

INTRODUCING... THE AC MASTER CONTROLLER™

Thank you for purchasing the AC Master Controller! The AC Master Controller allows you to automatically select one or two power sources from four AC inputs: two that are from shore power, and two that are from generators.

Warranty/Registration

Before proceeding, complete and mail back the Warranty Registration card.

Manual Purpose

With your personal safety in mind, this manual lists important safety precautions first, then covers installation, operation, maintenance, troubleshooting, warranty, and customer service information.

APPLICATION

The AC Master Controller automatically selects the first input AC from a possible 2 inputs for Bus A and Bus B inputs. Each output bus has a generator and a shore power input.

The AC Master Controller (ACMC) is part of a system that brings AC power on board safely and conveniently. The ACMC has four inputs: two A inputs (one shore, one main genset) to feed the A bus, and two B inputs (one shore, one auxiliary genset) to feed the B bus. If only one input is detected, the missing input feature automatically parallels the both A and B outputs, bringing power to both the A and B buses. Shore power is the dominant (master) input.

To avoid “hot swaps”, if the same genset which ran at startup is still running 5 seconds after shore power is energized, the ACMC will take the genset off line and, after a three-second delay, engage the shore power. The boat's AC system can thus access power from a selection of single or combination A and B inputs, including the following choices:

- A shore only
- B shore only
- A and B shore in combination
- A genset only
- B genset only
- A and B gensets in combination
- A shore with B genset in combination
- B shore with A genset in combination

All of the output is done automatically, with no manual switch gear (rotary switches or slide bar lockouts).

Special Feature

Both A input contactors are rated for 100 amps. This allows a single large generator to operate both the A and B bus at full power, using the ACMC's paralleling feature. All the owner or captain has to do is assess what power is available to the boat and energize accordingly.

IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS. This manual contains important safety and operating instructions for the AC Master Controller. Read the entire manual before using this unit. Also read all instructions and cautions for and on the AC Master Controller.

Warnings

WARNING — HIGH VOLTAGE

To avoid serious injury or death from high voltage electrical shock, disconnect AC shore power before opening panel.

WARNING — ELECTRICAL SHOCK AND FIRE HAZARD

Cord grip connectors must be used to prevent wires from chafing on the metal case and causing an electrical short. See installation instructions for suitable connector types or call Charles Marine Products to order a connector kit.

Installation Precaution

Boat wiring is a complex task that can cause shock, corrosion and other hazards if not done properly by trained, experienced personnel. For more information on this subject contact the **American Boat and Yacht Council (ABYC)** or see the standards and regulations below:

American Boat and Yacht Council
E-8 “Alternating Current (AC)
Electrical Systems on Boats”

3069 Solomon’s Island Road
 Edgewater, MD 21037
 Telephone: 410.956.1050
 FAX: 410.456.2737

NFPA Standard 302.
“Pleasure and Commercial Motor Craft”

National Fire Protection Association
 1 Batterymarch Park
 P.O. Box 9101
 Quincy, MA 02269-9401
 Telephone: 800.344.3555

Rules and Regulations for Recreational Boats

Excerpts from the United States Code (USC) and the Code of Federal Regulations (CFR) (U.S. Coast Guard Regulations) are available from the **American Boat and Yacht Council** listed above.

Note: Installation of the AC Master Controller must be made in accordance with all applicable standards and regulations.

Environmental Precaution

The AC Master Controller is intended for installation inside an engine room or elsewhere inside the boat. Make sure that the location will not subject the unit to rain, snow, excessive moisture, or excessive heat.

Application Precaution

These units are intended for hard-wired, permanent, on-board applications. Use of attachments not recommended or sold by Charles Marine Products may result in risk of fire, electrical shock or personal injury.

Damaged Unit Precaution

Do not operate the AC Master Controller if it has received a sharp blow, been dropped, immersed in water or otherwise damaged. See the section in this manual on *Warranty & Customer Service* for repair information.

Disassembly Precaution

Do not disassemble the AC Master Controller. See the sections in this manual on *Maintaining the AC Master Controller*, *Troubleshooting the AC Master Controller* and *Warranty & Customer Service*.

MOUNTING

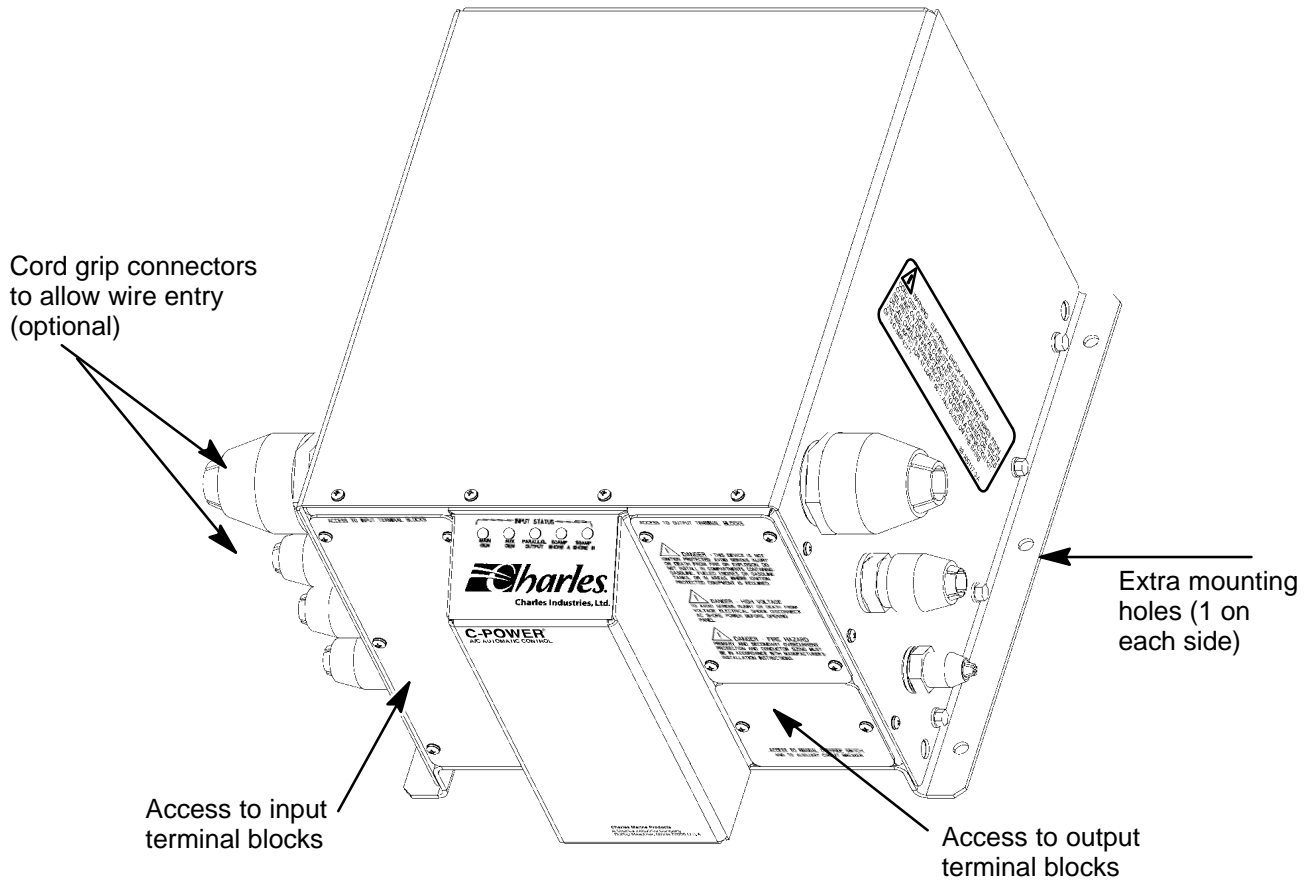


Figure 1. AC Master Controller Access Openings

Choosing Mounting Hardware

As with any marine equipment, secure mounting is of utmost importance. You will need to provide four bolts or screws to secure the unit. They must be 1/4-inch in diameter. The screws or bolts you choose should be backed with a flat washer and kept vibration-free with a split-ring lock washer. If using bolts, they must be secured on both sides of the bulkhead and also backed with a washer or washer plate. If using screws, they should be at least 1" long. All hardware must be corrosion-resistant stainless steel or cadmium-plated steel.

Mounting the AC Master Controller

The AC Master Controller may be mounted horizontally on a deck or vertically on a bulkhead.

Horizontal Mount

WARNING – ELECTRICAL SHOCK HAZARD

Use care when drilling to avoid contact with any wires or live components.

Step	Action
1.	Carefully lower and position the unit on the deck in the exact location the unit will be installed. <i>Note: The wiring enclosure should be visible and accessible.</i>
2.	Mark the location of the mounting holes. The center hole on each side is optional.
3.	Remove the unit and drill the four (or six) marked holes with the proper-sized drill bit.

Step	Action
4.	Realign the unit's mounting holes with the drilled holes and fasten the unit to the deck with the appropriate mounting hardware.
5.	(optional) For extra protection, mount 2 extra screws through the holes in the base plate (see Figure 1).
6.	Firmly secure all mounting hardware.

Vertical Mount

WARNING – ELECTRICAL SHOCK HAZARD

Use care when drilling to avoid contact with any wires or live components.

Step	Action
1.	Carefully lower and position the unit on the bulkhead in the exact location the unit will be installed. <i>Note: The wiring compartment should be at the bottom to ensure proper cooling of the unit.</i>
2.	Remove the unit and drill four marked holes with the proper-sized drill bit.
3.	Realign the unit's mounting holes with the drilled holes and fasten the unit to the bulkhead with the appropriate mounting hardware.
4.	(optional) For extra protection, mount 2 extra screws through the holes in the base plate (see Figure 1).
5.	Firmly secure all mounting hardware.

Choosing the Appropriate Wire Type and Gauge

All input and output conductors should be at least 6 AWG, stranded, 600 volt rating, UL type AWM, UL 1426 or equivalent, or a UL listed marine shore power cable. See ABYC standard E-8 for more details on conductor types and sizing (gauge).

Note: Use UL Recognized ring or captive spade terminals for making all connections to the terminal block regardless of the wiring method chosen.

Choosing Electrical Wiring Hardware

Wiring should only be done with a jacketed cable (.030 inches jacket thickness minimum) such as UL type 1426 boat cable, or by using a UL listed marine cable set wire (type SO or equivalent). This wiring should be installed in the boat in a protected area and routed to avoid contact with sharp edges or hot surfaces.

WARNING – ELECTRICAL SHOCK HAZARD AND FIRE HAZARD

Cord grip connectors must be used to prevent wires from chafing on the metal case and causing an electrical short. See Table 1 for suitable connector types or call Charles Marine Products to order a connector kit.

The AC Master Controller is intended for hard-wiring in a permanent location. Cord grip connectors with water sealing bushings and strain relief are required to secure wires or cables going into or out of the AC Master Controller.

Charles Marine Products recommends the cord grip connector kit 97-001743-A. Individual parts are listed in Table 1.

Table 1. Recommended Cord Grip Connector and Accessories

Manufacturer	Cord Grip		Sealing Washer		Locknut		Cord Range	Cord Type
	Part #	# to Order	Part #	# to Order	Part #	# to Order		
Thomas & Betts	2675	4	5263	4	142	4	.660-.780	6/3 cordset
Thomas & Betts	2690	1	5262	1	141	1	.125-.275	6/24 cordset
Thomas & Betts	2703	2	5266	2	145	2	1.080-1.280	2/3 cordset

Various other cord grip connectors may be suitable for use with the AC Master Controller. Contact Charles Marine Products customer service for information.

Overcurrent Protection – Input

Overcurrent protection must be provided at the time of installation by a circuit breaker on the primary (shore) supply circuit. A two-pole shore power main circuit breaker is required for the shore power line going into the AC Master Controller. For 240 volt (or 220 volt), 50-amp service, this should be rated at 50 amps, 240 volts, 3000 AIC and be of the long-time delay type.

Making AC Master Controller Connections

WARNING – HIGH VOLTAGE

To avoid serious injury or death from high voltage electrical shock, disconnect AC shore power before opening panel.

Follow the procedure below to make the appropriate connections.

Step	Action
1.	Remove the access cover.
2.	Install the cord grip connectors using the sealing gaskets and locknuts.
3.	Undo the chucks from the cord grip connectors.
4.	Slide the cord grip connectors down and over the cables from the primary (shore power) circuit breaker and to the secondary (boat) circuits.
5.	Insert the cables through the cord grip connectors and cut to length.
6.	Strip back the insulation.
7.	Use UL Recognized ring or captive spade terminals for making all connections.
8.	Connect all wiring based on the chosen wiring method.
9.	Tighten the cord grip connectors.
10.	Reinstall the access cover.

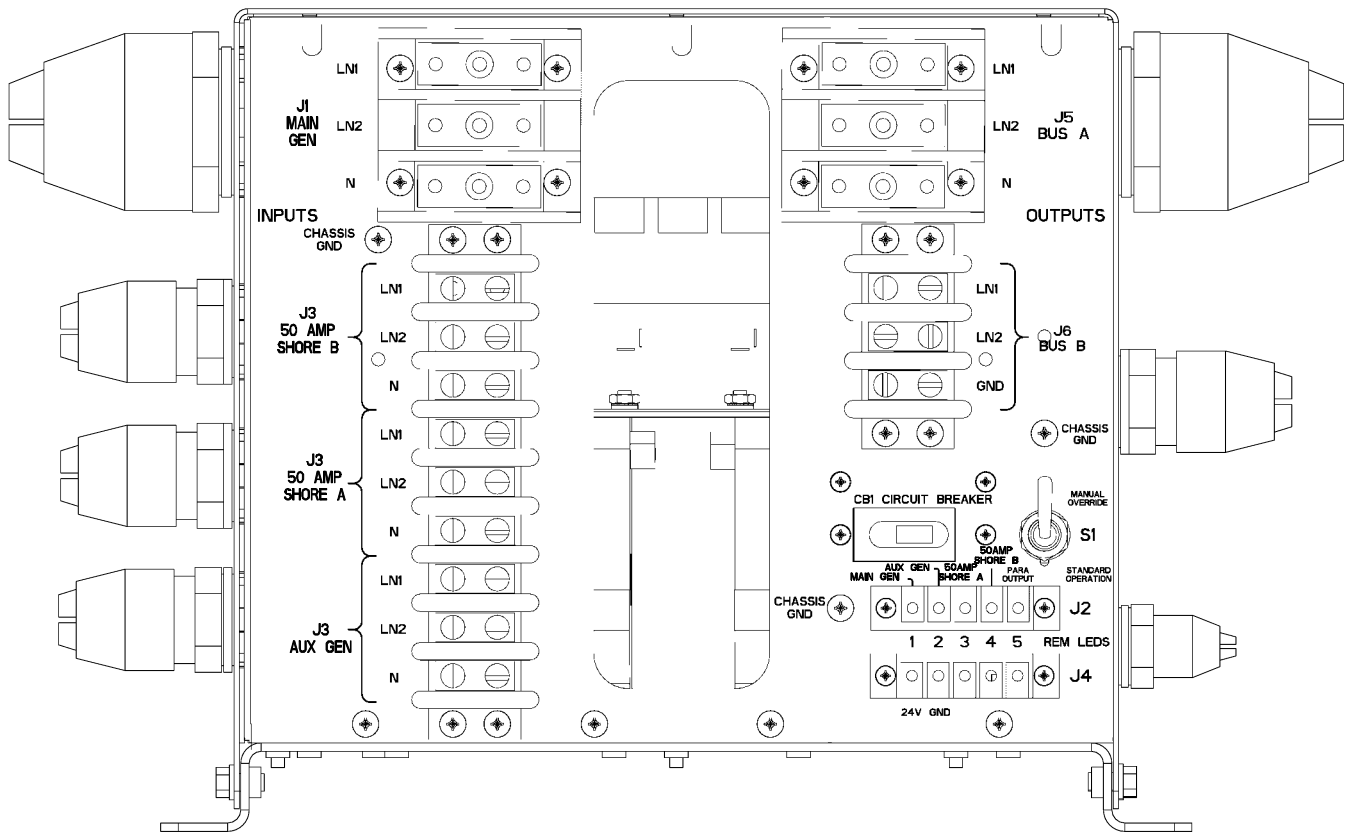


Figure 2. Wiring Contacts for the AC Master Controller (all covers removed)

WARRANTY & CUSTOMER SERVICE

Warranty

CHARLES MARINE PRODUCTS warrants the AC Master Controller will be free from defects in materials and workmanship which cause mechanical failure for one (1) year, as set forth in the Limited Warranty. Review this warranty carefully for information on what is covered by its terms. Complete and return the warranty registration card within ten (10) days of purchase to establish proof of ownership and validate the warranty coverage. You must provide notice of any alleged defect in material of workmanship within thirty (30) days of discovering the problem, and within the warranty period. Follow the procedure outlined below to obtain warranty service.

Warranty Service and Repair

If the unit fails to operate properly after following all the instructions in the manual, or if the AC Master Controller requires service, take the following steps:

1. Contact Charles Marine Products Customer Service and obtain a "Returned Goods Authorization" (RGA) number and a Service Center address
2. Ship or mail the AC Master Controller together with the RGA to the appropriate Service Center. Shipping costs to and from the Service Center are your responsibility
3. When service is completed, Charles Marine Products will return the AC Master Controller to you.

Customer Service

If technical assistance or customer service is required, contact Charles Marine Products at:

- (847) 806-6300 (Customer Service)
- (847) 806-6352 (FAX)
- (905) 821-7673 (Canada)

For correspondence only, mail to:

Charles Marine Products
 Charles Center
 5600 Apollo Drive
 Rolling Meadows, IL 60008-4049

SPECIFICATIONS

The specifications for the AC Master Controller are listed in Table 2.

Table 2. AC Master Controller Specifications

Feature	U.S.	Metric
Input Voltage	240 VAC	
Input Current	50 Amps	
Output Voltage	240 VAC	
Output Current	150 Amps	
Operating Frequency	50/60 Hz	
Operating Temperature	32° to 122° F	0° to 50° C
Approximate Weight	62.85 pounds	28.49 kilograms
Height	11.75 inches	29.85 centimeters
Width	14.75 inches	37.47 centimeters
Width (excluding the mounting flange)	12.65 inches	32.13 centimeters
Depth	16.06 inches	40.80 centimeters

