

DC Power Distribution Panel

PN 8378 / PN 3378 18 Position

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 Ampere AC/DC magnetic 65V DC/277V AC Maximum	
Amperage Rating:	All components are sized for 100 Amperes of continuous current	
Voltage Rating:	Panels are rated for 12 volts DC. Panels can be upgraded to 24 volts with PN 8240, 18-32V DC Voltmeter.	
Voltmeter Rating:	8-16 Volt DC meter. Accuracy 3% of scale	
Ammeter Rating:	0-100 Ampere DC meter. Accuracy 3% of scale	
External Shunt:	50 Millivolt = 100 Ampere resistive manganin element	
Overall Dimensions:	Inches	Millimeters
	14-3/4 x 7-1/2	374.65 x 190.50

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)

Applicable Standards

- American Boat and Yacht Council (ABYC) Standards and Recommended Practices for Small Craft sections: E-1, E-3, E-9.
- United States Coast Guard 33 CFR Sub Part 1, Electrical Systems.

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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 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 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

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

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.

Related Products from Blue Sea Systems

PanelBack Insulating Covers
High Amperage Fuses and Circuit Breakers for positive feed wires
High Amperage Battery Switches
Terminal Blocks and Common Bus Connectors
AC and DC Voltmeters and Ammeters

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Installation

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. Optional - Upgrading to 24 Volts

Remove and replace the existing 8-16V DC voltmeter with an 18-32V DC voltmeter (PN 8240). Connect the existing meter sense wires to the new meter, Red Positive wire to + and Yellow negative wire to -.

3. Select mounting location and cut opening

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, gas 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 fasten the panel to the mounting surface.

4. Select positive feed wire and negative return

Determine the positive feed (red) and negative return (black or yellow) wire size by calculating the total amperage of the circuits that will be routed through the panel. Blue Sea Systems' electrical panels are rated at 100 ampere total capacity. The positive feed wire must be sized for 3% voltage drop at the 100 ampere panel rating or the maximum amperage that will be routed through the panel in any particular installation, whichever is less.

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 2 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.

5. Install shunt, positive feed wire and negative return

The panel is supplied with an external shunt ammeter that must be connected in the positive feed line to the panel. The shunt may be mounted at any point in the feed line, but mounting it close to the panel will keep the sense wires that run to the meter short, minimizing voltage loss and interference, creating the most accurate meter reading.

Connect the positive feed wire from the positive source to either of the 2 large bolt terminals on the shunt top. This is now the shunt positive terminal. Connect two additional lengths of feed wire from the remaining shunt terminal, now the negative terminal, to both panel positive buses. Next, connect a minimum 16 AWG red wire from the screw on the side of the shunt positive terminal to the meter positive terminal and connect another identifying color wire from the shunt negative terminal to the meter negative terminal. There should be a 1 ampere fuse in the sense wires near the shunt terminal. Be certain that on all 4 shunt connections the wire ring terminals sit directly on the brass blocks of the shunt without any washers in between.

Connect a negative return wire from both negative buses on the panel to DC negative.

