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
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
E-mail conductor@bluesea.com
www.bluesea.com

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.

How it works

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

Applicable Standards
- 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.bluesea.com.

Sizing Chart

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 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.

<table>
<thead>
<tr>
<th>Wire Size</th>
<th>Ampacity engine</th>
<th>Voltage Drop</th>
<th>12’</th>
<th>24’</th>
<th>32’</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>25.0</td>
<td>21.3</td>
<td>86</td>
<td>288</td>
<td>173</td>
</tr>
<tr>
<td>14</td>
<td>35.0</td>
<td>29.6</td>
<td>138</td>
<td>459</td>
<td>275</td>
</tr>
<tr>
<td>12</td>
<td>45.0</td>
<td>38.3</td>
<td>219</td>
<td>729</td>
<td>437</td>
</tr>
<tr>
<td>10</td>
<td>60.0</td>
<td>51.0</td>
<td>348</td>
<td>1159</td>
<td>695</td>
</tr>
<tr>
<td>8</td>
<td>80.0</td>
<td>68.0</td>
<td>553</td>
<td>1643</td>
<td>1156</td>
</tr>
<tr>
<td>6</td>
<td>120.0</td>
<td>102.0</td>
<td>879</td>
<td>2529</td>
<td>1757</td>
</tr>
<tr>
<td>4</td>
<td>160.0</td>
<td>136.0</td>
<td>1398</td>
<td>4659</td>
<td>2796</td>
</tr>
<tr>
<td>2</td>
<td>210.0</td>
<td>178.5</td>
<td>2222</td>
<td>7408</td>
<td>4445</td>
</tr>
<tr>
<td>1</td>
<td>245.0</td>
<td>208.3</td>
<td>2803</td>
<td>9342</td>
<td>5605</td>
</tr>
<tr>
<td>0</td>
<td>285.0</td>
<td>242.3</td>
<td>3536</td>
<td>11786</td>
<td>7073</td>
</tr>
<tr>
<td>00</td>
<td>330.0</td>
<td>280.5</td>
<td>4457</td>
<td>14856</td>
<td>8915</td>
</tr>
<tr>
<td>005</td>
<td>395.0</td>
<td>327.3</td>
<td>5619</td>
<td>18731</td>
<td>11239</td>
</tr>
<tr>
<td>6000</td>
<td>445.0</td>
<td>378.3</td>
<td>7085</td>
<td>23620</td>
<td>14172</td>
</tr>
</tbody>
</table>

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

This template has been provided to help you in installing your new Blue Sea Systems switch panel. Transfer this layout to the mounting surface where the panel is to be mounted. Drill pilot holes as needed for panel mounting screws.