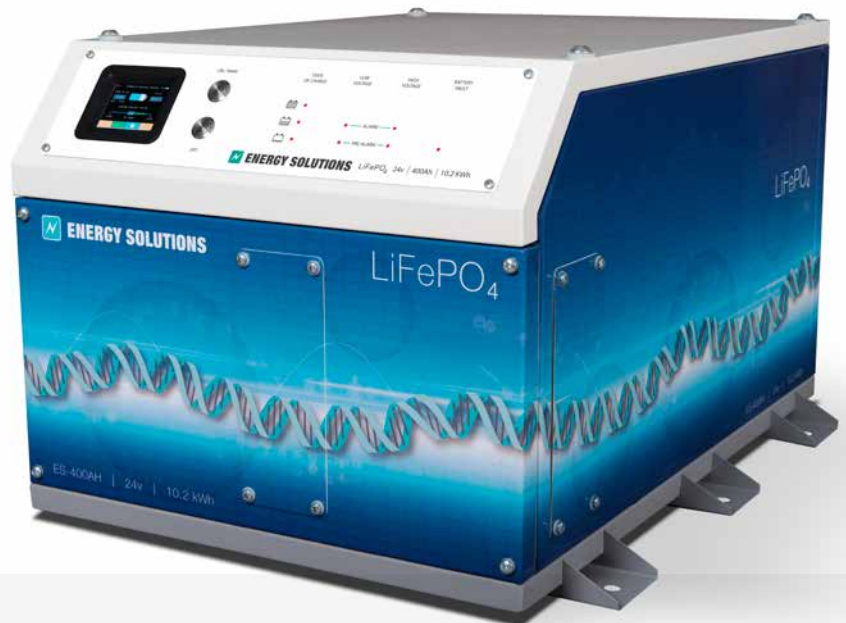
ES - 400AH

Intelligent Battery

The demand for intelligent batteries which allow greater capacity and optimise power use is on the increase across the marine market. Energy Solutions are addressing that demand with a brand new battery which is designed to be a simple swap out for lead acid batteries. With all the protection and control built in - it is as close to a like for like swap as you can get.

Safe Technology, High Capacity

The battery is composed of Lithium-iron-phosphate (LiFePO_4 or LFP), the safest of the mainstream Li-ion battery types. With a capacity of 400 Ah (10.2kWh) the battery is ideal for applications with high energy requirements.



Why Lithium Ion?

The numerous advantages of Lithium Ion battery technology include:



80%

lighter than lead acid batteries
(for same useable capacity)



33%

less bulky
takes up a third less space



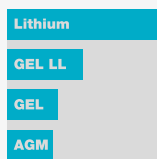
400A

90% charged in one hour
100% in three hours

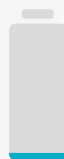


99%

efficient at converting charge
energy to charge source



longer service life
2000 - 3000 cycles



no sulphating - can be left
discharged without damage



great for situations with long
periods of non-use



low self-discharge rate

Preliminary Spec Sheet

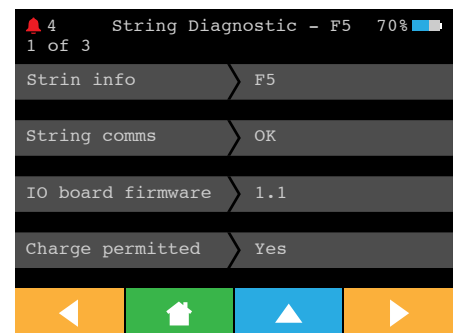
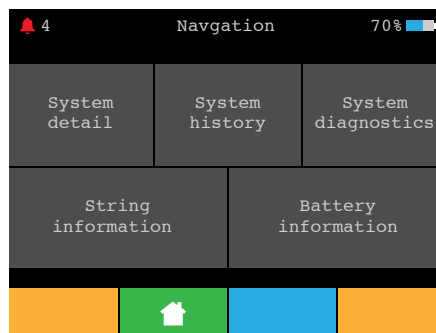
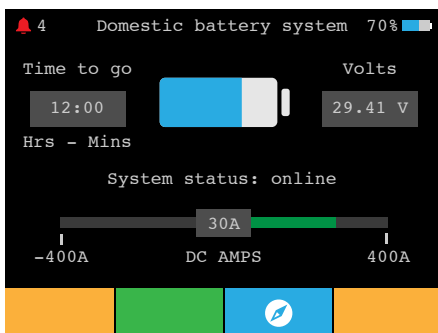
High Capacity Lithium Ion 24V Battery Pack - 10.2 kWh



| Specifications | ES - 400AH |
|---|------------------------|
| Cell technology | Lithium Iron Phosphate |
| Height (mm) | 426 |
| Length (mm) | 718 |
| Width (mm) | 500 (600 with feet) |
| Nominal voltage (V) | 26,4 |
| Charge method | CCCV |
| End of charge voltage (V) | 28.80 |
| End of charge voltage (V) for endurance (cycle life) | 28.20 |
| Charge current (A) (1C) | 400 |
| Charge current (A) for endurance (cycle life) (1C) | 120 |
| End-of-discharge voltage (V) | 20.00 |
| End-of-discharge voltage (V) for endurance (cycle life) | 22.00 |
| Discharge current (A) (1C) (*) | 400 |
| Discharge current (A) for endurance (cycle life) (0.3C) | 120 |
| Discharge pulse current (A) (10 seconds) (48C) (*) | 1000 |
| Discharge pulse current (A) (1 second) (48C) (*) | 1500 |
| Discharge performance at 20 °C (rated capacity kWh) | 10.5 |
| Discharge performance at -20 °C (capacity kWh) | 8.8 |
| High rate discharge performance at 20 °C (capacity kWh) | 8.9 |
| Operating temperature range (Charge) | 0°C to +45°C |
| Operating temperature range (Discharge) | -20°C to +55°C |
| Storage temperature range | -20°C to +45°C |
| Weight (kg) | 130 |
| Volume (m3) | 0.153 exc. feet |

(*) Actual current is limited by fuse to 500A max

Example screens from touch screen control panel



Unique Features of ES Lithium Ion LiFePO₄ Battery:

- Provides high capacity (24V, 400Ah, 10kWh) in a single unit.
- Primary fusing, current monitoring, protection contactor and display are all integrated.
- Flexible I/O to connect to a wide range of chargers and inverters.
- Provision to control external charge and load contactors, if required.
- Two batteries can be connected in series to provide 48 volts - only a single CANbus cable is needed.
- Multiple batteries can be connected in parallel for higher capacity and redundancy.
- External CANbus available with protocol on request.