

# AC Power Distribution Panel

PN 8058 / PN 8059 / PN 8265 / PN 8460 / PN 8461 / PN 8480

## 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  
 Circuit Breakers: 15 amp Single Pole  
 Maximum Amperage: Varies by components; busbar maximum 100A  
 Voltage Rating: Panels are rated for 120 volts AC and are so marked in order to comply with ABYC standards

	PN	Inches	Millimeters
Overall Dimensions:	8058/3058	5-1/4 x 3-3/4	133.4 x 95.3
	8059/3059	5-1/4 x 7-1/2	133.4 x 190.5
	8265/3265	14-3/4 x 7-1/2	374.7 x 190.5
	8460/3460	14-3/4 x 4-1/2	374.7 x 114.3
	8461/3461	10-1/2 x 7-1/2	266.8 x 190.5
	8480/3480	5-1/4 x 11-1/4	133.4 x 285.8
Mounting Centers:	8058/3058	4-7/16 x 2-15/16	112.7 x 74.6
	8059/3059	4-7/16 x 6-11/16	112.7 x 169.9
	8265/3265	13-29/32 x 6-11/16	353.6 x 169.9
	8460/3460	13-29/32 x 3-11/16	354.0 x 93.7
	8461/3461	9-11/16 x 6-11/16	246.1 x 169.9
	8480/3480	4-7/16 x 10-7/16	112.7 x 265.1

Standards: This panel, when properly installed, complies with all applicable *Standards and Recommended Practices* of the American Boat and Yacht Council as well as United States Coast Guard 33 CFR Sub Part 1.

9582 Rev.009

## ⚠ WARNING ⚠

- ✓ These instructions are intended to provide assistance with the installation of this product, and are not a substitute for a more comprehensive understanding of electrical systems. We strongly recommend that a competent electrical professional perform the installation of this product.
- ✓ If either the panel front or back is to be exposed to water it must be protected with a waterproof shield.
- ✓ The panels must not be installed in explosive environments such as gasoline engine rooms or battery compartments as the circuit breakers are not ignition protected.
- ✓ The vessel's shore power cord must be disconnected from shoreside power before installing this electrical panel.
- ✓ If an inverter is installed on the vessel its power leads must be disconnected at the battery before the panel installation. Be aware that many inverters have a "sleep mode" in which their voltage potential may not be detectable with measuring equipment.
- ✓ If an AC Generator is installed aboard it must be stopped and rendered inoperable before the panel is installed.
- ✓ Verify that no other AC source is connected to the vessel's wiring before the panel is installed.

## Guarantee

Any Blue Sea Systems product with which a customer is not satisfied may be returned for a refund or replacement at any time.

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# Installation

## 1. Disconnect all AC and DC power

Disconnect all AC power originating on or off the vessel. This includes inverters, generators, shore power attachments and any other device capable of supplying AC power to the ship's circuits.

Disconnect the main positive DC cable from all batteries to eliminate the possibility of a short circuit and to disable the inverter while installing the distribution panel.

## 2. Select mounting location and cut opening

This panel is not intended to serve as the main AC circuit breaker panel. A double pole circuit breaker that breaks both the AC hot and neutral legs (such as Blue Sea Systems' PN 8029) must be installed in a location which is not more than 10 feet from the shore power inlet or the electrical attachment point of a permanently installed shore power cord as measured along the conductors of the feed wires.

Select a mounting location which is protected from water on the panel front and back and is not in an area where flammable vapors from propane, gasoline or lead acid batteries accumulate. The circuit breakers used in marine electrical panels are not ignition protected and may ignite such vapors.

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

## 3. Install branch circuit wires

Determine the proper wire size for each branch circuit using the chart. Verify that the standard 15 amp circuit breakers installed in the panel are correct for each branch circuit. Remove and replace any that are incorrectly sized. The circuit breaker must have a rating less than the allowable amperage of the wire, yet greater than the circuit's continuous current.

Connect each branch circuit hot (black) to the appropriate load terminal. Connect each branch circuit neutral (white) to one of the screws on the neutral bus. Connect each branch safety ground wire (green) to one of the screws of the safety ground bus.

Do not confuse the neutral current carrying wires (sometimes called ground) with the green normally non-current carrying wires (sometimes called grounding). These two wires must be connected only at the source of power, nowhere else.

### Wire sizing chart

Use the wire sizing chart below to determine the proper branch and feed circuit wire sizes.

ABYC E-11 Table VI-B 105° C ( 221° F) Wire

Wire Size (AWG)	Outside Engine Spaces	Inside Engine Spaces
16	17.5	11.9
14	24.5	20.8
12	31.5	26.8
10	42.0	35.7
8	56	47.6
6	84	71.4
4	112	95.2
2	126	107.1

**Note:** This chart assumes wire with 105° C (221° F) insulation rating and no more than 3 conductors are bundled. Not suitable for sizing flexible shore power cords. Blue Sea Systems recommends that the feeder wires from the power inlet to the panel should be 10 AWG for 30A systems and 6 AWG for 50A systems.

# Installation (continued)

## 4. Install feed circuit wires

Install the feed wires from the AC main circuit breaker panel or other AC source, referring to the wire sizing chart to select the correct wire size. Connect the black AC hot, white AC neutral and green AC safety ground to their corresponding buses. In the case of the 24 position panel, the black AC hot, white AC neutral and green AC safety ground should be connected to the middle bus structure.

## 5. Installation of Backlight System

The backlight board is a DC device. When installing it in an AC panel both wire leads must be connected to an appropriate DC source and ground.

Connect the yellow negative wire to a DC ground. Connect the red positive wire to any DC positive supply, usually a switch that controls the vessel's other nighttime illumination.

## 6. Apply branch circuit labels and mount panel

Apply a label for each circuit from the label set provided. If the appropriate label is not included, extended label sets are available through retail suppliers, and over 500 individual labels are available directly from Blue Sea Systems. Please go to [www.blueseasystems.com](http://www.blueseasystems.com) to order labels for specific applications.

Fasten the panel to the mounting surface using the screws provided.

## 7. Testing

- ✓ Using a multimeter where the power source is connected to the panel verify:
  - a. 120 volts between hot and neutral (nominal, this may vary depending on source voltage)
  - b. 120 volts between hot and ground.
  - c. 0 volts between neutral and ground.
- ✓ Turn on each branch circuit to verify power to each circuit.

## Optional Branch LEDs

This Panel is supplied with LEDs pre-installed in all optional branch positions. For future expansion of the panel remove the hot leg of the LED from the AC neutral bus and connect it to the load side of the appropriate branch circuit breaker.

### Note

This Blue Sea Systems electrical distribution panel is furnished with 15A circuit breakers for AC branch circuits. These ratings will satisfy the vast majority of marine circuit protection situations.

## Other Innovative Products from Blue Sea Systems

- 360 Panel System
- Battery Management Solutions
- AC and DC circuit protection devices
- WeatherDeck waterproof circuit breaker panels
- Fuses, fuse blocks, and BusBar
- Analog and digital meters

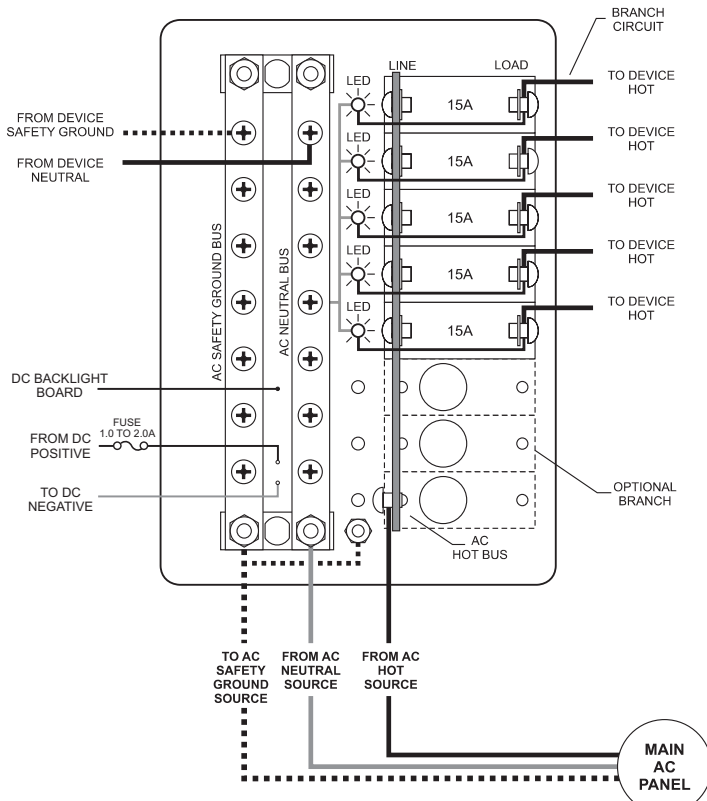
## The Purpose of a Panel

There are five purposes of a marine electrical panel:

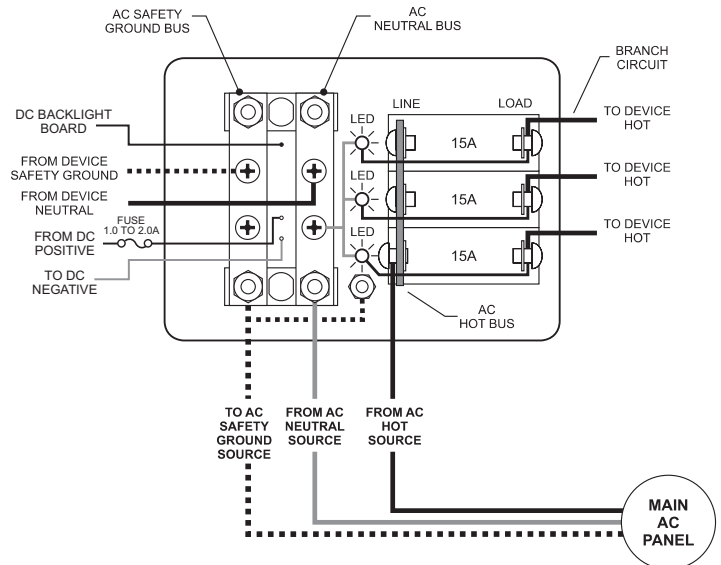
- Power distribution
- Circuit (wire) protection
- Circuit ON/OFF switching
- Metering of voltage and amperage (In panels with meters)
- Condition Indication (circuit energized)

## Useful Reference Books

- Calder, Nigel (2005). *Boatowner's Mechanical and Electrical Manual* (3d ed). Camden, ME: International Marine / McGraw-Hill.
- Wing, Charlie (2006). *Boatowner's Illustrated Electrical Handbook* (2d ed). Camden, ME: International Marine / McGraw-Hill.



**Wiring Diagram**  
AC Distribution Panel  
PN 8059 / PN 3059



**Wiring Diagram**  
AC Distribution Panel  
PN 8058 / PN 3058