

## DC Battery Switch Panel

### Two m-Series Single Circuit ON/OFF Battery Switches

PN 8080

#### Features

- Isolates Start circuit from House circuit: protects electronics from sags and spikes caused by engine cranking
- Discharges batteries independently
- 100A Large Case Flat Rocker circuit breaker provides circuit protection and switching for House/Main distribution
- Single Circuit ON/OFF battery switch controls engine Start circuit
- Single Circuit ON/OFF battery switch combines House and Start battery banks for emergency starting (Emergency Cross Connect/Parallel)

#### Panel Specifications

Material:	0.125" 5052-H32 Aluminum Alloy	
Primary Finish:	Chemical Treatment per Mil Spec C-5541C	
Final Panel Finish:	Graphite color 2 part textured Polyurethane	
Maximum Voltage Rating:	48V DC	
House Amperage Rating:	100A Maximum (on installed circuit)	
Switch Amperage Ratings:	Continuous:	300A
	Intermittent (5 min.):	500A
	Cranking (100 sec.):	700A
	Inrush (2.5 sec.):	1500A
	Inches	Millimeters
Dimensions:	5.250 x 6.500	133.40 x 165.10
Mounting Centers:	4.44 x 5.69	112.7 x 138.1
Battery Switch Terminal Studs:	3/8"-16 (accepts M10 terminal)	
Torque:	120 in-lbs.	

Blue Sea Systems Inc.  
425 Sequoia Drive  
Bellingham, WA 98226 USA

Phone (360) 738-8230  
Fax (360) 734-4195  
E-mail [conductor@blueseas.com](mailto:conductor@blueseas.com)  
[www.blueseas.com](http://www.blueseas.com)

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## How it works

DC Battery Switch Panel PN 8080 provides an electrical system in which the main House circuit and the engine Start circuit are isolated from each other. Battery isolation protects the Start battery from being discharged from the many 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.

Battery switch operation is simplified because the House circuit breaker and two battery switches are ON/OFF. The engine and house switches are turned ON when the boat is boarded, and OFF when the boat is not in use. In an emergency requiring that both battery banks are combined—e.g., a discharged start battery—the operator switches the Emergency Cross Connect / Parallel switch to the ON position; this combines both Engine and House battery banks.

Charging of two battery banks can be automated by adding an Automatic Charge Relay (PN 7600 or PN 9112) to the system. This combination creates a complete battery management system of isolated battery circuits, emergency combine function, and automated charge management.

## ⚠ WARNING ⚠

- ✓ If the installer is not knowledgeable about electrical systems, consult an electrical professional.
- ✓ If either the panel front or back is to be exposed to water it must be protected with a waterproof shield.
- ✓ The main positive connection must be disconnected at the battery post to avoid the possibility of a short circuit during the installation of this distribution panel.

#### Guarantee

If at any time you are not satisfied with this product, you may return it for a refund or replacement.

#### Useful Reference Books

Calder, Nigel, 2005: *Boatowner's Mechanical and Electrical Manual*, 3rd edition, Blue Ridge Summit, PA: TAB Books, Inc.  
Wing, Charlie, 1993: *Boatowner's Illustrated Handbook of Wiring*, Blue Ridge Summit, PA: TAB Books, Inc.

#### Applicable Standards

- American Boat and Yacht Council (ABYC) Standards and Recommended Practices for Small Craft sections: E-1, E-3, E-11.
- United States Coast Guard 33 CFR Sub Part 1, Electrical Systems.

#### Engine Starting Standard

Blue Sea Systems' battery switches, in addition to being tested to UL 1107, are also tested to the Engine Starting Standard by a United States Coast Guard certified Nationally Recognized Testing Laboratory. The Standard rates battery switches based on testing under very difficult starting conditions. For information on the Engine Starting Standard, visit Blue Sea Systems at [www.blueseas.com](http://www.blueseas.com).

## Installation

### 1. Disconnect all DC power

To eliminate the possibility of a short circuit while installing the panel, disconnect the main positive cable from all batteries.

### 2. Select mounting location and cut opening

Select a mounting location that is protected from water on the panel front and back.

Using the panel template provided, make a cut out in the mounting surface where the panel is to be mounted. Do not fasten the panel to the mounting surface.

### 3. Electrical Connections

Battery cable terminals must be attached under battery switch stud nut and lock washer. The electrical connection illustration is general in nature and is not meant to be a guide for the wiring of any specific vessel. There is a wide range of wiring configurations possible. Consult your marine electrical professional for the wiring system applicable to your boat.

Make appropriate adjustments to the wiring diagram to suit your specific installation and equipment. Fusing may be appropriate in several of the lines depending on the proximity of components, conductor sheathing, and the conductivity of the surrounding structure. Consult the **Wire Sizing Chart** to determine the appropriate wire sizes.

### 4. Apply Labels and Mount Panel

Apply a label to each of the circuits from the label sheet provided. Use the panel mounting screws supplied with the panel to secure the panel to the mounting surface. Additional labels are available from Blue Sea Systems.

## Wire Sizing Chart

1. Calculate the maximum sustained amperage of the circuit. Measure the length of the circuit from the power source to the load and back.
2. Calculate **Famps** (Feet x amps). Multiply circuit length by max. current.
3. Base the wire on either the 3% or 10% **voltage drop**. In general, items that affect the safe operation of the boat and its passengers (running lights, bilge blowers, electronics) use 3%; all other loads use 10%.
4. Are the circuit runs in an **engine space or non-engine space**?
5. Starting in the column that has the right **voltage and voltage drop**, select a value that is greater than the calculated **Famps**. Look left to the **Ampacity** column to verify that the total amperage of the circuit does not exceed the maximum allowable amperage of the wire size for that row. If it does, move down until the wire ampacity exceeds the circuit amperage. Finally, look left to the **wire size** column to select the wire size.

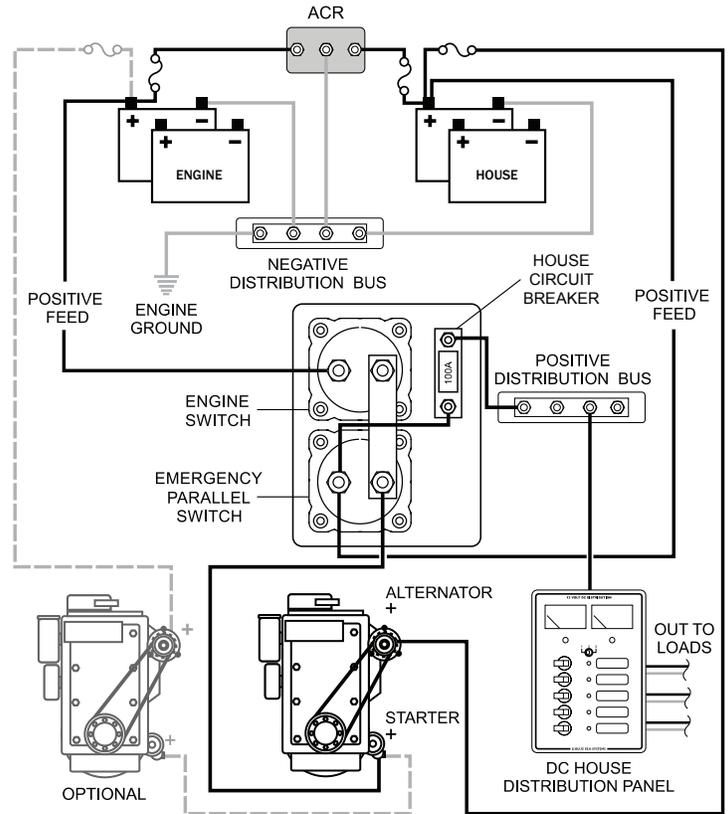
## Example

A 12 volt system at 10% drop with a 40' circuit x 45 amps = 1800 Famps. A wire size of 8 is required.

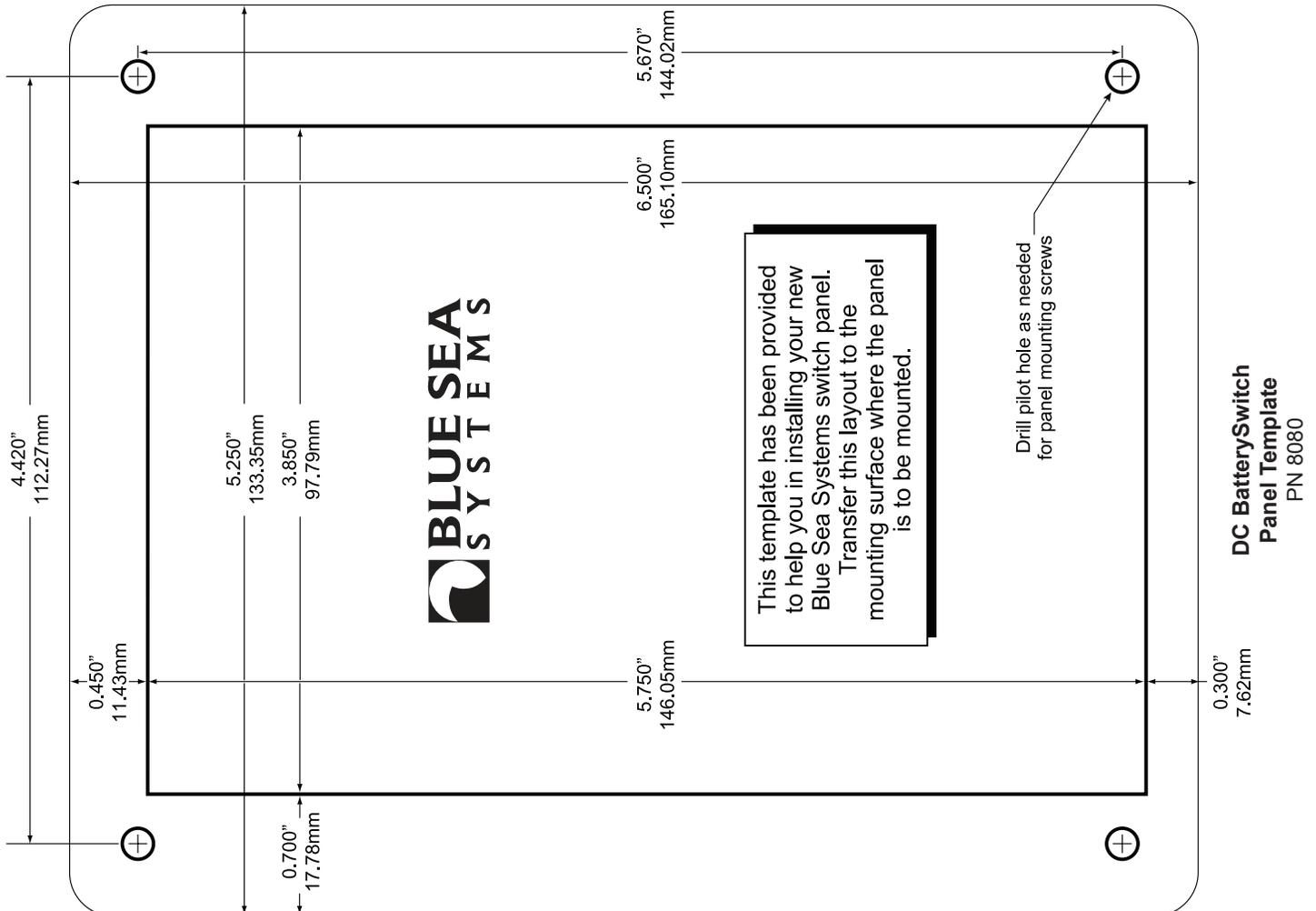
Wire Size	Wire Ampacity		Voltage →		12		24		32	
	non-engine	engine	3%	10%	3%	10%	3%	10%	3%	10%
16	25.0	21.3	86	288	173	576	230	768		
14	35.0	29.8	138	459	275	918	367	1223		
12	45.0	38.3	219	729	437	1458	583	1944		
10	60.0	51.0	348	1159	695	2317	927	3090		
8	80.0	68.0	553	1843	1106	3686	1474	4915		
6	120.0	102.0	879	2929	1757	5858	2343	7811		
4	160.0	136.0	1398	4659	2796	9319	3727	12425		
2	210.0	178.5	2222	7408	4445	14815	5926	19754		
1	245.0	208.3	2803	9342	5605	18684	7474	24912		
0	285.0	242.3	3536	11788	7073	23576	9430	31434		
00	330.0	280.5	4457	14858	8915	29715	11886	39620		
000	385.0	327.3	5619	18731	11239	37462	14985	49950		
0000	445.0	378.3	7086	23620	14172	47241	18896	62988		

Note: For wire with 105°C insulation rating and AWG wire sizes.

Chart courtesy of the West Advisor



**Wiring Diagram**  
**DC Battery Switch Panel**  
PN 8080



**DC Battery Switch**  
**Panel Template**  
PN 8080