Marine Electrical Products

DC Power Distribution Panel
PN 8053  6 Position Water Resistant
PN 8054  3 Position Water Resistant

Panel Specifications
Material:  0.100” 5052-H32 Aluminum Alloy
Primary Finish:  Chemical Treatment per Mil Spec C-5541C
Final Panel Finish:  Graphite color 2 part textured Polyurethane
Fuse Holder:  Accepts commonly available AGC (fast acting) and
MDL (slow blow) 1-1/4” x 1/4” glass fuses.
Fuses:  15 Ampere AGC (fast acting) fuses installed.
Amperage Rating:  Switches and Fuse Holders,
20 amperes maximum for 12 volt system
15 amperes maximum for 24 volt system
Cumulative Rating:  45 Amperes
Voltage Rating:  Panels are rated for 12 or 24 volts DC.
Circuit Indicator:  LED embedded in switch, rated 100,000 hour 1/2 life
PN Inches Millimeters
Overall Dimensions:  8053 5-1/4 x 7-1/2 133.40 x 190.50
8054 5-1/4 x 3-3/4 133.40 x 95.30
Mounting Centers:  8053 4-7/16 x 6-11/16 112.30 x 169.40
8054 4-7/16 x 2-15/16 112.30 x 74.20
Water Resistant:  Will withstand the water exposures normally
encountered in above deck applications: Salt spray,
rain, hose washdowns, momentary immersions.

The Purpose of a Panel
There are five purposes of a marine electrical panel:
•  Power distribution
•  Circuit (wire) protection
•  Circuit ON/OFF switching
•  Metering of voltage and amperage  (In panels with meters)
•  Condition Indication  (circuit energized)

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. Decide whether the circuit runs in an engine space or non engine
space. Engine spaces are assumed to be at 50 degrees C, non engine
spaces are assumed to be at 30 degrees C.
3. Multiply the maximum current times the length of the circuit to calculate
Famps (Feet x amps)
4. Base the wire on either the 3% or 10% voltage drop. In general, items
which affect the safe operation of the boat and its passengers (running
lights, bilge blowers, electronics and distribution panel supply circuits)
use 3%; all other loads use 10% (cabin lights, bait pumps).
5. Starting in the column which has the right voltage and voltage drop
shown at the top, run down the list of numbers until arriving at a value
which is greater than the calculated Famps. Move 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, move left to the wire size column to select the wire
size.

Examples
a. A 12 volt system at 10% drop with a 40’ circuit  x 45 amps = 1800
Famps. A wire size of 8 is required.
b. A 24 volt system at 3% drop with a 10’ circuit x 100 amps = 1000
Famps. A wire size of 6 is required.

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1. Disconnect all AC and DC power
Before starting, disconnect the main positive cable from all batteries to eliminate the possibility of a short circuit while installing the distribution panel. Also disconnect the AC shore power cord from the boat to eliminate the possibility of electrocution from AC wiring in the proximity of the DC distribution panel.

2. Select mounting location and cut opening
Select a mounting location which is not in an area where flammable vapors from propane, gasoline or lead acid batteries accumulate. This panel is not ignition protected and may ignite such vapors.

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

3. Select positive feed wire
Determine the positive feed (red) wire size by calculating the total amperage of the circuits that will be routed through the panel. Blue Sea Systems' water resistant electrical panels are rated at 45 amp total capacity. The positive feed wire must be sized for 3% voltage drop at the 45 amp panel rating or the maximum amperage that will be routed through the panel in any particular installation, whichever is less. It is recommended that the positive feed wire be sized for the full panel capacity, which, in most cases, will require at least 8 AWG wire, assuming a 10 foot wire run between the panel and the batteries in 12 volt systems. Refer to the Wire Sizing Chart for other situations. Remember that the length of the circuit is the total of the positive wire from the power source and the negative wire back to the DC Negative Bus. Be certain that there is a fuse or circuit breaker of the correct size protecting the positive feed wire.

4. Install LED negative feed wire
Use a 16 AWG wire to connect the LED negative feed (yellow) wire to the DC Negative Bus.

5. Install branch circuit wires
Determine the proper wire size for each branch circuit using the guidelines in step 3. Verify that the standard 15 amp fuses installed in the panel are appropriate for each branch circuit. Remove and replace if necessary. Connect the positive (red) branch circuit wires to the load terminals of each switch. Connect each negative (black) branch circuit wire to a DC Negative Bus such as Blue Sea Systems' MiniBus PN 2304.

6. Apply branch circuit labels
For each branch circuit, select a label from the 30 basic labels provided, and apply it to the recessed area on the front of the panel. If the appropriate labels are not found, the Extended Label Set of 120 labels may be ordered from your marine supplier (PN 8039). Individual labels are also available from Blue Sea Systems, and may be ordered using the provided Label Order Form.

7. Mount Panel with water resistant gasket
A gasket has been included for sealing the panel against the mounting surface. The gasket will easily stretch around the panel when applied from the front. Place the gasket between the panel and the mounting surface. Make sure all surfaces are clean and free from debris. Using the panel mounting screws supplied with the panel, screw down the panel to the mounting surface.

8. Testing
Reconnect the main positive cable to the battery terminals and turn the main switch on to supply power to the panel. Turn on all branch circuits and test the voltage at the panel. Compare this voltage to the battery terminal voltage to determine that the voltage drop is within 3%. With all branch circuits still on, test the voltage at one device on each circuit to determine that there is a 3% or 10% drop as is appropriate.

Note
This Blue Sea Systems electrical distribution panel is furnished with 15 amp AGC (fast acting) glass fuses. This rating was selected to minimize the need for removing the fuse and reinstalling different size fuses. 15 amp fuses will satisfy the vast majority of marine circuit protection situations.

Applicable Standards
• United States Coast Guard 33 CFR Sub Part 1, Electrical Systems.