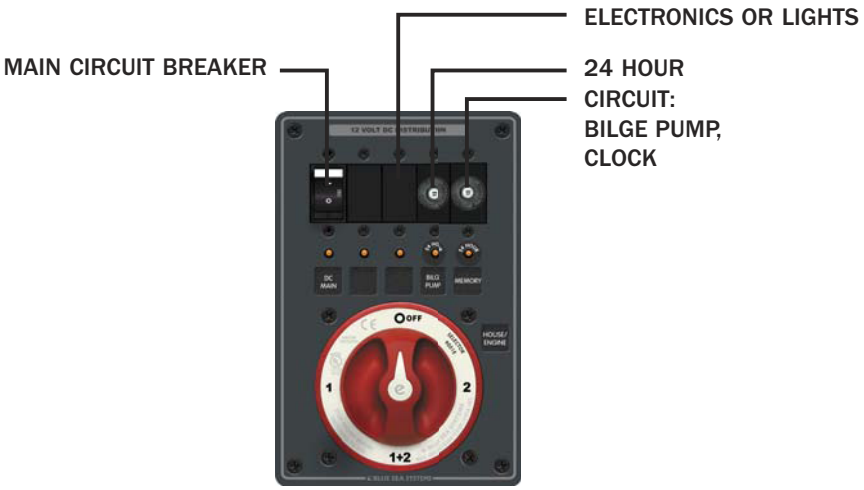
Application Brief - DC Main Power Distribution

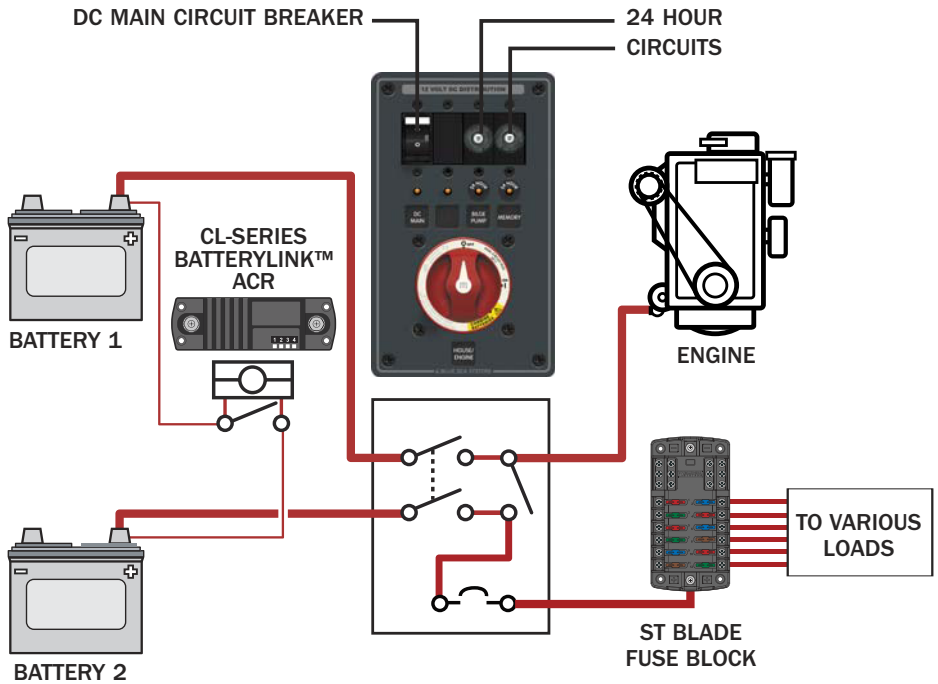
Blue Sea Systems's Battery Management Panels can be used to provide a complete stand-alone DC main power distribution system. The panels also can be combined with other Blue Sea System panels or fuse blocks to create a distributed system consisting of main and branch circuits. These Battery Management Panels can be easily customized to meet each boat owner's unique needs.

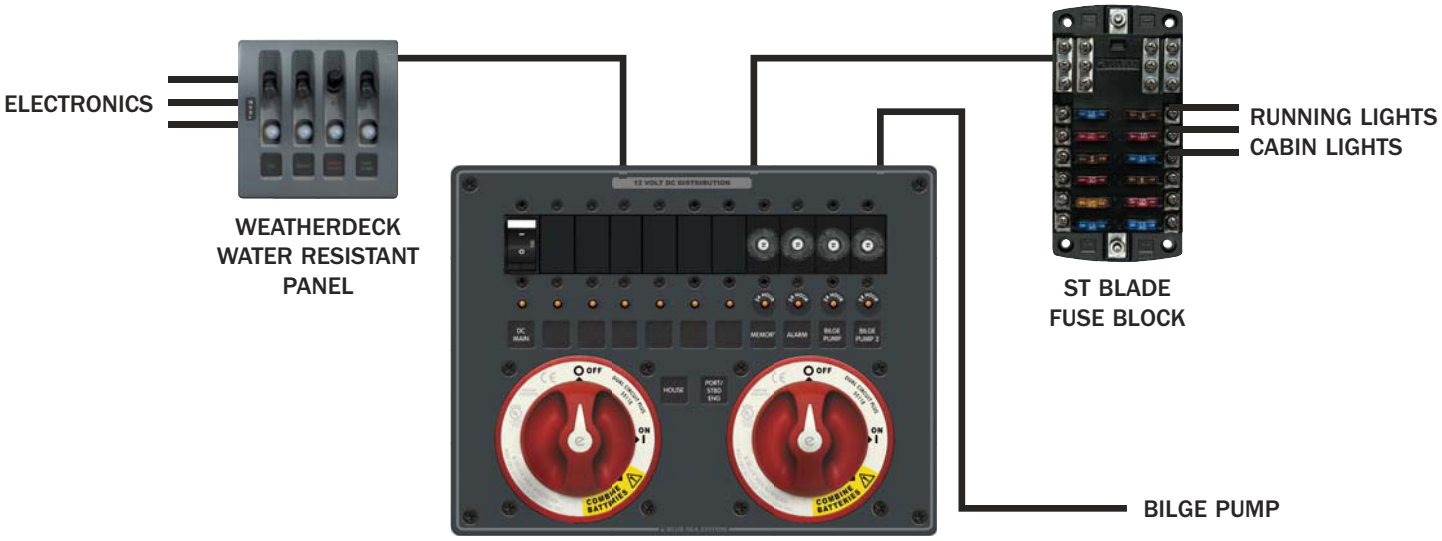
There are three primary functions of a DC power distribution system:
• Battery switching
• Primary circuit protection
• Distribution of high amperages from a single cable into multiple wires with lower amperages
These three functions may be consolidated into a single device as in the case of Blue Sea Systems' new family of Battery Management Panels.

For small boats and simple systems, DC power distribution can easily be managed with a single Blue Sea Systems' Battery management Panel. These panels contain a battery switch, main circuit breaker, and two 24-hour circuits. Panels have blank slots to add a wide variety of circuit breakers for additional circuits for lights, electronics, and other appliances.



With the growth of electrical equipment on boats, distributed systems---main panel and sub panels---are becoming the preferred approach. Only essential services are kept on the main panel. The remaining services are distributed to sub panels or fuse blocks.





The main panel should be as close to the engine compartment and battery banks as possible. Proximity to the engine compartment and battery banks is necessary to minimize the distance between sources of power (batteries and charging devices) and primary circuit protection. To learn more about the ABYC overcurrent protection guidelines, see Tech Brief: DC Circuit Protection.

Sub panels should be easily accessible to the functions they feed. For example, the boat owner may install a Blue Sea Systems' WeatherDeck™ Water Resistant Circuit Breaker Panel or Fuse Panel as a sub panel to switch and protect lights. This panel can be mounted in a convenient location, for example, on the flybridge or cockpit.

The boat owner may want an ST Blade Fuse Block as a sub panel for switched electronics. This sub panel can be located at the boat's navigation station where it is convenient to the equipment it protects. The ST Blade Fuse Block combines the benefits of ATO/ATC blade-style fuses with screw terminals that comply with ABYC Recommended Practices and meet the specified requirements of marine use. Each fuse block includes an insulating cover and write-on labels for panel circuit identification.

There are additional advantages of distributed systems over a centralized system. The first is the separation of potentially interactive equipment such as pumps and electronics. Pumps may create radio frequency interference (RFI) that interferes with electronic equipment. The system may benefit from providing electrical power to pumps from one sub-panel, and electrical power to electronics from a different sub-panel.

Distributed systems also permit a reduction in the number of cables radiating from the main panel to areas of equipment concentration. This reduces the need for excessive cable and potential RFI between circuits and equipment.