

AC Main Panel

PN 7372

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:	50 amp Triple Pole AC Magnetic Breakers 80V DC/277V AC Maximum	
Amperage Rating:	50 amp service	
Voltage Rating:	120/240 Volts AC	
	Panels are rated for these voltages and are so marked in order to comply with ABYC standards.	
	Inches	Millimeters
Panel Depth:	2 1/2	63.5
Overall Dimensions:	5 1/4 x 3 3/4	133.4 x 95.3
Mounting Centers:	4 7/16 x 2 15/16	112.7 x 74.6

The Purpose of a Panel

There are six purposes of a marine electrical panel:

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

Applicable Standards

- American Boat and Yacht Council (ABYC) Standards and recommended Practices for Small Crafts sections: E-8, Alternating Current Electrical Systems on Boats.
- United States Coast Guard Code of Federal Regulations 33, Part 183, Subpart I, Electrical Systems on Boats.

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⚠ WARNING ⚠

- ✓ It is not possible within the scope of these instructions to fully acquaint the installer with all the knowledge of electrical systems that may be necessary to correctly install this product. If the installer is not knowledgeable in electrical systems we strongly recommend that an electrical professional be retained to make the installation.
- ✓ 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 gas engine rooms or battery compartments as the circuit breakers are not ignition proof.
- ✓ 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 vessels' 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

If this panel is to serve as your main shore power disconnect circuit breaker, select 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. If it is more than 10 feet, additional fuses or circuit breakers must be installed within 10 feet of the shore power inlet.

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 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. Install feed and output wires

Install the feed wires from the AC source. Install the output wires. Refer to the wire sizing chart to select the correct wire size. Connect the black AC hot, red AC hot, white AC neutral and green AC safety ground as shown in the illustration. The circuit breaker must have a rating less

than the allowable amperage of the wire, yet greater than the circuit's continuous current.

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.

If the feed wires are from the shore power inlet or the electrical attachment point of a permanently installed shore power cord and the inlet or attachment point is more than 10 feet from this panel, an additional fuse or circuit breaker must be installed within 10 feet of the shore power inlet. The measurement is made along the conductors.

Wire sizing chart

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

Allowable Amperage of Conductors

Wire Size (AWG)	Outside Engine Spaces	Inside Engine Spaces
16	25.0	21.3
14	35.0	29.8
12	45.0	38.3
10	60.0	51.0
8	80.0	68.0
6	120.0	102.0
4	160.0	136.0
2	210.0	178.5

Note: For wire with 105°C insulation rating and no more than 2 conductors are bundled. Not suitable for sizing flexible shore power cords.

Installation (continued)

4. 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. Do not confuse the red DC positive with the red AC hot.

5. Apply circuit labels and mount panel

Apply a label for each source from the 10 basic labels provided. If the appropriate label is not included, individual labels are available from Blue Sea Systems for specific applications. Refer to the label order form for a complete listing of individual labels.

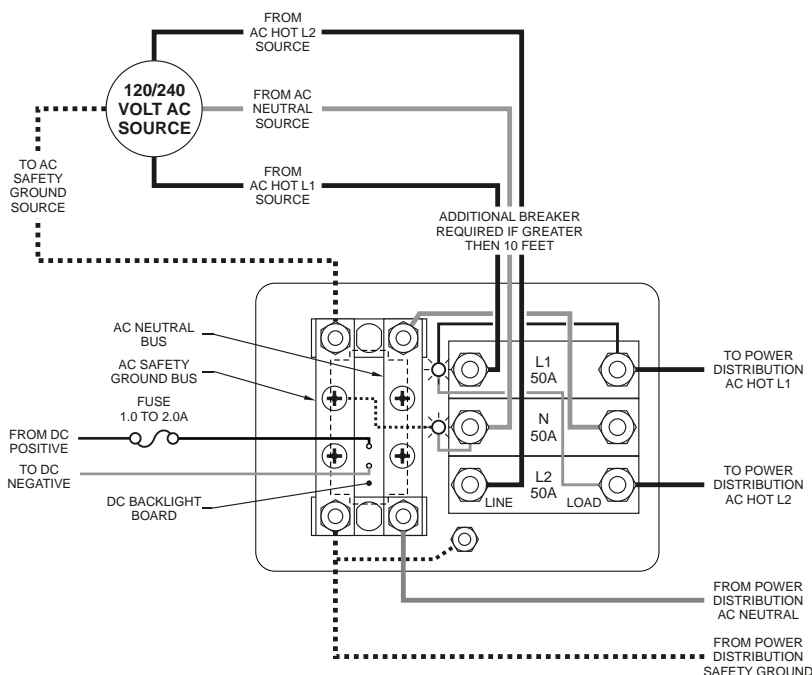
Fasten the panel to the mounting surface using the panel mounting screws supplied with the panel.

6. Testing

- ☑ Connect the shore power cable to the boat AC power inlet. Do not connect the shore power cable to the shore power pedestal. Instead run the shore power cable such that the shore power plug is next to the AC panel. With an Ohmmeter verify that the pins of the shore power plug are connected to the appropriate terminals of the panel. Refer to ABYC E-11 Figure 13 or 14 or NEC / NEMA documents for the standard pin arrangements for your plug.
- ☑ Connect the vessel's shore power and verify the Reverse Polarity light is not illuminated. If the red Reverse Polarity light is on then either the hot and ground or the hot and neutral wires have been crossed. Starting at the panel, trace the connections back as far as necessary to locate the error.
- ☑ Using a multimeter where the power source is connected to the panel verify:

PN 7232 - 120 Volt AC

- a. 120 volts between each hot and neutral (nominal, this may vary depending on source voltage)
- b. 120 volts between each hot and ground.
- c. 240 volts between the two hot, L1 and L2.
- c. 0 volts between neutral and ground.



Wiring Diagram
AC Main Power
Distribution Panel

(Part Number 7372 shown for reference)

Related Products from Blue Sea Systems

- High Amperage Fuses and Circuit Breakers for positive feed wires
- High Amperage Battery Switches
- Terminal Blocks and Common Bus Connectors
- AC Distribution Panels
- DC Distribution Panels
- AC and DC Digital and Analog Voltmeters and Ammeters

Useful Reference Books

Calder, Nigel, 1996: *Boatowner's Mechanical and Electrical Manual*, 2nd edition, Blue Ridge Summit, PA: TAB Books, Inc.

Wing, Charlie, 1993: *Boatowner's Illustrated Handbook of Wiring*, Blue Ridge Summit, PA: TAB Books, Inc.