



CS -1

Multi - Zone / Multi Source Controller

Instruction Manual

0165-001253

CS-1 Multi - Zone / Multi - Source Controller

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"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 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 products 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, and the like.
6. **Carts and Stands** - The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 6A. 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.



7. **Wall or ceiling Mounting** - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **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.
9. **Heat** - The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
10. **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.

Safety Instructions

11. **Grounding or Polarization** - The precautions that should be taken so that the grounding or polarization means of an appliance is not defeated .
12. **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 , convenience receptacles, and the point where they exit from the appliance.
13. **Cleaning** - The appliance should be cleaned only as recommended by the manufacturer.
14. **Nonuse Periods** - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
15. **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.
16. **Damage Requiring Service** - The appliance should be serviced by qualified service personnel when:
 - A. The power - supply cord or the plug has been damaged ; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain ; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped or the enclosure is damaged.
17. **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.

Precautions

1. Warranty Card

The serial number appears on the rear panel of this unit near the power cord. Copy the serial number onto your warranty card and mail it back to Russound / FMP, Inc. 5 Forbes Road Newmarket, New Hampshire 03857. Be sure to retain a copy and keep it in a safe place.

2. Power

WARNING

BEFORE TURNING ON THE POWER FOR THE FIRST TIME , READ THE FOLLOWING SECTION CAREFULLY.

- Some models are designed for use only with the power supply voltage of the region where they are sold.

USA & Canadian : AC120V, 60Hz

Other Countries : AC 230V, 50/60Hz

Voltage Label (Rear Panel)

A label located at the rear panel power connection will indicate the AC power input for the unit. For use in the USA or Canada the Label will read as AC120V, 60Hz. For other countries the label will read AC230V, 50/60Hz.

3. Do Not Touch The CS-1 With Wet Hands

Do not handle the CS-1 or power cord when your hands are wet or damp. If water or any other liquid enters the CS-1 cabinet , take the CS-1 to qualified service personal for inspection.

4. Location of CS-1

Place the CS-1 in a Well - Ventilated Location.

Take special care to provide plenty of ventilation on all sides of the CS-1 especially when it is placed in an audio rack. If ventilation is blocked the CS-1 may over heat and malfunction.

Do not expose the CS-1 to direct sun light or heating units as the CS-1 internal components temperature may rise and shorten the life of the components.

Avoid damp and dusty places .

5. Care

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.

Product Overview

The CS-1 is a modular controller for source and volume in multi-zone, multi-source audio systems. The CS-1 provides an interface between the sources and the amplifier(s) by accepting the input of up to 6 line level audio sources and distributing them to as many as 8 stereo amplifiers. The CS-1 also provides an interface between the amplifiers and loud speakers, providing independent zone volume control and speaker impedance matching through eight plug-in zone cards. Each zone card allows source selection for its amplifier and volume control for its speakers.

All functions of this highly flexible system can be accessed from the front panel keypads with simple push button controls. The eight front panel keypads provide illuminated indicators and controls for each zones source selection, volume setting and on/off status. A broad range of legends is included, allowing custom labeling of each keypad. The CS-1 can interface with up to eight amplifiers. Zones can be daisy chained, such that one amplifier can power up to eight zones. Multiple input selection requires that multiple amplifiers are used.

Remote zone control is available through optional push button keypads. These attractive and easy to use keypads are mounted in a standard single gang "J" box using a Decora ® style cover plate. Upon selection each of the source buttons lights indicating which source is selected for the zone. A lit source button also indicates that the zone is turned on. Turning off the zone will blank the keypad display. Again legends are supplied allowing the source buttons to be customized.

Multiple CS-1 controllers can be daisy chained to increase the total number of zones. An optional source expansion card is available for installations requiring more than eight zones. This expansion card increases the total number of zone available to fifteen.

Decora ® is a registered trade mark of Leviton corporation.

Features

- Source selection for up to six line level audio sources.
- One amplifier can be used to power one to eight zones. Up to eight amplifiers can be used (one for each zone) .
- Independent ten position push button zone volume control .
- Individual zone on/off.
- All off from any Keypad.
- In wall key pad and front panel controls.
- Custom Front Panel Legends.
- Custom Key Cap Legends.

SYSTEM CONNECTIONS

SOURCES

The CS-1 can accept up to six line level sources at the source input card. These sources can be any variety of CD players, tape players, line audio from VCR's etc.. The source input can not be used with phonograph. Be sure to wire the line output of the sources to the CS-1 source input card. (Figure 1).

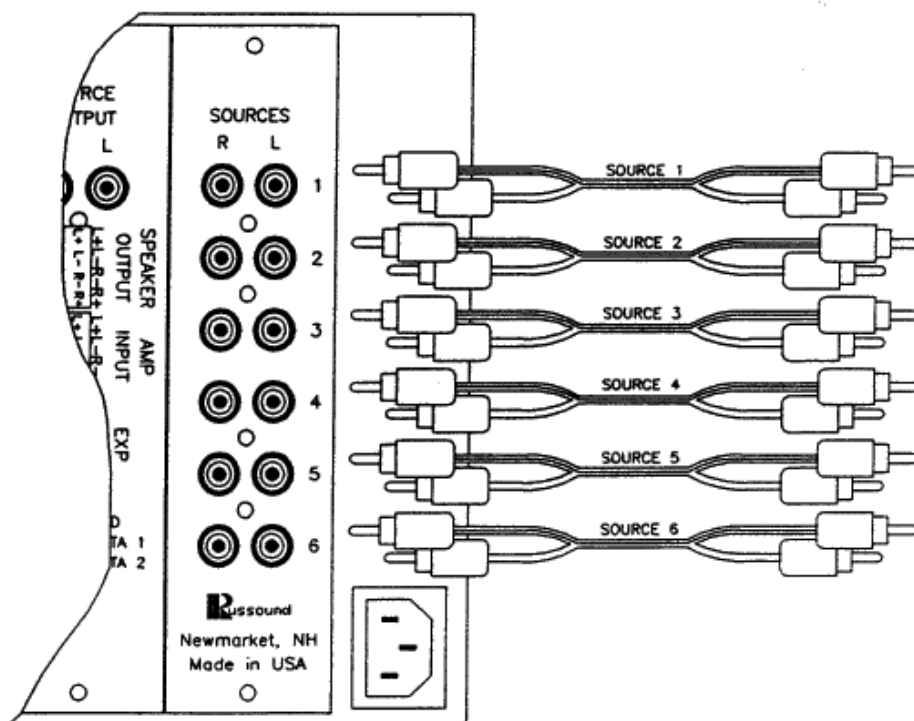


Figure 1

The source expansion card (optional) can be used to loop the line audio to a second CS-1 or to a pre-amp or receiver. (Figure 2).

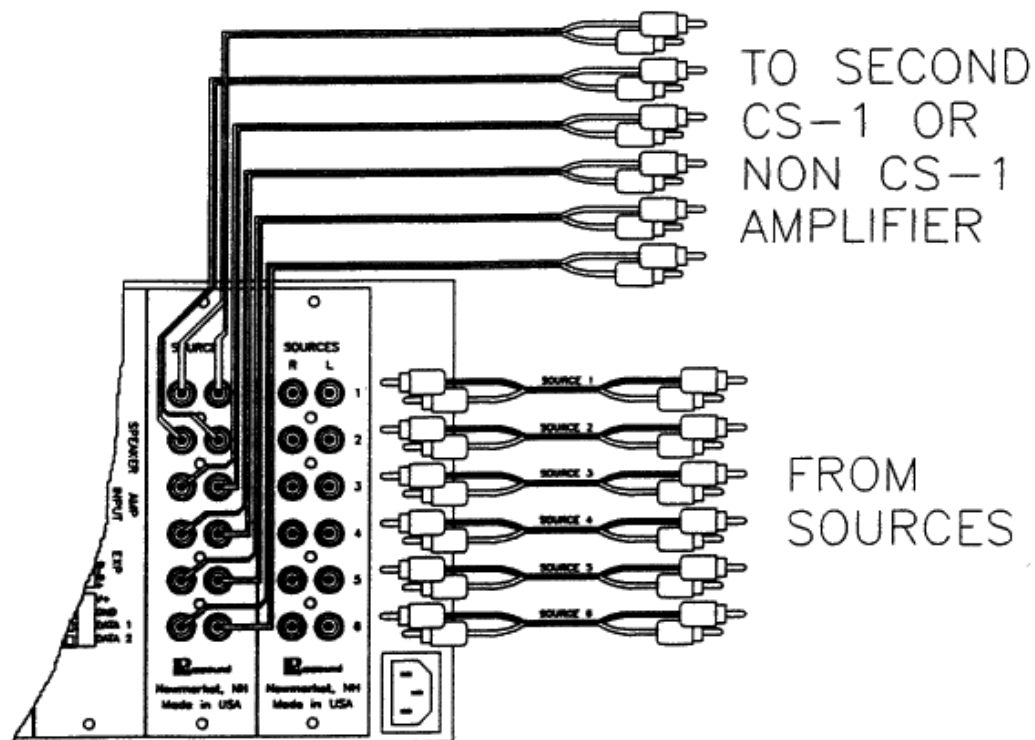


Figure 2

When source connection is made to the CS-1 note that the sources are numbered one to six on the source input card. This numbering corresponds with the source selection buttons on the in wall Keypad (Figure 3) and the front panel Keypad. (Figure 4).

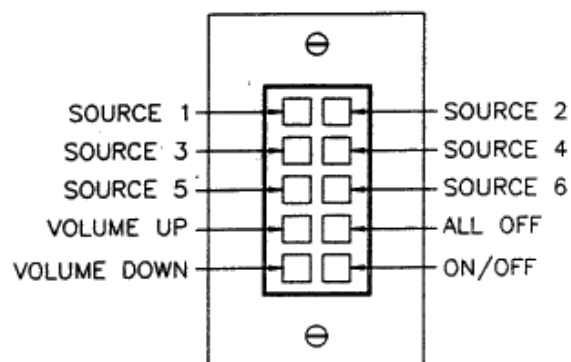


Figure 3

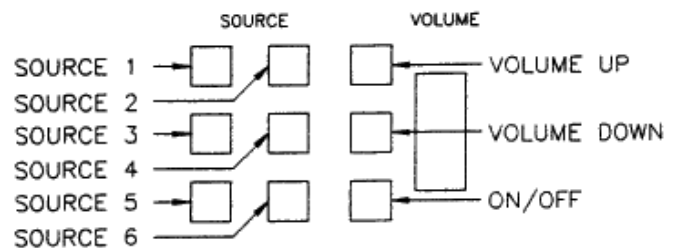


Figure 4

"WARNING"

DISCONNECT THE POWER FROM THE CS-1 BEFORE INSTALLING OR REMOVING ZONE CARDS. DO NOT REMOVE THE COVER TO INSTALL OR REMOVE ZONE CARDS.

Zone Cards

Configuring

The CS-1 is ordered with one to eight zone cards that are installed at the factory. All zone cards will be configured as instructed when ordered. For instance if four zone cards are ordered as E-Z match @ 2X (used for impedance matching) and two amplifiers are used and zone one and two will share the same amplifier (amp 1), zone one and two will both have the number one DIP switch set on the zone card. Similarly if zone three and four will share the same amplifier (amp 2) the DIP switch will be set with switch two on for both zone three and for zone four. This setting will enable the sources to be selected in zone one or two when sharing the same amplifier and the same for zones three and four. When installing additional zone cards the DIP switch needs to first be set for the number amplifier which is powering the zone (Figure 5). If a zone card is changed from one amplifier to another the DIP Switch **MUST** be reset to allow for proper source selection from that zone.

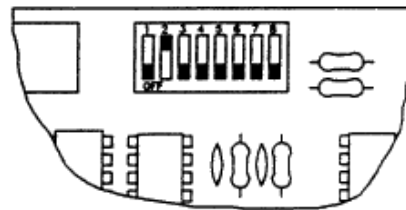


Figure 5

Inserting

Before installing Zone cards into the CS-1 be sure that the power is disconnected. Note that the cover should not be removed. The CS-1 will have filler panels in the zones that do not have zones cards installed, these filler panels need to be removed as zones are added. Make certain you retain the screws as they will be used to install the zone cards. The CS-1 contains a card cage with card guides that will guide the card into the connector on the bus board (Figure 6). The connection is made when the zone card is inserted and firmly pressed into place.

The zone cards need to be installed in order from right to left. For example if you are installing zone seven and eight, remove both filler panels and install zone seven first followed by zone eight. After the card is installed use the two screws to hold in the zone card. Note that if the zone card bracket does not line up with the screw holes in the chassis the zone card may have not aligned properly on the card cage guides. If this occurs the zone card should be removed and the connecting pins on the card should be checked for bent or jammed pins before reinstalling.

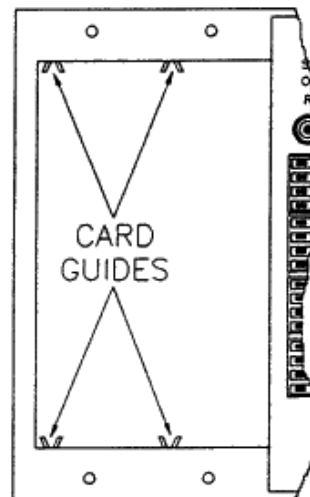


Figure 6

If it becomes necessary to remove a zone card, such as when one is being reconfigured, the power should first be disconnected from the CS-1, and the power for the amplifiers and sources turned off. Remove the zone cards in order from left to right until the desired zone card is reached. If the card is being removed to reconfigure the DIP switch setting the old setting must first be turned off before the new switch is turned on. Once the card has been reconfigured it should be reinserted along with the other cards. If the card is being completely removed replace the filler panel for that zone.

Once the CS-1 is configured you can test the operation of the zone cards by powering up the CS-1 and turning on the power switch on the front panel. This should activate the source and volume displays on the front panel of the CS-1. Note that the zones without zone cards will not light, only the zones with zone cards will come on. At this time a test of source selection and volume settings can be done. If a zone appears to not function properly consult the trouble shooting guide. After this test turn off and unplug the CS-1.

Wiring

Be sure that the power is disconnected from the CS-1 and that the equipment that is to be attached to the CS-1 is not powered. Starting with the first amplifier and Zone 1 on the CS-1:

- 1) Connect the amplifier **AUX** or **Tape Line Input** to the **SOURCE OUTPUT** of the zone card. This connection will allow the source selected in the zone to be amplified by the amplifier (Figure 7).
- 2) The **Speaker Output** of the amp should be connected to the **AMP INPUT** connector of the zone card. The input polarity is important, be sure to follow the labelling on the zone card (Figure 7).

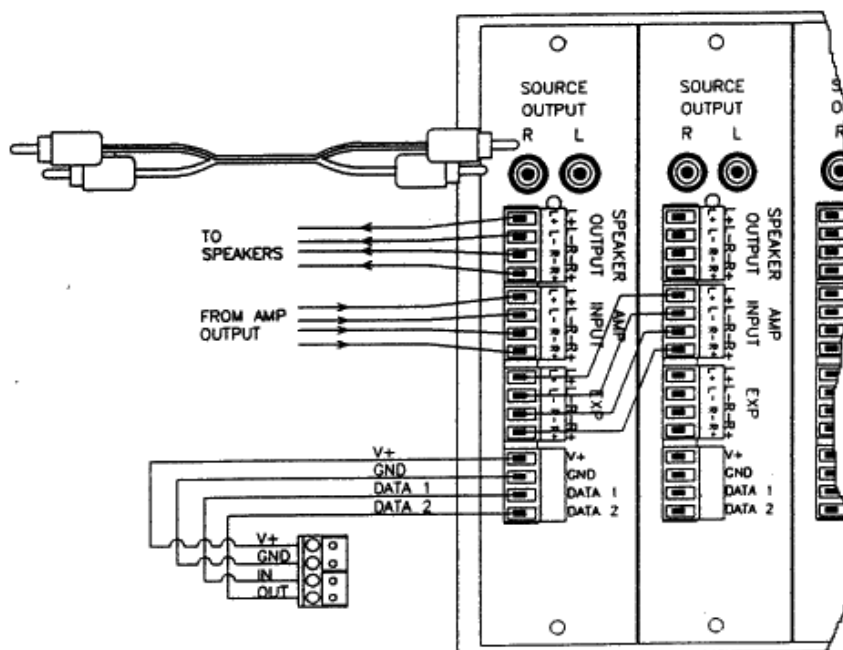


Figure 7

3) The Speakers for the zone wire to the SPEAKER OUTPUT on the Zone card (Figure 7).

4) If a keypad is being installed for the zone card it should be wired as shown in Figure 7. Note the keypad IN and OUT connections wire to the zone cards DATA 1 and DATA 2 connections respectively.

If the next zone is being driven by a different amplifier repeat steps one through four for the next Zone Card and amp. If the next zone is being driven by the same amplifier as the previous zone skip step 1 and follow steps 2a through 4a below.

2a) Wire from the EXP connector of the previous zone card to the AMP INPUT connector of the current zone card (Figure 7).

3a) The Speakers for the zone wire to the SPEAKER OUTPUT on the Zone card (Figure 7).

4a) If a keypad is being installed for the zone card it should be wired as shown in Figure 7. Note the keypad IN and OUT connections wire to the zone cards DATA 1 and DATA 2 connections respectively.

Continue following steps 1-4 or steps 2a-4a, whichever is appropriate, until all of the Zone cards are fully wired. Note the connectors on the Zone cards are removable to make them easier to wire to.

Audio Wire for connecting the amplifier to the CS-1 and for connecting the CS-1 to the speakers should be 14 AWG or 16 AWG such as Russound part #AW144CL3 or Russound part #AW164CL3.

The wire that is required for Keypad connection MUST BE #22 (or larger) AWG/4 conductor twisted pair (heavy telephone wire). If twisted pair is not used than be sure the wire that is used for the data lines are separated by the power and ground lines.

CAUTION
CHECK ALL CONNECTIONS
BE SURE THAT THE AMPLIFIER
CONNECTION IS NOT CONNECTED
TO THE KEY PAD CONNECTION

Keypads

Installation

The Keypads are installed into a standard single gang electrical J - Box . Included with the Keypad is a Decora ® plate that mounts onto the J - box with the Keypad (Figure 8). The four connections are labeled on the front of the bottom PCB. They correspond to the zone card connections as follows. V+=V+, GND=GND, IN=DATA1, Out=DATA2.

The Keypad is constructed with three PCB's that are inter connected by locking connectors. These connectors should be checked before the Keypad is placed into the wall.

The Keypad legends should be installed prior to the final installation. This will allow for easier placement of the Key Cap legends. The legends should match up to the Key Caps on the Front Panel. Note that the volume up/down, All Off and On/Off are installed at the factory (Figure 9).

After the Keypad connector is wired, plug the connector onto the back of the Keypad. install the Keypad into the J - Box with the Decora ® plate and cover.

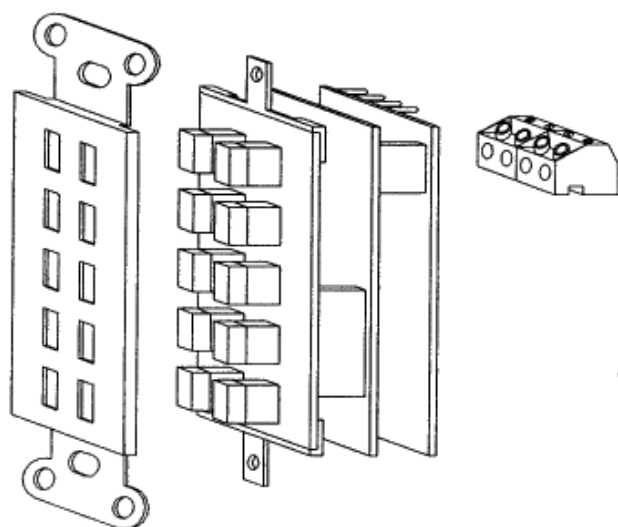


Figure 8

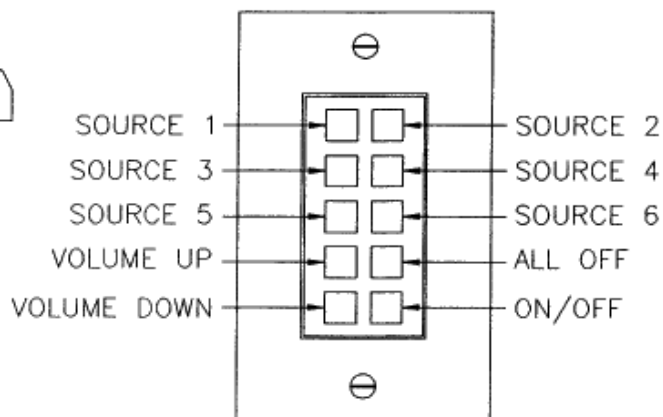


Figure 9

Decora ® is a registered trade mark of Leviton corporation.

Front Panel

The Front Panel labels are attached to the indentation that is located at the top of each zone. Be sure to carefully line up the label in the indentation before the label is placed on the front panel. To label the six source button caps remove the cap and place the labeling in the cap. Snap the cap back into place. The volume up and down, On/Off and All Off, will have already been placed into the caps at the factory. These should not to be removed or changed. The volume indicator for each zone represents the volume setting for that zone. The power switch on the front panel is the master power for the CS-1. The main power should be left On at all times unless zone cards are being reconfigured or added or the system is not used for an extended period. Note that the zones on the Front Panel (Figure 10) are in an order that corresponds to the order of the Zone Cards on the rear (Figure 11).

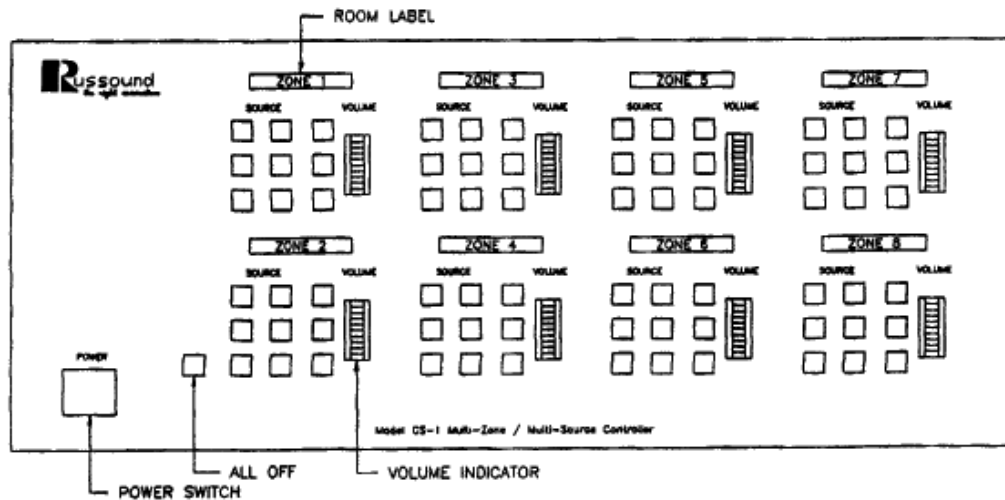


Figure 10

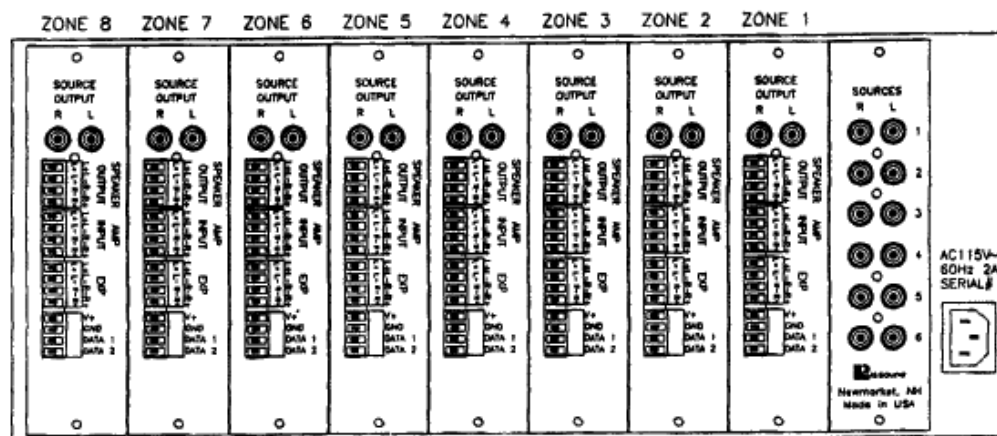


Figure 11

Start Up

Be sure that the amplifier(s) and sources are off before proceeding.

After all the connections are double checked the CS-1 can be plugged in. Turn on the power switch. The displays on the front panel will come on. To set up the CS-1 after power is turned on:

- 1) Press the ALL OFF button on the front panel. This will cause all the zones to reset to off. The Front Panel volume and source indicators will remain on however the ON/OFF display will be off. All the zone Keypads will be off at this time.
- 2) At the Front Panel press the ON/OFF button for each zone, turning on all the zones. The ON/OFF button display will be on and all the Keypads source displays will be on.
- 3) For each zone press the volume UP button until the volume is at its highest display indicator. Then press volume down until the volume is at its lowest display indicator.
- 4) Randomly operate the source selector at the front panel for each zone. The LED in each of the source buttons should light as it is depressed.
- 5) Check the operation at each of the Keypad's for ON/OFF , source selection and ALL/OFF.
- 6) Turn the volume control at each of the amplifiers to its lowest setting. Turn on the power for the amplifiers and sources. Be sure that the amplifiers have the AUX or Tape line input selected .
- 7) At the CS-1 check that all zones are on , and the volume level is set to half . Select a source for the zone and then turn up the amplifier to achieve a comfortable listening level.
- 8) From the Keypad in each zone adjust the volume up and down and select different sources .

Troubleshooting guide

Problem	Cause	Remedy
Power switch is on but power does not come on.	Not Plugged in.	Check power plug at rear panel.
Keypad lights but does not operate.	No Data In ,out .	Data in and out reversed or Front Panel button is depressed
Keypad operates but source lights do not change.	No Data In.	Repair Data in line.
Keypad Skips Sources when operated.	Data in and out	Separate Data lines. lines are parallel not twisted pair wire.
Keypad does not light .	No power . Zone turned off	Check +5v and GND. Press On/Off button.
Sound level increases when volume is lowered on CS-1.	Amp in is connected to the Speaker Out at the CS-1 zone card.	Correct Amp and Speaker wiring at CS-1 zone card.
No sound.	Amp not on. Line input at amp not selected.	Turn on Amp. Select AUX or Tape.

Specifications

Model CS-1

Zone Card

Audio Power : Max. Audio power input 150w per Channel , 50w RMS.

Main Chassis

Current Draw : AC 115V approximately 2 Amps.

AC 230V approximately 1 Amp.

Power supply rating : USA & Canadian Model AC 120V, 60Hz

Other Countries Model AC 230V 50Hz .

Dimensions : 17" W x 16" D x 7" H. Rack mount 19"

Weight : Main Chassis W/1 Zone Card - 16 lbs.

Each additional Zone Card adds - 1.5lbs.