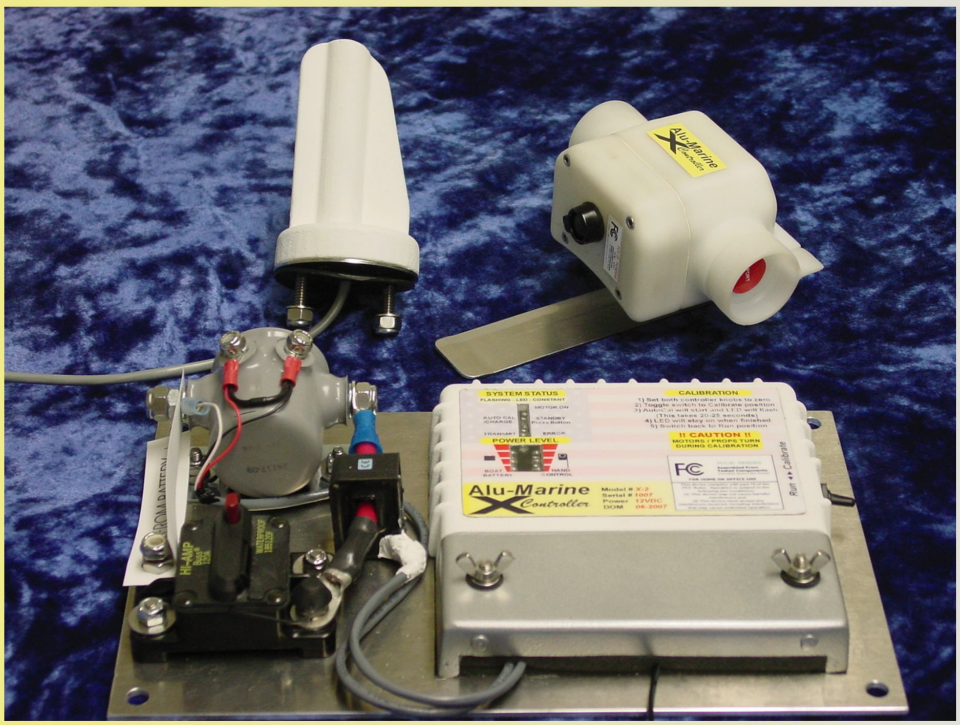
Alu-Marine X Controller



Operation Manual

RF Version 2.0

For your safety and the safety of others, we recommend you fully read this operation manual and understand how to use your X Controller prior to operation.

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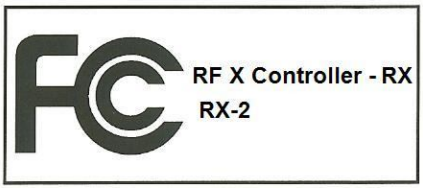
0.1 FCC Certification Notification

This device compiles with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

0.2 FCC Declaration of Conformity



0.3 FCC Information to User

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* Reorient or relocate the receiving antenna.
* Increase the separation between the equipment and receiver.
* Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
* Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a class B computing device, pursuant to FCC Rules. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

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1.0 Description of components

The X Controller system consists of a base unit, wireless RF controller, and an antenna. A brief description of these components is as follows:

1.1 X Controller Base unit

The base unit is the brains of the system. It is responsible for receiving signals from the wireless controller and converting them into motor commands, housing all electronics, and charging of the wireless controller. There are status indicators on the front panel to display boat battery power, controller battery power, and system status. Refer to section 2.0 for details. On the bottom of the box are all the external connections; see the connection diagram for details. On the right of the box is the calibration switch. Refer to “Calibration Procedure” in section 2.0 for details on use of this switch.

1.2 X Controller wireless (RF) controller

The wireless RF controller is used to input motor commands. Motor direction and speed are controlled by moving the 2 knobs located on either side of the controller. Each knob works one motor. The speed is determined by how far the knob is rotated. More rotation = more speed. The direction of the motor is determined by the knob position past the center point (tab up is speed and rotation at zero (0) or both motors off). Power is obtained from rechargeable batteries and is cycled ON and OFF via the pushbutton located on the bottom of the controller. Operation time is dependant on frequency of use (average operation time is 12-15 hours). If the controller battery power becomes too low, the system will turn off to prevent injury. To charge the controller, attach the controller. If the battery is dead it may take up to 7 hours to reach full charge. Connecting the hand controller to the charge cable of the base will shut off the motors and start the charging cycle. You must charge the controller before use (about 7 hours).

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2.0 Setup and Operation

We recommend that all installation and wiring be performed by a professional. The antenna that is attached to the base unit should be mounted close to waist level in fishing position and with as few objects as possible between the wireless controller and the antenna. Disconnect the hand controller from the charging cable on the base, and place the control taps in the middle for stopped position. If the red indicator below the green indicator is on solid, press the button on the bottom of the controller, and the red indicator will start flashing.

System Status Indicators - consist of three (3) indicators in the upper section of the window on the base front panel.

INDICATOR LEGEND

	Steady on	Flashing
Top (RED)	Motors on	
Center (GRN)	Standby	Charging/Calibrating
Bottom (RED)	Error	Transmitting RF

Power Level Indicators – consist of eight (8) indicators in the lower section of the window on base unit front panel. They show the power level of the boat battery (left side) and the controller battery (right side). Both side read the same:
4 indicators on = 100% (full charge) - 76% capacity
3 indicators on = 75% - 51% capacity
2 indicators on = 50% (half charged) - 26% capacity
1 indicators on = 25% capacity or less

Follow these steps to operate your X Controller:
1) Fully charge controller (approximately 7 hours).
2) Disconnect the connector from the charging cable of base unit, the green indicator on the base unit will light steady.
3) Set both controller knobs to zero position (tabs up) – NOTE: system will not work unless both knobs are in the zero position or until both knobs are returned to zero position.
4) If off, turn on any switch connected to the base unit's kill switch terminals.
5) Calibrate the system if not already done (see calibration procedure below).
6) Turn on the hand controller by pressing the pushbutton located on the bottom of the controller. When the system is on, the lower red indicator in the system status window labeled "transmit" on the base will blink.

You can now operate your motors by turning the knobs on the controller. Each knob works one motor. The speed is determined by how far the knob is rotated. More rotation = more speed. The direction of the motor is determined by the knob position past the center point (tab up is speed and rotation at zero (0) or both motors off).

To reset an error condition, the red error indicator lit solid, simply turn the hand controller off with the push button, and then back on.

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Calibration Procedure

Ensure props are clear of obstructions before and during calibration procedure

MOTORS/PROPS TURN DURING CALIBRATION

1- Disconnect the hand controller from the charging cable of the base.
2- Turn both controller knobs to zero (center) position.
3- If off, turn any kill switch to the ON position.
4- Press ON/OFF button on the bottom of controller; the red status indicator will flash.
5- Move the CALIBRATION switch on base up to the Calibrate position, and the green indicator will begin flashing.
6- Motors will begin to slowly turn – this process takes about 20 seconds.
7- When calibration is complete, the green indicator will light solid.
8 - Move the Calibration Switch down for normal run operation.

3.0 Troubleshooting

If at any time the system experiences a communications fault of more than three (3) seconds, the motors will turn off. When communication is restored you must return the knobs to the zero (0) position to re-enable the motors. Faults can be caused by a number of things. Some of the things to check for are:

Is the battery low? Average operation time is around 12 hours; has it been in use for around 12 hours? Was it charged long enough (around 7 hours). Please note that if the battery life gets noticeably short (with proper charging), the battery may need to be replaced.

Is there something blocking the signal from the hand controller to the base antenna? Some electronics and metal enclosures can block the signal. You can check signal strength easily by moving to a different location to see if it will work better. You can also use the base unit as a signal strength indicator. This is done by watching the frequency at which the red indicator flashes. Whenever the signal is interrupted the indicator will not blink. This means that if the indicator is blinking fast, then communications are ideal. Whenever the indicator misses a blink the communications are less than desirable.

Are you getting interference from another source? Your X Controller works at 916MHz. If there is another device operating at the same frequency this may be the cause of the communications fault.

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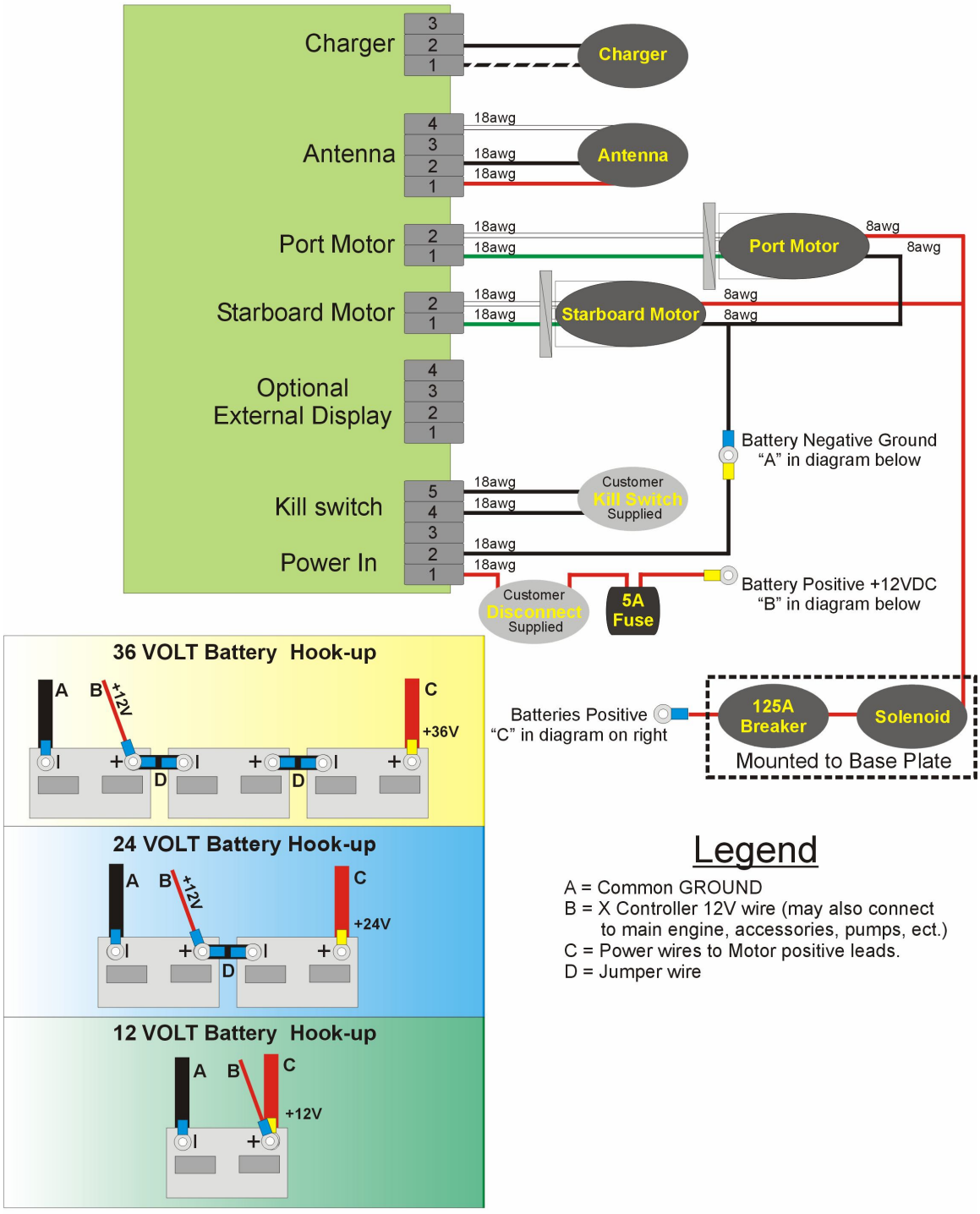
4.0 Wiring Diagram

X Controller RF Version (PROTOTYPE) Wiring Diagram



Legend

A = Common GROUND
B = X Controller 12V wire (may also connect to main engine, accessories, pumps, ect.)
C = Power wires to Motor positive leads.
D = Jumper wire

Your X Controller should be hooked up as outlined above

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4.1 Point-to-Point Wiring Instructions

1. Install motors, the base plate, and the antenna prior to making any connections.
2. Connect the black 8 AWG wire of the motors to negative side of the battery.
3. Connect a wire from the negative side of the battery to the base unit 2nd terminal of the Power and Kill Switch connector.
4. Connect the red 8 AWG wire of the motors to the left solenoid terminal with 5/16” ring terminals. Before tightening the nut, make sure all three ring terminals are on the post: the two ring terminals for the two motors and feedback wire 22 AWG terminal ring terminal.
5. Connect the port motor’s white wire to the 1st terminal of the Port connector.
6. Connect the port motor’s green wire to the 2nd terminal of the Port connector.
7. Connect the starboard motor’s white wire to the 1st terminal of the Starboard connector.
8. Connect the starboard motor’s green wire to the 2nd terminal of the Starboard connector.
9. Install a customer supplied switch (toggle, single pole, single throw) as the Emergency Motor Power Kill Switch where desired.
10. Connect one side of the Kill Switch to the 4th terminal of the Power and Kill Switch connector.
11. Connect the other side of the Kill Switch to the 5th terminal of the Power and Kill Switch connector.
12. Connect the +5V (red) wire from the Antenna to the 1st terminal of Antenna connector.
13. Connect the GND (black) wire and shield wire from the Antenna to the 2nd terminal of Antenna connector.
14. Connect the Signal (white) wire from the Antenna to the 4th terminal of Antenna connector.
15. Note the 3rd terminal of the Antenna connector remains unconnected.
16. Connect a wire from the 12 volt battery positive side to the 5 amp fuse holder.
17. Connect the other side of the 5 amp fuse holder to the customer supplied power switch.
18. Connect the other side of the customer supplied power switch to the 1st terminal of the Power and Kill Switch connector.
19. Note the 3rd terminal of the Power and Kill Switch connector remains unconnected.
20. Connect the 6 AWG wire from positive side of the 12 volt battery to a customer supplied Battery Disconnect switch.
21. Make sure base unit is off, and then connect the other side of the Battery Disconnect switch to the BATT terminal of the circuit breaker or the fusible link on the base plate.

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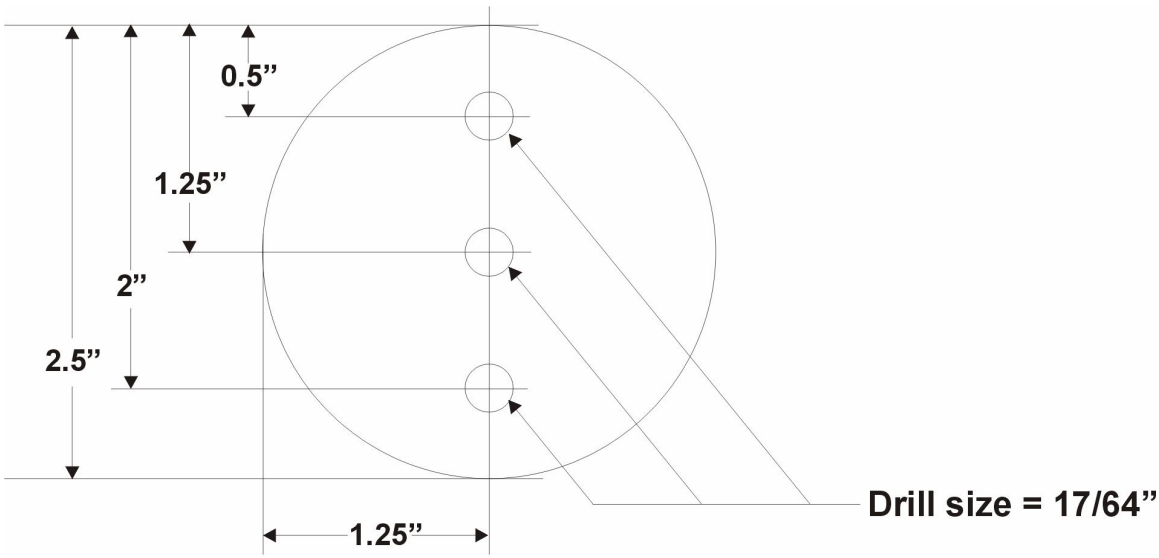
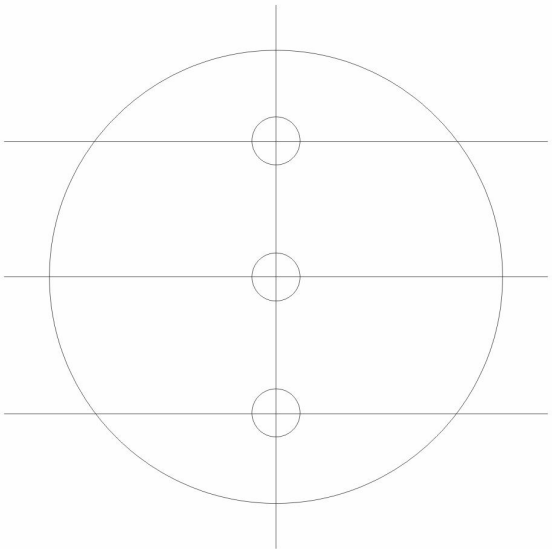
5.0 Antenna mounting template



Drill Template



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