

Dual Battery Main Distribution Panel One Selector Battery Switch PN 8687/8691

Features

- Power distribution, switching, and circuit protection combined in one panel
- Configurable to suit specific needs of individual boat owners
- Familiar Selector Battery Switch: m-Series (8687) or e-Series (8691)
- Two 15A thermal circuit breakers provide 24-hour circuit protection
- Each circuit contains circuit labels and LED indicator lights that provide circuit status
- Blank slots to accommodate additional circuit breakers or switches

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:	24V DC	
House Amperage Rating:	100A Max (on installed circuit)	
Switch Amperage Ratings:	Continuous: 8687-300A, 8691-350A Intermittent (5 min.): 8687-500A, 8691-600A Cranking (100 sec.): 8687-700A, 8691-900A Inrush (2.5 sec.): 8687, 1500A, 8691-1750A	
Dimensions:	Inches	Millimeters
	8687 4.50 x 7.50	114.3 x 190.50
Mounting Centers:	8691 5.25 x 8.00	133.35 x 203.20
	8687 3.67 x 6.67	93.22 x 169.42
Battery Switch Terminal Studs:	8691 4.42 x 7.17	112.27 x 182.12
	3/8"-16 (accepts M10 terminal)	
Torque:	140 in-lbs.	

Blue Sea Systems Inc.
425 Sequoia Drive
Bellingham, WA 98226 USA

Phone (360) 738-8230
Fax (360) 734-4195
E-mail conductor@blueseasystems.com
www.blueseasystems.com

Document 6344 Rev.B



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 panels must not be installed in explosive environments such as gasoline engine rooms or battery compartments because the circuit breakers are not ignition protected.
- ✓ 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

Calder, Nigel, 2005: *Boatowner's Mechanical and Electrical Manual*, 3rd edition, Blue Ridge Summit, PA: TAB Books, Inc.
Wing, Charlie, 1993: *Boatowner's Illustrated Handbook of Wiring*, Blue Ridge Summit, PA: TAB Books, Inc.

Applicable Standards

- American Boat and Yacht Council (ABYC) Standards and Recommended Practices for Small Craft sections: E-1, E-3, E-11.
- United States Coast Guard 33 CFR Sub Part 1, Electrical Systems.
- National Fire Protection Agency (NFPA) 302

Related Products Available from Blue Sea Systems

Toggle World Circuit Breakers, e.g., 7200
Small Case Rockers, e.g., 7300, 7408 (flat), 7433 (slot reset)
Large Case Rockers, e.g., 7450
CLB with Adapter, e.g., 7050/4111
Push Button Switches with Adapter, e.g., 8200
Toggle Switches with Adapter, e.g., 8204

Installation

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 and is not in an area where flammable vapors from propane, gas or lead acid batteries accumulate. 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. Install LED negative feed wire

Use a 16 AWG wire to connect the LED negative feed (Yellow) wires to a DC negative bus.

4. 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 Sizing Chart** to determine the appropriate wire sizes.

5. 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.

Caution

Caution: ABYC Interrupt

In certain circumstances, main DC circuit breakers may have to break very high amperages. The ability of a circuit breaker to safely break high amperage is its Ampere Interrupt Capacity (AIC) rating. AIC is a function of a battery's Cold Cranking Amperes (CCA) capacity. According to ABYC E-11 standards, circuit breakers shall have a DC voltage rating of not less than the nominal system voltage, be capable of an interrupting capacity according to the values in the table below, and remain operable after the fault. For example, a boat with a group 24 or 27 battery may have as much as 650 CCA. The DC main circuit breaker for this circuit must have an AIC rating of 1500 Amperes.

DC voltage rating	CCA of all connected batteries	Ampere Interrupt Capacity (AIC)	
		Main Circuit Breaker (Amperes)	Branch Circuit Breaker (Amperes)
12 Volt and 24 Volt	650 or less	1500	750
	651-1100	3000	750
	over 1100	5000	2500
32 Volts	1250 or less	3000	1500
	over 1250	5000	2500

Blue Sea Systems Battery Management Panels contain thermal (push button reset) circuit breakers rated at 15A. These circuit breakers are suitable for 24-hour circuits connected directly to 12V or 24V battery banks with CCA capacities less than 660A.

Installation of this panel in systems with battery banks of 660A or higher should include an additional fuse or circuit breaker of appropriate interrupt capacity in the line between the battery bank and the pushbutton circuit breakers to comply with ABYC E-11 and NFPA 302.

Wire Sizing Chart

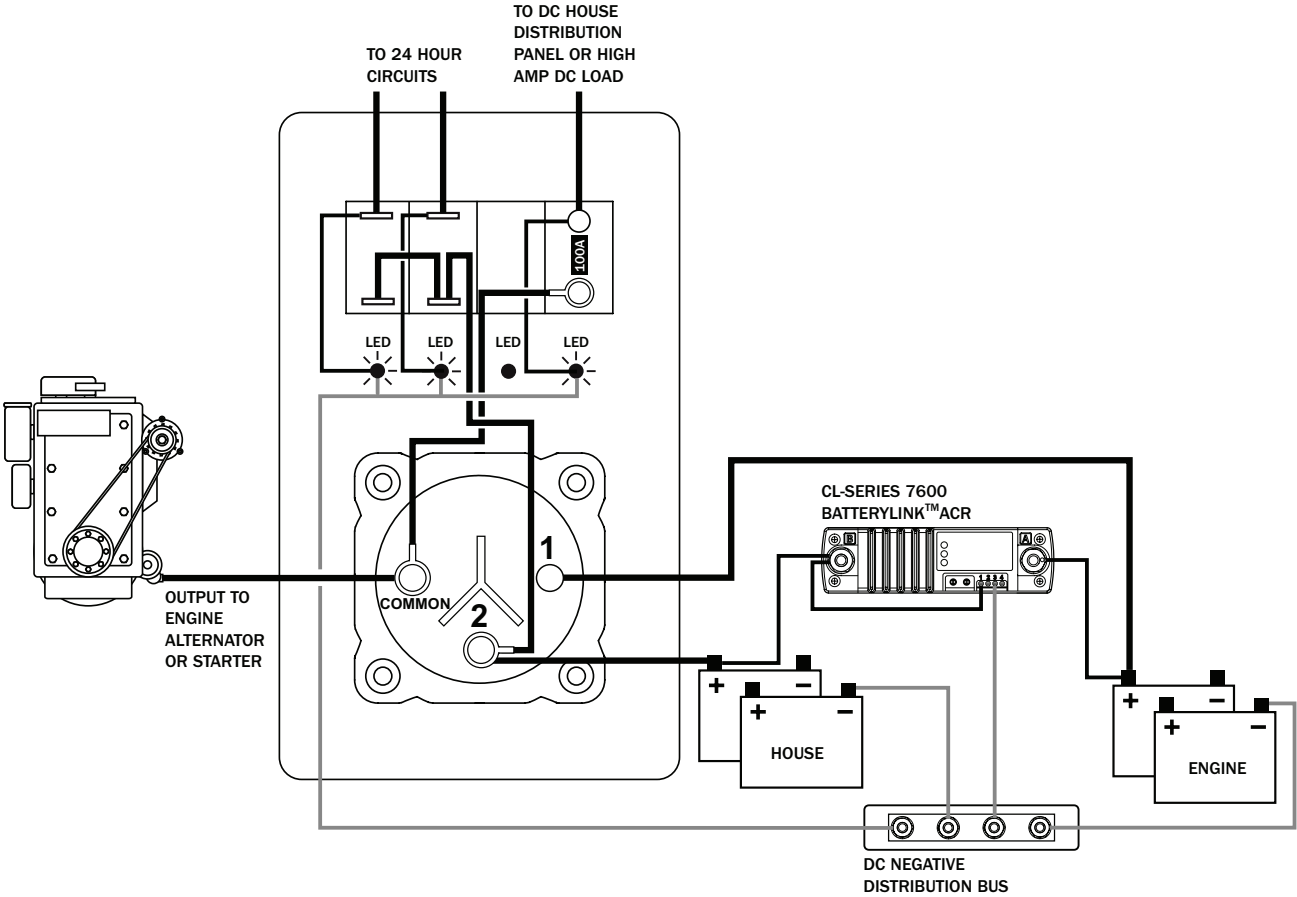
- 1. Calculate the maximum sustained amperage of the circuit. Measure the length of the circuit from the power source to the load and back.
- 2. Calculate **Famps** (Feet x amps). Multiply circuit length by max. current.
- 3. Base the wire on either the 3% or 10% **voltage drop**. In general, items which 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 **Famps** column with the right **voltage** and **voltage drop**, run down the list 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.

Example

A 12 volt system at 10% drop with a 40' circuit x 45 amps = 1800 Famps. A wire size of 8 is required.

Wire Size	Wire Ampacity non-engine	Wire Ampacity engine	Voltage		12		24		32	
			Drop	→	3%	10%	3%	10%	3%	10%
16	25.0	21.3	→		86	288	173	576	230	768
14	35.0	29.8			138	459	275	918	367	1223
12	45.0	38.3			219	729	437	1458	583	1944
10	60.0	51.0			348	1159	695	2317	927	3090
8	80.0	68.0			553	1843	1106	3686	1474	4915
6	120.0	102.0			879	2929	1757	5858	2343	7811
4	160.0	136.0			1398	4659	2796	9319	3727	12425
2	210.0	178.5			2222	7408	4445	14815	5926	19754
1	245.0	208.3			2803	9342	5605	18684	7474	24912
0	285.0	242.3			3536	11788	7073	23576	9430	31434
00	330.0	280.5			4457	14858	8915	29715	11886	39620
000	385.0	327.3			5619	18731	11239	37462	14985	49950
0000	445.0	378.3			7086	23620	14172	47241	18896	62988

Note: For wire with 105°C insulation rating and AWG wire sizes.
Chart courtesy of the West Advisor



Wiring Diagram
Dual Battery Main Distribution Panel
PN 8687 Shown