

## Application Brief - m-Series Battery Switch

*The mini battery switch that outperforms switches twice its size.*

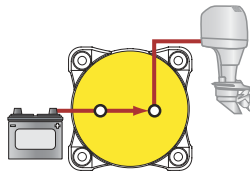
Blue Sea Systems' new m-Series Battery Switch, available in four practical models, is a great choice for most boaters. Its "mini" size, flexible mounting options, and current-carrying capacity make this battery switch a wise choice. The m-Series switch is versatile enough to meet just about any battery switch application for small and medium-size boats. It is very compact, measuring less than 3" by 3" (7.6cm X 7.6cm), making it ideal for installations where there are size and space constraints. In spite of its size, its current-carrying capacity exceeds many standard-size switches.

### Four Models

The m-Series Battery Switch is available in four models:

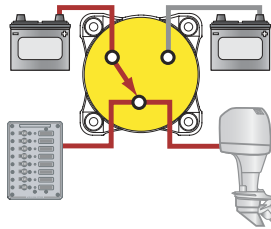
- **Single Circuit ON, OFF**—

Disconnects a single battery bank in emergencies, or when the boat is not in use. It is available with a key or a knob.

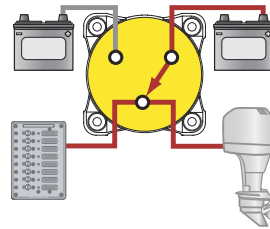


**Switch Set to "ON"**

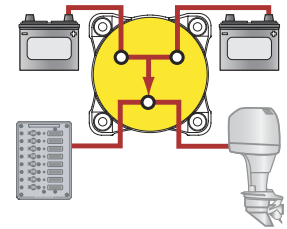
- **Selector 1, 2, 1+2, OFF**—Selects either battery bank 1 or battery bank 2, or both battery banks are combined for charging or emergency starting.



**Switch Set to "1"**

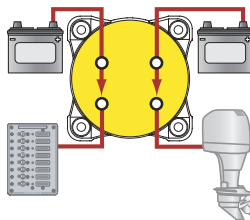


**Switch Set to "2"**

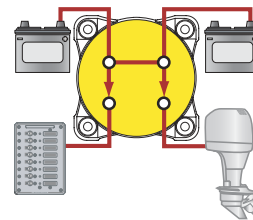


**Switch Set to "1+2"**

- **Dual Circuit Plus™ OFF, ON, COMBINE BATTERIES**—Isolates Start and House circuits, and combines both battery banks for emergency starting.

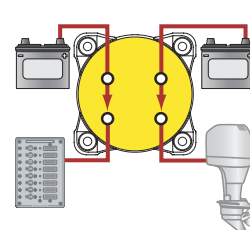


**Switch Set to "ON"**

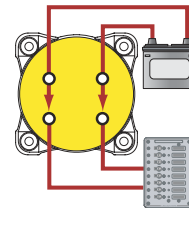


**Switch Set to  
"COMBINE BATTERIES"**

- **Dual Circuit™ OFF, ON**—Switches the positive and negative terminals of one battery bank, or it switches two isolated battery banks.



**Switch Set to "ON"  
Isolated Battery Banks**



**Switch Set to "ON"  
One Battery Bank**

The latest innovation in battery switches, Blue Sea Systems' Dual Circuit™ and Dual Circuit Plus™ Battery Switches provide Engine and Start circuit isolation. Dual Circuit™ Battery Switches turn the House and Start batteries on at the same time, but isolates them from each other. Battery isolation protects the Start battery from being discharged from House loads like refrigerators, stereos, and lights, preserving it for starting the engine. Battery isolation also protects sensitive electronics from voltage spikes and sags that may occur during engine starting. In addition, when coupled with an automatic charging relay (ACR) or battery isolator, both battery banks are automatically charged.

## Current and Voltage Ratings

The mini size of Blue Sea Systems' m-Series battery switches is deceiving. These switches are capable of 300 Amperes continuous rating and 500/450 Amperes intermittent rating. The Single Circuit and Selector models are rated at 48V; the Dual Circuit™ and Dual Circuit Plus™ are rated at 32 V. Furthermore, the Dual Circuit™ and Dual Circuit Plus™ models are rated at 300 Amperes per circuit so that they have a total current-carrying capacity of 600 Amperes. And, because these switches are UL Listed, you can be confident that they safely handle these high amperages. (See: Technical Brief: [UL Marine Listed, Battery Switch Testing](#))

## Case Material

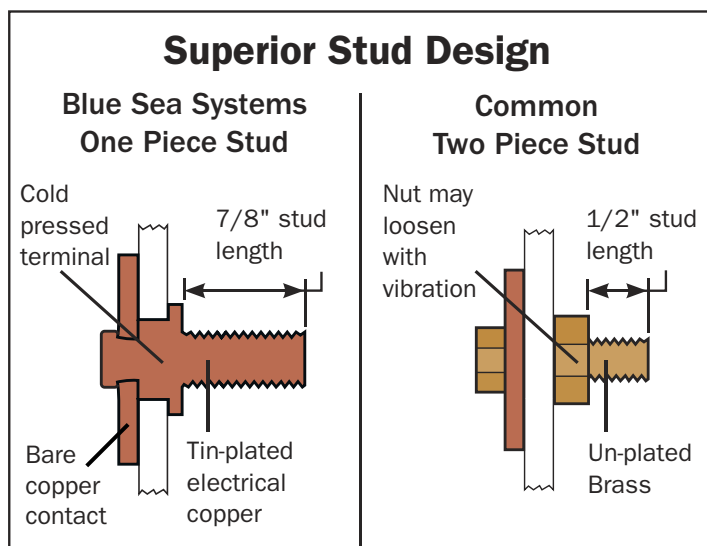
The m-Series Battery Switch case is manufactured using two glass-reinforced plastic variations with properties specific to their application in the switch:

- The front case, knob, snap-on rear cover plate, and removable isolator covers are made from glass-reinforced polycarbonate, a highly impact resistant material.
- The switch back plate to which the terminal studs are connected is polybutylene terephthalate (PBT) polymer. PBT is a high heat-rating material not affected by the heat that can be generated by the terminals when operating with high current.

## Terminal Stud and Electrical Contact Material

The m-Series battery switch is manufactured with copper contacts and tin-plated copper terminal studs. The bare copper contacts provide the best conductivity and therefore the least amount of heating. The 3/8" (M10) tin-plated copper studs provide maximum conductivity and corrosion resistance. The 7/8" (22.2mm) long stud length accepts multiple-cable terminals.

On the Dual Circuit™ and Selector models, the terminal studs are cold pressed into the copper contacts; On the Single Circuit model, the heads of the studs serve as the electrical contacts. Both techniques provide a very strong mechanical and ideal electrical connection. This technique is better than using a nut to fasten the stud to the bus or backplate—a practice used by most battery switches on the market today. A nut may loosen with vibration or during installation of battery cables. When the one-piece stud is pressed into place, it remains tightly fastened thereby eliminating the risk of overheating and switch failure.



## Mounting Options

The m-Series battery switch can be mounted in any one of three convenient ways to meet just about any installation need:



- Surface mounting



- Front panel, through hole mounting, this option is self-trimming, for up to 3/4" (19mm) panel thickness

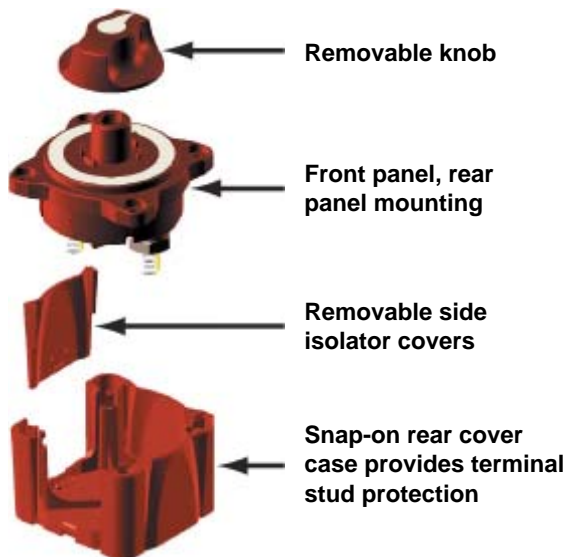


- Rear-panel, through-hole mounting, for up to 1/8" (3.175mm) panel thickness

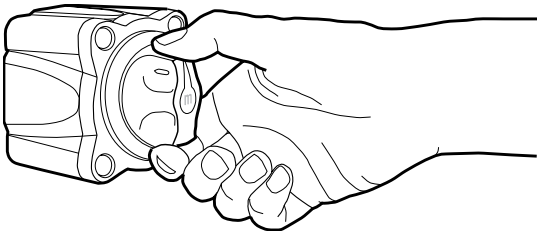


- Rear case installed

The rear cover plate can be attached in all of the mounting configurations. The removable rear cover plate and side isolator covers protect terminal studs. Remove only the side isolator cover required for you to make connections.



The knob can be removed when the switch is in the off position to provide lockout for servicing. This prevents power from being turned on while the electrical system is being serviced. The knob is positively retained in other positions.



#### **Additional Features**

In addition to its compact size, multiple models, and current-carrying capacity, the m-Series Battery Switch also has additional features that make it a desirable choice for many boating needs:

- Ignition protected-Safe for installation aboard gasoline-powered boats
- Accepts up to 4/0 AWG battery cables

Check out Blue Sea Systems' new Mini Battery Switch. See if one of them provides a practical solution for your boat.