

# **ALTx-2/2D**

## **Volume Control**

### **Installation Manual**



## SAFETY INSTRUCTIONS

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### *Safety Instructions*

1. Read Instructions - All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions - The safety and operating instructions should be retained for future reference.
3. Heed Warnings - All warnings on the appliance in the operating instructions should be adhered to.
4. Follow Instructions - Follow all operating and user instructions.
5. Water and Moisture - The appliance should not be used near water; for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
6. Wall Mounting - The appliance should be mounted to a wall as recommended by the manufacturer.
7. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
8. Power Sources - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
9. Grounding or Polarization - Precaution should be taken so that the grounding or polarization means of an appliance is not defeated.
10. Object and Liquid Entry - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through the openings.
11. Damage Requiring Service - The appliances should be serviced by qualified service personnel when: The power supply cord or the plug has been damaged; Objects have fallen, liquid has been spilled into the appliance; The appliance has been exposed to rain; The appliance does not appear to operate normally; or The appliance has been dropped or the enclosure is damaged.
12. Servicing - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.
13. Care - From time to time you should wipe off the front panel with a soft dry cloth.



## ***Introduction***

The ALTx-2 (2D) UltraMatch™ Volume Control is a wall-mounted standard or Decora® style stereo speaker-level 12-step attenuator. It connects between the speaker outputs of an amplifier/receiver and a pair (or multiple pairs) of speakers. The ALTx-2 adjusts volume level by attenuating the amplifier signal output of the ALTx-2 to the speakers. It is manufactured using a high-quality autoformer design for long life, excellent frequency response, no heat build-up, and maximum power transfer from the amplifier to the speakers.

The UltraMatch™ designation means the ALTx-2 can match the minimum output impedance of the amplifier/receiver, in addition to adjusting volume. It eliminates the need for a speaker selector or other impedance matching equipment. When the impedance matching switch is in 1X position the volume control can be used as a standard control. The 2X, 4X, and 8X settings allow it to be used as an UltraMatch™ control.

## ***Considerations***

**Amplifier power rating** - Make sure the amplifier has 20 watts per channel for each pair of speakers to be connected.

**How many ALTx-2s** - An UltraMatch™ volume control should be used for each pair of speakers (however, up to 2 pairs of speakers can be used on each control).

**Speaker rating** - A minimum 4-ohm speaker load can be connected to the Output of each UltraMatch™ volume control.

**Impedance matching switch** - Each ALTx-2 in the system must have the impedance matching switch positioned correctly (1X, 2X, etc.). Switch must be set BEFORE the ALTx-2 is installed.

**Installation location** - Typical locations for ALTx-2 installation include proximity to other wall controls, near a desk or next to entrances.

**Proper impedance matching switch position for UltraMatch™ Impedance Matching** - ALTx-2 impedance matching switch position must be chosen to correctly multiply the impedance of the system to a level that equals or exceeds the minimum impedance of the amplifier.

By determining the impedance capability of the amplifier with a few simple calculations, you can determine the number of speakers the system can safely operate. The impedance matching switch position can then be determined by using the charts on the next pages.

## IMPEDANCE MATCHING

**Amplifier impedance** - Determine the amplifier's minimum impedance. The amplifier's minimum impedance is measured in ohms (4, 6 or 8 ohms) and can be found in the amplifier's manual. It may also be listed on the back panel of the amplifier near the speaker terminals.

**Speaker impedance** - Determine the impedance for each pair of speakers (see speaker's manual). If the speaker impedance is 6 ohms, use the 4-ohm row in the charts below.

**Speaker pairs** - Determine the total number of 8-ohm pairs of speakers. Also determine the total number of 4 ohm pairs of speakers.

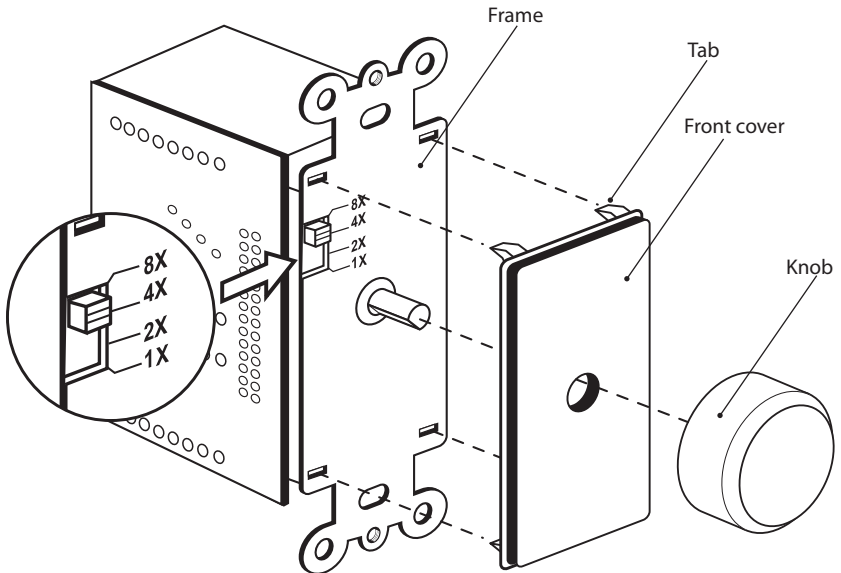
**Appropriate chart** - Choose the "4-ohm Amplifier" or "8-ohm Amplifier" impedance matching chart below that matches the amplifier's minimum impedance. If the amplifier is 6 ohm stable, use the 8 ohm chart.

**Appropriate row and column** - Cross reference the total number of 4-ohm pairs of speakers (rows on charts below) with the total number of 8 ohm pairs of speakers (columns on charts below) to choose the right switch position (1X, 2X, 4X or 8X.) - see illustration on page 5.

4-ohm Speaker Pairs	0	1	2	3	4	5	6	7	8
	0	-	1X	2X	4X	4X	8X	8X	8X
1	2X	4X	4X	8X	8X	8X	8X		
2	4X	8X	8X	8X	8X				
3	8X	8X	8X						
4	8X								

4-ohm Speaker Pairs	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	0	-	1X	1X	2X	2X	4X	4X	4X	4X	8X	8X	8X	8X	8X	8X	8X
1	1X	2X	2X	4X	4X	4X	4X	8X	8X	8X	8X	8X	8X	8X	8X		
2	2X	4X	4X	4X	4X	8X	8X	8X	8X	8X	8X	8X	8X				
3	4X	4X	4X	8X	8X	8X	8X	8X	8X	8X	8X						
4	4X	8X	8X	8X	8X	8X	8X	8X	8X								
5	8X	8X	8X	8X	8X	8X	8X										
6	8X	8X	8X	8X	8X												
7	8X	8X	8X														
8	8X																

**Note:** before accessing impedance switch, remove knob and front plate. Front plate is attached to the frame with 4 tabs, use caution to push the tabs out of the frame.



## INSTALLATION

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### *Type of Speaker Cable*

For most applications, 16 gauge, stranded copper speaker cable is recommended for the ALTx-2 speaker connections. For wiring runs longer than 100 feet, 14 gauge wire is recommended. Always use cable with a "CL" fire rating.

NOTE - Never use solid-core, aluminum or Romex® type cable with volume controls.

### *P-Ring and Electrical Boxes*

From the wallplate/faceplate to the back of the ALTx-2, the mounting depth of the volume control is 2-7/8". It requires a minimum of a standard light switch plaster ring (p-ring) or standard 22 cu. in. (or larger) electrical box.

CAUTION: Do not install the ALTx-2 into electrical boxes with 110V devices. Do not locate speaker wires too close to a light switch or dimmer switch as this may cause a humming or buzzing sound to be heard through the speakers. If it is necessary to locate the volume control near electrical devices, install it in a separate metal electrical box, ground the box to the electrical system ground, and route the speaker wires several feet away from the electrical wiring.

### *EZB Connecting Blocks*

The EZB-1SC and EZB-2SC connecting blocks are Russound accessories that simplify connections of multiple volume controls and speaker pairs. The EZB-1SC is a neat, compact wiring device for connecting up to four volume controls to an amplifier's outputs. The EZB-2SC expands the EZB-1SC to another four volume controls.

### *Wiring Instructions*

CAUTION: Many receivers operate at a rating of 8 ohms. On receivers that offer A and B speaker outputs, both A and B connections share the same amplifier. It is recommended to wire all speakers to the A output (using an EZB-1SC) when using impedance matching UltraMatch™ volume controls. Do not mix speakers connected via volume controls with speakers connected directly to the amp/receiver.

### ***Wiring Instructions (continued)***

If using ALTx-2s with a resistor-based speaker selector, place selector in Bypass mode and match number of speakers with ALTx-2 settings (see page 4).

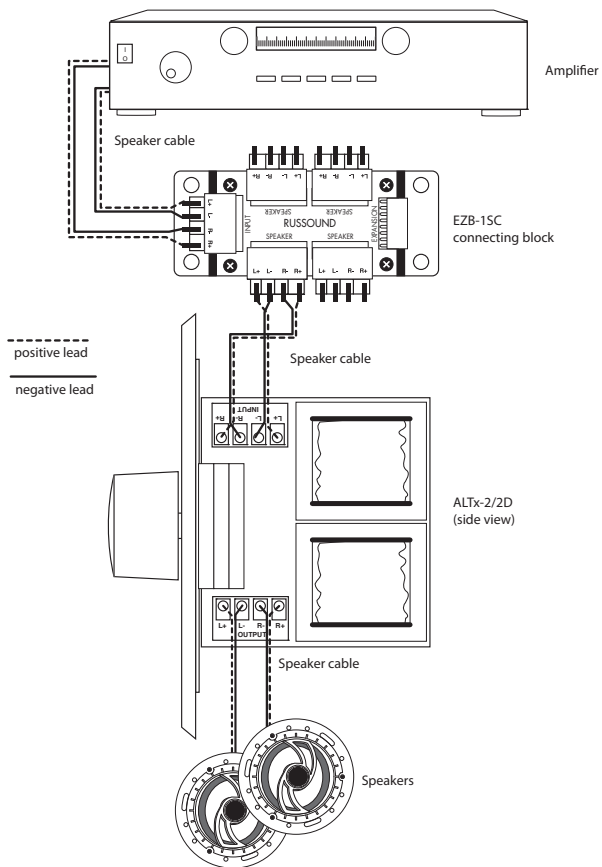
If using ALTx-2s with an autoformer-based selector, set selector for number of speakers and set ALTx-2 at 1X setting.

1. Connect the speaker cable from the amplifier's outputs to the ALTx-2's 4-pole screw down Input connector. Keep polarity (+ or -) and identification (L or R) consistent. CAUTION: Do not reverse the Input and Output connections!!
2. Connect the speaker cable from the ALTx-2's 4-pole screw down Output connector to a pair of speakers. Keep polarity (+ or -) and identification (L or R) consistent.
3. Install the completed assembly in the junction box. Insert carefully to avoid excessive strain on the connector. Taking the time to feed the excess wire out the back of the junction box will help you with the final assembly.

### ***Operation***

1. Turn the amplifier/receiver OFF and set its volume to minimum.
2. Set all the ALTx-2 volume controls to maximum (fully clockwise).
3. Turn on the amp/receiver and select a music source (e.g., tuner or CD player).
4. Slowly turn up the amplifier/receiver volume to the maximum desired listening level, and leave the amp/receiver set at that level. If the sound becomes muddy or distorted, the level has reached the amplifier's volume capability limit. Quickly reduce the volume to avoid damaging the speakers. Never turn the receiver up beyond the comfortable listening level, usually no more than 50%. NOTE: An amplifier driven beyond its limit will produce D/C voltage (clipping) resulting in improper signal transfer and possible amplifier shutdown or damage.
5. Adjust the volume of the speakers to the desired listening level using the ALTx-2.
6. Turn off the speakers in each room by turning the knob on the ALTx-2 completely counter-clockwise.

## INSTALLATION EXAMPLE





***ALTx-2 Specifications***

<b>Power handling:</b>	126W max; 42W RMS continuous (per channel)
<b>Min. speaker impedance:</b>	4 ohms
<b>Impedance matching type:</b>	Autoformer based
<b>Quick connect terminals:</b>	4-pole screw down accepts up to 12 gauge cable
<b>Attenuation:</b>	12 steps including Off; total attenuation 48 dB
<b>Frequency response:</b>	20Hz - 20kHz, +/-1.0/-0.5 dB at rated power
<b>Mounting:</b>	Standard 22 cu. in. single-gang junction box
<b>Dimensions:</b>	1.625"W x 2.675"H x 2.5"D (41 x 73 x 63 mm)
<b>Weight:</b>	1 lb. (453g)

## **WARRANTY**

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### ***Warranty***

The Russound ALTx-2 Volume Control is covered by a Gold Limited Lifetime Warranty against any failure in materials or performance. Russound will replace any defective parts at no charge. No return of defective parts is required.

To receive a replacement unit, call Russound at (603) 659-5170 with the product model number and the shipping address. Proof of purchase may be required.

Russound sells products only through authorized Dealers and Distributors to ensure that customers obtain proper support and service. Any Russound product purchased from an unauthorized dealer or other source, including retailers, mail order sellers and online sellers will not be honored or serviced under existing Russound warranty policy. Any sale of products by an unauthorized source or other manner not authorized by Russound shall void the warranty on the applicable product.

Due to continual efforts to improve product quality as new technology and techniques become available, Russound/FMP, Inc. reserves the right to revise system specifications without notice.





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