



# R290DS


Dual Source Power Amplifier  
Installation Manual


## SAFETY INSTRUCTIONS



 **WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

 **CAUTION:** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE THE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

 The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

 The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### 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 - All operating and user instructions should be followed.
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. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus. Do not touch the appliance with wet hands. Do not handle the appliance or power cord with wet or damp hands. If water or any other liquid enters the appliance cabinet, take it to qualified service personnel for inspection.

6. Cleaning - The appliance should be cleaned only as recommended by the manufacturer. From time to time you should wipe off the front and side panels and the cabinet with a soft cloth. Do not use rough material, thinners, alcohol or other chemical solvents or cloths since this may damage the finish or remove the panel lettering.
7. Ventilation - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings. Place the unit in a well-ventilated location, leaving at least 2 inches (5 cm) of clearance on all sides, top and rear of unit for air flow. If ventilation is blocked, the unit may overheat and malfunction.
8. Heat - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
9. Grounding or Polarization - Precaution should be taken so that the grounding or polarization means of an appliance is not defeated.
10. Power Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, receptacles, and the point where they exit from the appliance.
11. 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.
12. Main Power Disconnect - The power switch is a single-pole switch. When the switch is in the "Off" position, the appliance is not completely disconnected from the main power. The main power plug is used as the disconnect device and shall remain readily operable. When installing the product, ensure that the plug is easily accessible.
13. Non-Use Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
14. Attachments - Only use attachments/accessories specified by the manufacturer.
15. Carts and Stands - The appliance should be used only with a cart or stand that is recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the appliance and cart



combination to overturn.

16. Wall or Ceiling Mounting - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
17. Location of the Amplifier - Do not mount this unit under a kitchen cabinet. Do not expose the amplifier to direct sun light or heating units as the amplifier internal components' temperature may rise and shorten the life of the components. Avoid damp and dusty places.
18. 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.
19. 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.
20. Damage Requiring Service - The appliance should be serviced by qualified service personnel when: A. The power supply cord or the plug has been damaged; B. Objects have fallen, liquid has been spilled into the appliance; C. The appliance has been exposed to rain; or D. The appliance does not appear to operate normally; or E. The appliance has been dropped or the enclosure is damaged.



Note: 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 of 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, or consult the dealer or an experienced radio/TV technician for help.

This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

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## PRODUCT OVERVIEW

### Introduction

The Russound R290DS is a 2-channel 90 watt dual source power amplifier with auto-source switching. It features Primary and Secondary audio line inputs with a loop out to another zone, receiver, or device from the Primary source. A signal only available as a speaker input can be connected and assigned as either the primary or secondary source.

This amplifier can be used for power upgrades in specific zones, for large speaker selector or volume control systems and for long series-parallel speaker runs (e.g., large outdoor zones).

The R290DS is rated at 90 watts per channel into 8 ohms, and 110 watts into 4 ohms. With the Stereo/Bridge Mono switch in the Bridge Mono position, both amplifier channels are combined for a higher powered mono output. In Bridge mode the R290DS is rated at 250 watts of power into a single 8 ohm load. Each amplifier output channel incorporates robust protection circuitry for safety and reliability under extreme circumstances.

The 12V Trigger In/Out allows the R290DS to be activated by other electronics or to activate other electronics via a 3.5 mm mini phone plug cable.

### Thermal Protection

All Russound amplifiers are designed with special circuitry to safeguard the amplifier under a thermal overload condition. Thermal protection mode will only engage when the unit has been run at high volume for extended periods of time without adequate ventilation and/or when speaker impedances are below the minimum levels for the amplifier. In thermal protection mode the amplifier will automatically stop output and the status indicator LED will go OFF. If this fault occurs, turn off the amplifier, and check that the speaker impedance rating is above the minimum rating. Also check for adequate ventilation around the amplifier and make adjustments if necessary. Once the unit has cooled to safe operating temperatures, the amplifier may be powered back on.

### Protection Circuitry

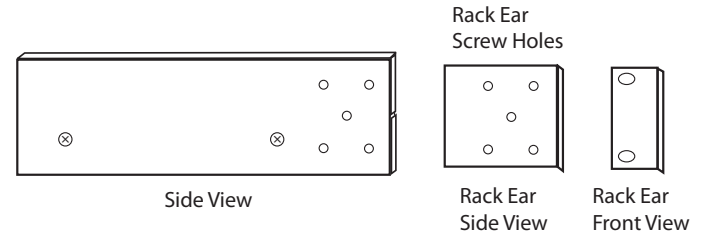
Special circuitry has been designed into the amplifier to safeguard under a short-circuit condition. A faulty speaker can also cause a short circuit condition.

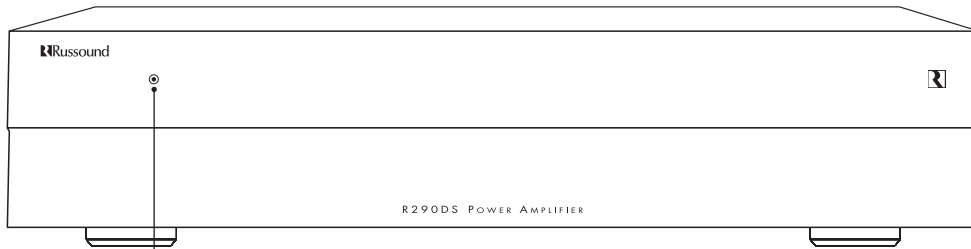
The front panel LED illuminates orange when the amplifier is in short circuit protection. If this fault condition occurs, turn off the amplifier and check speakers for short circuit conditions when appropriate.

### Rack Mounting

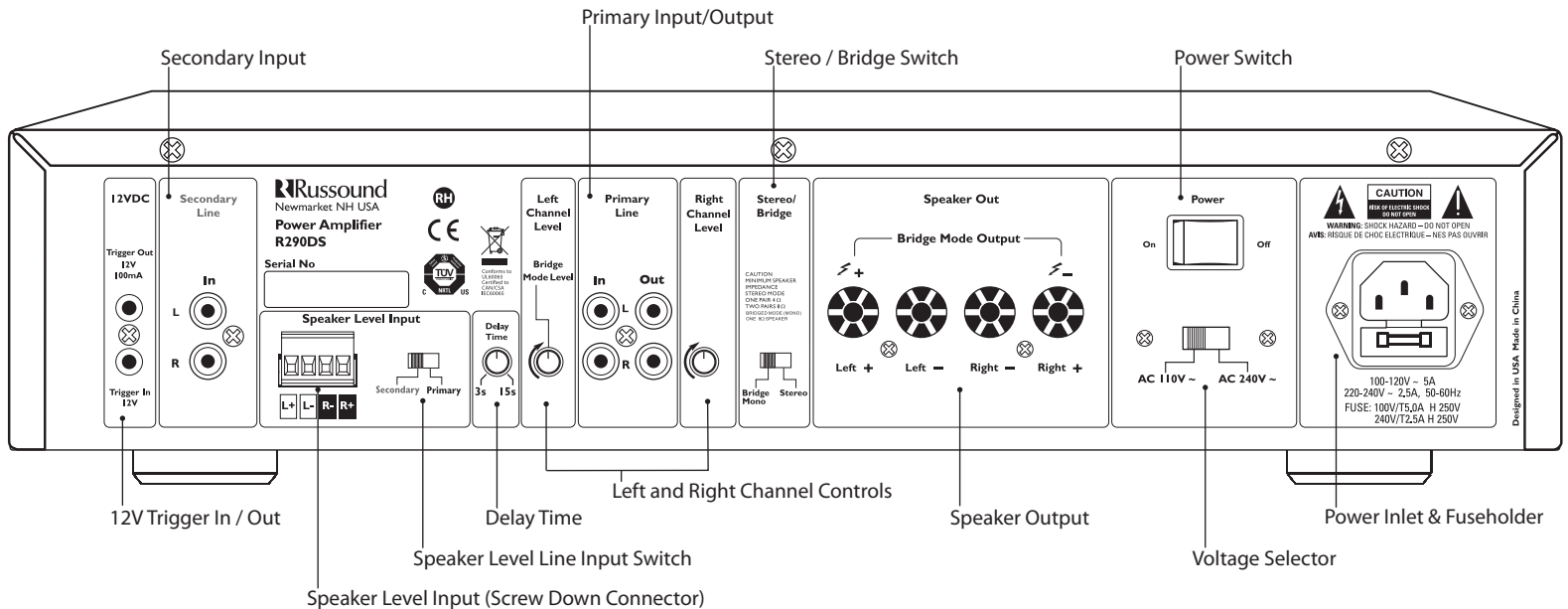
The R290DS amplifier can be rack mounted using the included rack-mount ears and hardware to attach the ears to the amplifier. The amplifier will take two rack spaces with the feet removed.

If mounted in a rack, one open rack space above and below is recommended to allow for ventilation and heat dissipation.





Status Indicator LED  
 Red - Standby  
 Green - Active  
 Orange - Short Circuit Protection



## SYSTEM CONFIGURATION - STEREO MODE

The R290DS has dual source capability. If two sources are used, connect the source you want to have priority to the Primary input and the other source to the Secondary input.

Whenever the Primary source is active, that signal will take priority over the distributed audio signal on the Secondary line. The signal is still active on the Secondary line, and once the Primary audio signal is muted or turned off the R290DS will automatically switch back to the Secondary audio signal.

### Stereo Mode

The R290DS can be configured as a power upgrade for specific zones, for use with large speaker selectors, and for long parallel speaker runs (outdoor zones)

1. Unplug the R290DS.
2. Set the Stereo/Bridge switch to Stereo.
3. Connect the audio line output from a stereo preamplifier or source to the left and right Primary input jacks of the R290DS. If the output is only available as speaker level see Speaker Level Signal at right.
4. Connect the audio line output from the secondary source to the Secondary input jacks in the same manner.
5. Connect your speakers to the terminals, observing proper polarity.
6. Restore power to the amplifier. Both channel levels can be adjusted with the corresponding channel level adjustments.

### Dual source connections

Connect the source audio outputs to both Primary and Secondary inputs as instructed above.

Set the delay with the Delay Time knob. The Delay Time adjustment determines when the switch back to the Secondary signal will occur. **Example:** If the primary source is a CD changer, increasing the delay time will prevent a switch back to the secondary source while the disc is changing.

**Note:** This works with all incoming signals, line level or speaker level.

### Speaker Level Signal

If either of the sources is only available as a speaker level signal, connect it to the Speaker In terminals, using the screw down terminal block and observing proper polarity. Only one set of speaker level inputs can be utilized and assigned by the selector switch.

Set the switch to Primary or Secondary.

Only one type of input (speaker or line) should be assigned to each line. For typical connectivity, do not set speaker input switch to Primary and make connections to the Primary line input.

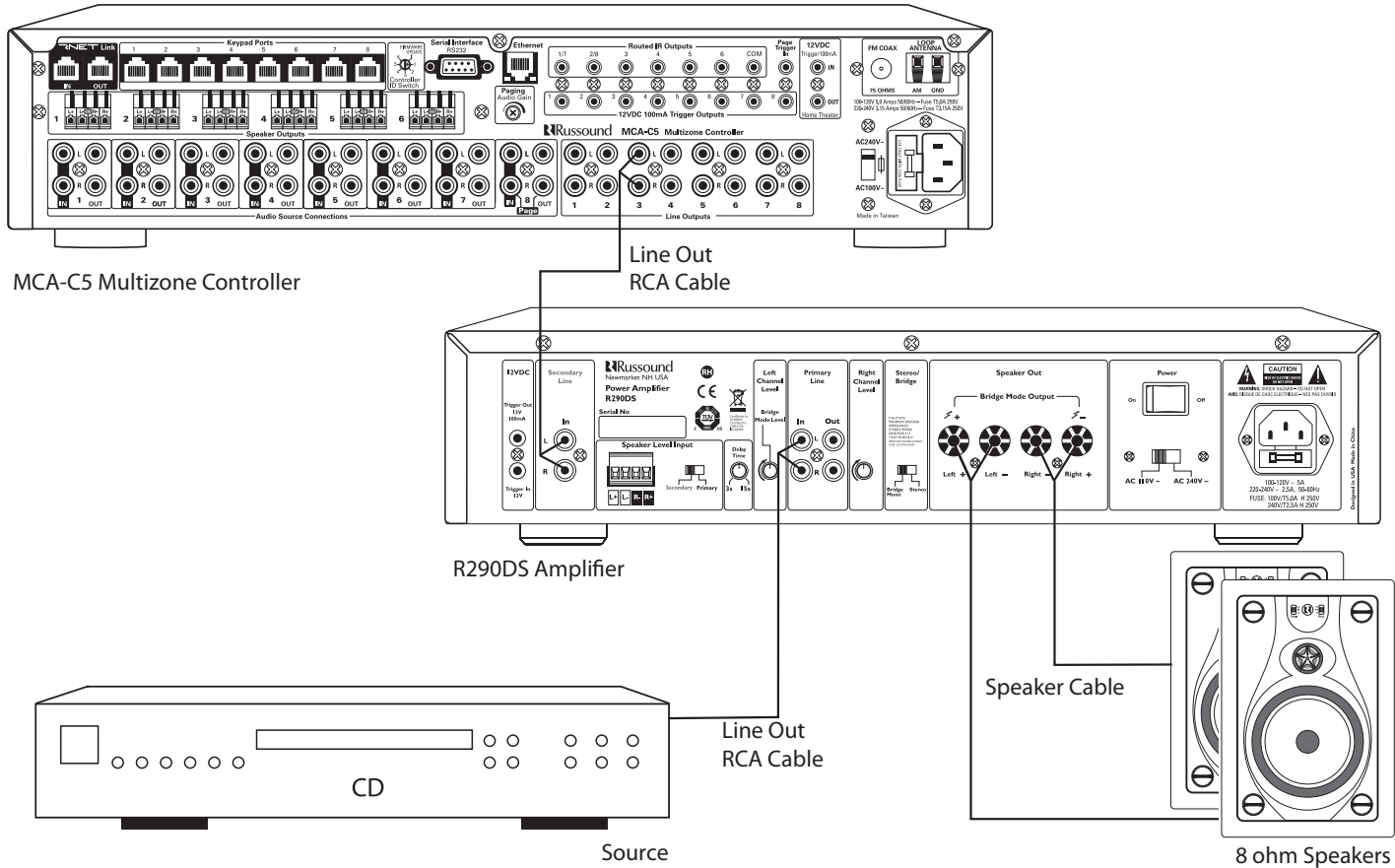
**Note:** If there are two inputs assigned as Primary (Speaker and Line) the Line input will take priority.

### Typical Connections

<i>Line Input</i>	<i>Speaker Input / Switch Position</i>	<i>Audible Output</i>
Primary / Secondary	n/a	Primary if signal present Secondary if no Primary signal
Primary	Secondary / Secondary	Primary if signal present Secondary if no Primary signal
Secondary	Primary / Primary	Primary if signal present Secondary if no Primary signal

### Connections for Unique Solutions

<i>Line Input</i>	<i>Speaker Input / Switch Position</i>	<i>Audible Output</i>
Primary / Secondary	Primary / Primary	Primary Line Input if signal present Speaker Input if no Primary Line signal Secondary if no Primary Line or Speaker signal
Primary / Secondary	Secondary / Secondary	Primary Line Input if signal present Secondary Line Input if no Primary signal Speaker Input if no Line signal



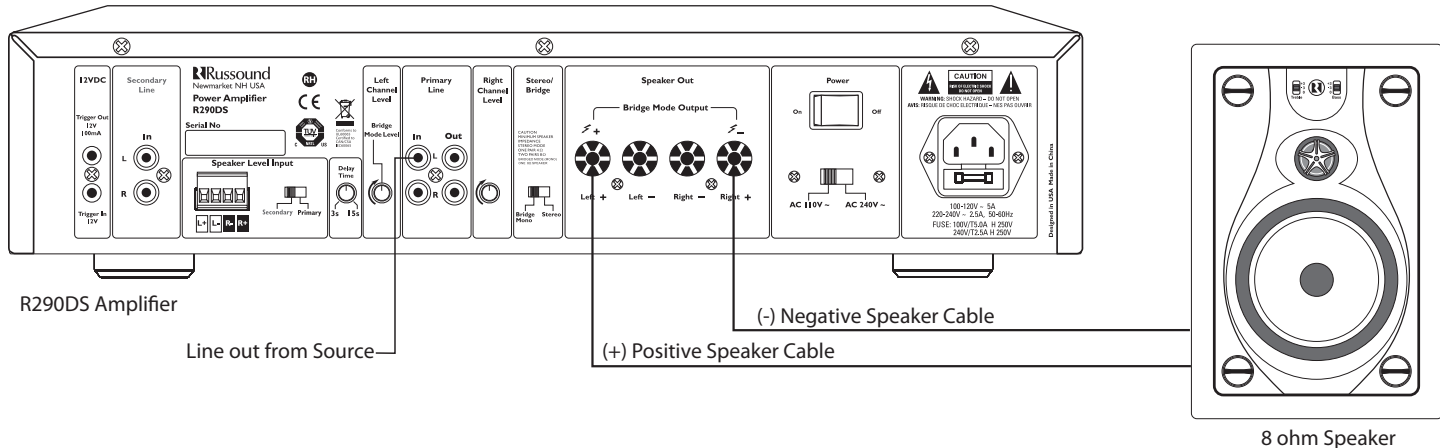
Stereo Mode Configuration with Dual Sources  
(CD player signal takes precedence)

## SYSTEM CONFIGURATION - BRIDGED MODE

### Bridged Mode

In this mode both the left and right channels are combined for a higher power mono output. For proper operation, the left channel adjustment should be set to the center position to start and then adjusted appropriately from there. The right channel adjustment is not applicable.

1. Unplug the R290DS.
2. Set the Stereo/Bridge switch to Bridge Mono.
3. Connect the line out from a preamplifier or source to the Left Primary input jack of the R290DS. Do not connect any input to the right side, it will be ignored.
4. Connect the negative lead (-) of the speaker cable to the R(+) terminal. Connect the positive lead (+) of the speaker cable to the L(+) terminal. (See the markings above the terminals on the rear panel). An 8 Ohm minimum load is recommended.
5. Restore power to the amplifier.

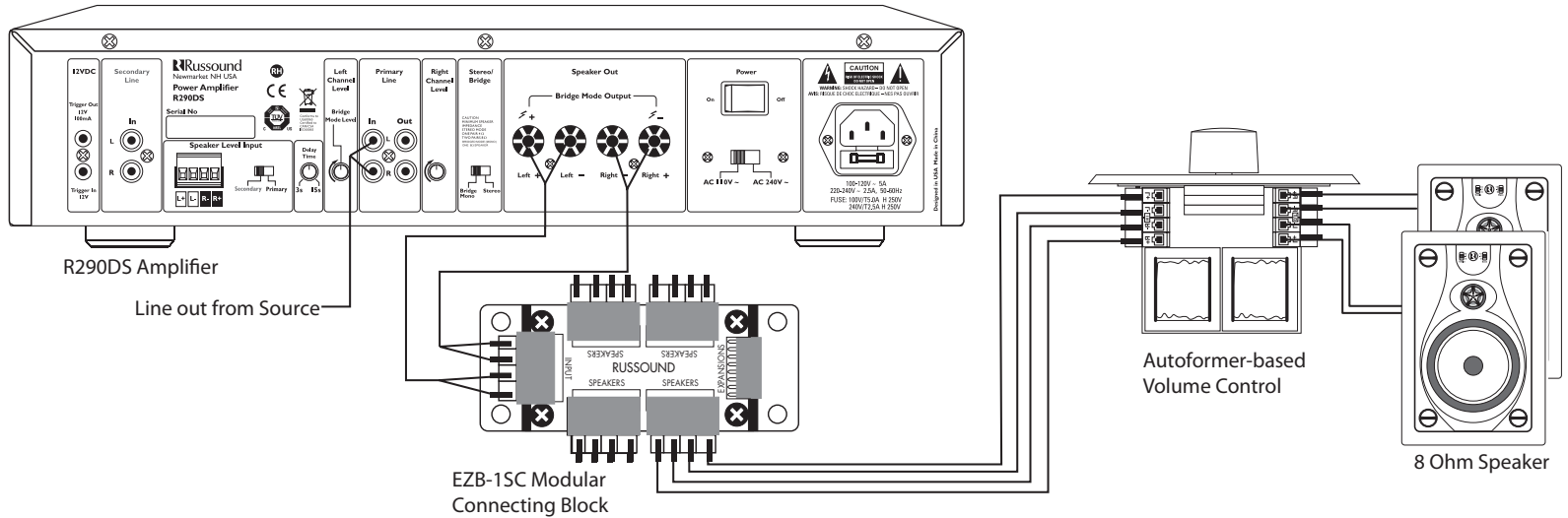


Bridged Mode Configuration



System Configuration with External Volume Control

The R290DS can be configured for large autoformer-based volume control systems/speaker selectors.



Configuration with Autoformer Volume Control

## TECHNICAL SPECIFICATIONS

### *R290DS Amplifier*

<b>Continuous Output Power:</b>	90W per channel at 8 ohms
<b>(<math>&lt;0.1\%</math> THD=N) @ 1kHz</b>	110W per channel at 4 ohms
	250W at 8 ohms, 2 channels bridged
<b>Distortion THD+N:</b>	$<0.3\%$ from 20Hz to 20kHz for 90W into 8 ohms
	$<0.05\%$ from 20Hz to 20kHz for 1W into 8 ohms
<b>Signal-to-Noise Ratio:</b>	$>110\text{dB}$ A-weighted
<b>Channel Separation:</b>	$>70\text{dB}$ @ 1 kHz
<b>Frequency Response:</b>	20Hz to 20kHz $\pm 0.3\text{dB}$
<b>Input Sensitivity:</b>	70mV for 1W at 8 ohms
	680mV for 90W at 8 ohms
<b>Input Impedance:</b>	47kohms Line Input
<b>Voltage Gain:</b>	32dB
<b>Power Requirements:</b>	<u>North American Model:</u>
	120VAC 60Hz 5A
	IEC 320 type connector with 3 terminal detachable power cord
<b>Power Requirements:</b>	<u>European Model:</u>
	230VAC 50Hz 2.5A
	IEC 320 type connector with 3 terminal detachable power cord
<b>Standby Power:</b>	$\leq 0.5\text{W}$
<b>Dimensions:</b>	17"W x 14"D x 4.125"H
	(43 x 35.5 x 10.5 cm)
<b>Weight:</b>	17.2 lbs. (7.8 kg)

*The R290DS Amplifier meets EU Standby Power Requirements*

**Warranty**

The Russound R290DS Power Amplifier is fully guaranteed against all defects in materials and workmanship for two (2) years from the date of purchase. During this period, Russound will replace any defective parts and correct any defect in workmanship without charge for either parts or labor.

For this warranty to apply, the unit must be installed and used according to its written instructions. If service is necessary, it must be performed by Russound. The unit must be returned to Russound at the owner's expense and with prior written permission. Accidental damage and shipping damage are not considered defects, nor is damage resulting from abuse or from servicing by an agency or person not specifically authorized in writing by Russound.

This Warranty does not cover:

- Damage caused by abuse, accident, misuse, negligence, or improper installation or operation
- Power surges and lightning strikes
- Normal wear and maintenance
- Products that have been altered or modified
- Any product whose identifying number, decal, serial number, etc. has been altered, defaced or removed.

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.

Damage to or destruction of components due to application of excessive power voids the warranty on those parts. In these cases, repairs will be made on the basis of the retail value of the parts and labor. To return for repairs, the unit must be shipped to Russound at the owner's expense, along with a note explaining the nature of service required. Be sure to pack the unit in a corrugated container with at least three (3) inches of resilient material to protect the unit from damage in transit.

Before returning a unit for repair, call Russound at (603) 659-5170 for a Return Authorization number. Write this number on the shipping label and ship to:

**Russound**  
ATTN: Service  
5 Forbes Road  
Newmarket, NH 03857

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.



# **R290DS**

## **Dual Source Power Amplifier**

### **Installation Manual**

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Specifications are subject to change without notice.

Russound is not responsible for typographical errors or omissions.

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