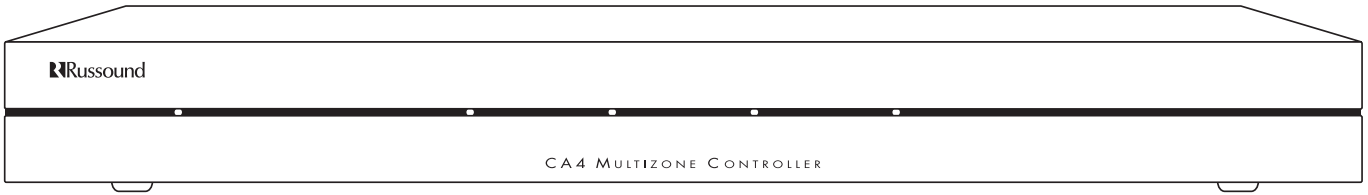
Russound®



CA4

Multizone Controller
System Installation Manual

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.
6. 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.

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.
11. Grounding or Polarization - Precaution 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, receptacles, and the point where they exit from the appliance.
13. Cleaning - The appliance should be cleaned only as recommended by the manufacturer.
14. Non-Use Periods - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time. To remove all power (supply mains) from the appliance, remove the plug from the wall outlet.
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.

Conforms to UL60065
Certified to CAN/CSA IEC60065

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, 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
    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. Power – WARNING: BEFORE TURNING ON THE POWER FOR THE FIRST TIME, READ THE FOLLOWING SECTION CAREFULLY.
2. Do Not Touch The Unit With Wet Hands – Do not handle the unit or power cord when your hands are wet or damp. If water or any other liquid enters the cabinet, unplug the unit from power immediately and take it to a qualified service person for inspection.
3. Location of Unit – Place the unit in a well-ventilated location. Take special care to provide plenty of ventilation on all sides of the unit especially when it is placed in an audio rack. If ventilation is blocked, the unit may overheat and malfunction. Do not expose the unit to direct sun light or heating units as the unit internal components temperature may rise and shorten the life of the components. Avoid damp and dusty places.
4. Care – From time to time you should wipe off the front and side panels of 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.

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PRODUCT OVERVIEW

Thank you for choosing the Russound® CA4 controller amplifier to enhance your home with multiroom audio.

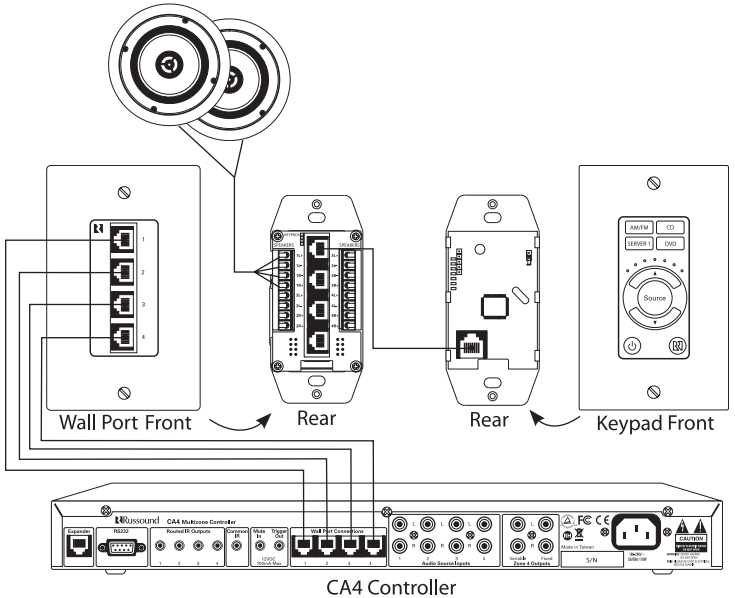
The CA4 caters to homeowners who want control over their multiroom audio systems with such capabilities as infrared (IR) tools to manage the system from anywhere in the house. Four source inputs, simplified programming, and user adjustable sound controls make listening to music throughout the home easier than ever.

Key features include:

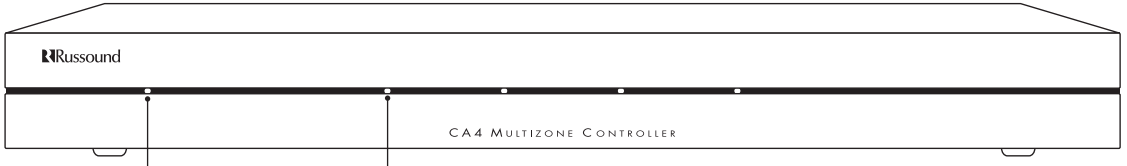
- Four sources delivered to four zones for sharing music throughout the home.
- Scalable to 8 zones by connecting two CA4 units.
- A remote control with simplified programming and control via intelligent IR learning capabilities for quick setup.
- Utilizes CAT-5 cables to carry the keypad and audio signals between the wall port and the controller.
- All speaker and CAT-5 keypad cables are run to the wall port for easy connectivity.
- A 12VDC 100mA trigger output
- 15 watts per channel
- Source Grouping

The CA4 kit ships with a remote control (CA4-RC), wall port (CA4-WP), four CAT-5 cables, and four keypads (CA4-KP) for home audio one-touch control. The user can adjust the bass, treble, loudness, and volume from each keypad. The system includes an RS232 connection for integration with home automation systems.

Russound's controller/amplifiers meet the needs of homeowners who want to experience true audio fidelity throughout the home. With the CA4, customers have a multiroom home audio solution at a cost-effective price.



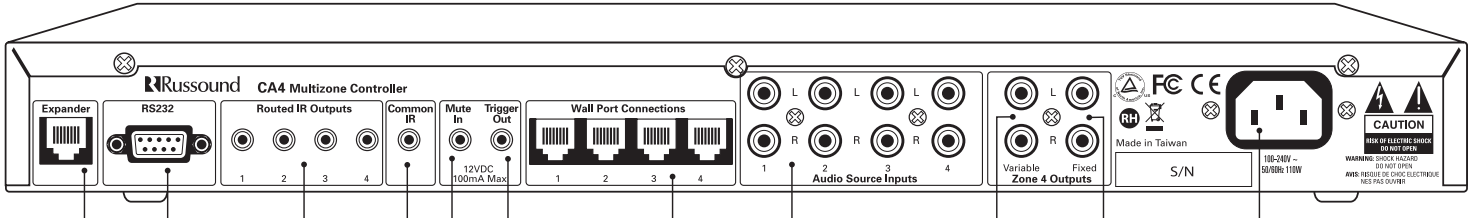
Typical Wiring Configuration



Power Indicator

Zone LED indicators

Front Panel



RJ-45 Expander Jack

RS232 Connection

Routed IR Outputs

Common IR

Mute Input

12VDC Trigger

Wall Port RJ-45 Connections

Audio Source inputs

Zone 4 Variable RCA Output

Zone 4 Fixed RCA Output

Power Cord Connection

Rear Panel

CA4-KP User Menu

The User Menu allows the user to adjust the audio properties and features of a particular zone. The audio features that can be adjusted are: Bass, Treble, and Loudness. Additional features that are selectable are Source Grouping, and All ON Participation. Source Grouping allows linked zones to listen to the same source and follow any source changes on those linked zones. When All ON participation is enabled, an All ON command will turn on any enabled zones and allow the initiating keypad to act as the Master keypad and control the source selection for all zones that are powered on.

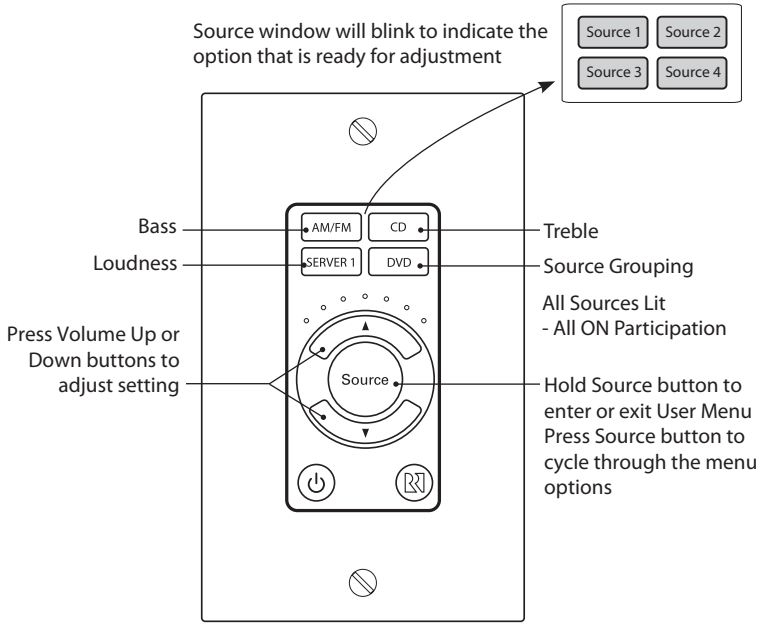
To enter the User Menu, press and hold the Source button for 3 seconds when the keypad is powered on. The Source windows will blink to indicate the option ready for adjustment. Another 3-second press and hold of the Source button (or a 9-second time-out) will return the keypad to regular operation.

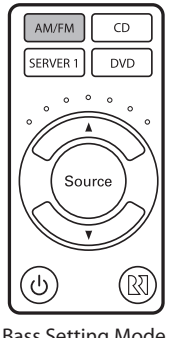
The top left (Source 1) button will temporarily blink to indicate "Bass" is ready for adjustment. Subsequent presses of the Source button will toggle through Treble (Source 2), Loudness (Source 3), Source Grouping (Source 4) and All ON Participation (all four Sources lit).

Once an option is selected, the Volume Up/Down buttons are used to adjust settings. The volume indicator LEDs temporarily light to show the option setting. A 3-second press and hold, or a 9-second time-out will return the keypad to normal operation.

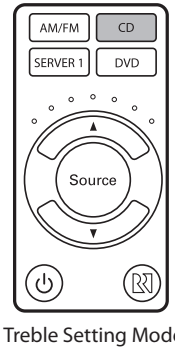
Setting Bass and Treble

1. Enter the User Menu.
2. Select Source 1 (upper left) for Bass or Source 2 (upper right) for Treble. The windows will blink to indicate the option for adjustment.
3. Press the volume up or down to adjust the settings. The LEDs above the volume up button will indicate the change. The middle LED will flash when flat.
4. Either press the Source button to go to the next option or exit the User Menu by a 3-second press of the source button or a time-out.





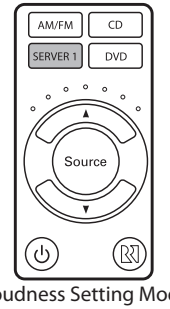
Bass Setting Mode



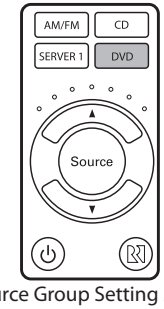
Treble Setting Mode

Setting Loudness

1. Enter the User Menu.
2. Press the source button to select Source 3 (lower left) for Loudness. The window will blink.
3. Press the volume up button to turn the feature ON, or the volume down button to turn it OFF. The far right hand volume LED will indicate ON and the far left hand volume LED will indicate OFF.
4. Either press the Source button to go to the next option or exit the User Menu by a 3-second press of the source button or a time-out.



Loudness Setting Mode



Source Group Setting Mode

Setting Source Grouping

1. Enter the User Menu.
2. Press and release the source button to cycle to and select Source 4 (lower right). The window will blink.
3. Pressing the volume up button will activate the feature and pressing the volume down button deactivates the feature. The far right hand volume LED will indicate ON and the far left hand volume LED will indicate OFF.
4. Either press the Source button to go to the next option or exit the User Menu by a 3-second press of the source button or a time-out.
5. Go to another keypad that is connected to the same controller and repeat the procedure so that these zones will be linked and listening to the same source. Any source changes on any of the linked keypads will be tracked and updated on all source linked keypads. Volume control remains independent as well as zone ON and OFF. Only zones connected to the same controller can be source grouped.

Keypad Functions

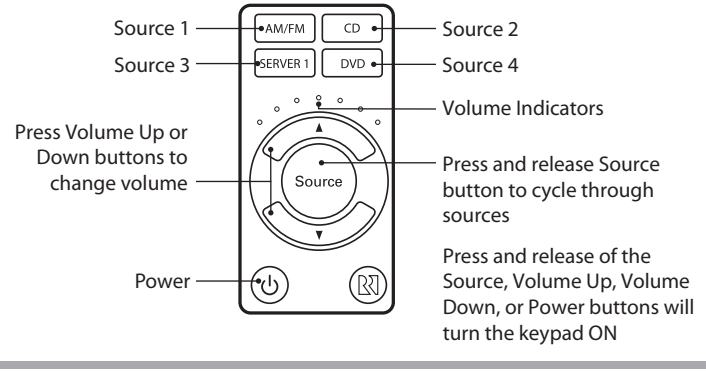
Power ON/OFF: A press and release of the power, source or volume up / down buttons will turn the keypad ON. A press and release of the power button will turn the keypad and the backlighting OFF. **Note:** If there are other keypads ON in the system the power button will remain lit.

Volume Adjustment: Upon initial powering of the keypad, the volume will automatically ramp up to the factory set turn-on volume level. Pressing the volume up or down buttons will change the volume accordingly. Volume levels will be indicated by the LEDs above the volume up button. Hold the buttons to ramp the volume up or down accordingly.

Source Selection: A press and release of the source button will cycle through the sources. The selected source will be backlit on the keypad.

All ON: A press and hold of the power button (3-seconds) while the zone is already in the ON state will turn all keypads ON (if enabled to respond). The volume LEDs will light up from the center and ramp outward. **Usage Note:** If initiating an All ON command, all other powered zones will automatically be placed into a Party Mode as non-Masters and will not have independent source control. The initiating keypad is the Master and will need to be turned off to discontinue the Party Mode before source control can be available for other zones.

All OFF: A press and hold of the power button (3-seconds) while the zone is in the OFF state will turn all keypads OFF. The volume LEDs will light up from the center and ramp outward. The backlighting on all keypads will turn off and the system will be in Standby mode.

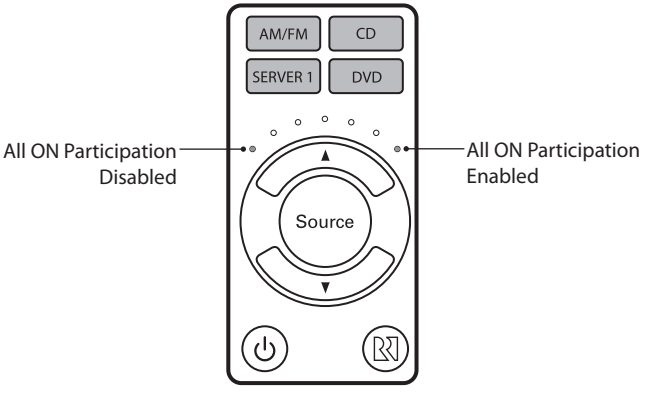


Setting All ON Participation / Party Mode

Enable / Disable All ON Participation

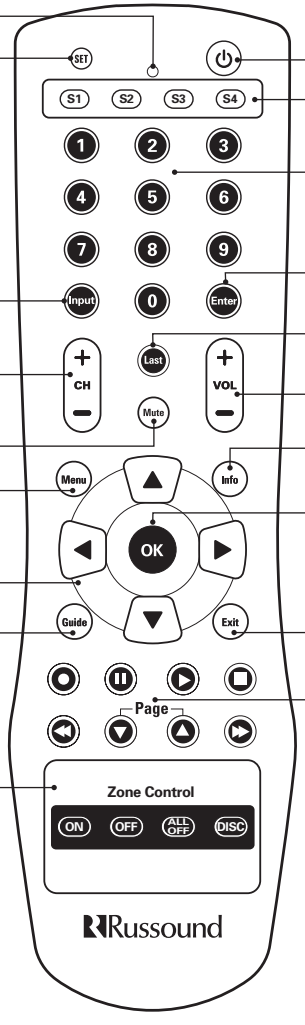
This setting will allow the keypad to respond to an All ON command. The default setting is All ON Participation Enabled.

1. Enter the User Menu.
2. Press and release the source button, until all the source buttons are flashing. It will cycle through each individual source and then all sources will flash.
3. Press the Volume Up button to turn the feature ON, or the Volume Down button to turn the feature OFF. The far right hand volume LED will be lit to indicate that the keypad is enabled to respond, or the far left hand volume LED will indicate that the keypad will not respond to the All ON command.
4. Either press the Source button to go to the next option or exit the User Menu by a 3-second press of the source button or a time-out.



Conditions/ Notes

- If the keypad is disabled to respond to the All ON command and is OFF when the All ON command is issued, it will not respond to the command. If it is turned ON while Party Mode is active on the system or was ON prior to the All ON command being initiated, it will automatically be entered into Party Mode as a non-Master.
- If the keypad is enabled to respond to the All ON Participation command and is OFF when the All ON command is issued, it will turn on and enter into Party Mode as a non-Master.
- The keypad issuing the All ON command will be the master keypad and be able to control the source selection for any other active zones. The power button will blink slowly tree times to indicate the Master status and then will remain lit. Volume control and Power On/Off remain independent for each keypad.
- Non-Master keypads in Party Mode cannot change the source. They will all show and follow the source choice of the Master keypad. If a user tries to change sources with a non-Master keypad, the volume up and down and source buttons will blink three times to indicate the error.
- Non-Master keypads can be turned OFF by a press and release of the Power button. Any keypad (Master or non-Master) can issue an All OFF command.
- Turning the Master keypad OFF will exit Party Mode, and allow the other zones to regain source control.
- A non-Master keypad cannot issue an All ON command. The source and volume buttons will blink three times to indicate an invalid command, and then will return the keypad to normal operation.



IR Indicator LED

Set **-** Program sequences

Input **-** Switch the TV's, VCR's, SAT's or DVD's input to view TV or video programs

Channel **-** Change channels sequentially - up or down

Mute **-** Press to turn the sound off or on in the zone

Menu **-** Display the menu for the selected device

Cursor Keys **-** Move the cursor in the menu screens

Guide **-** Display the program guide for the selected device

Zone Control **-** Turns zones on/ off / all off (DISC can be learned in as a source control feature.)

Power **-** Turn the selected source on or off.

Source Keys **-** Use these keys to select specific sources on the keypad and to set which source the remote will control.

Numeric Keys **-** Directly enter channels (e.g. 09 or 31).

Enter **-** Press to choose the highlighted menu option. May perform "OK" function for devices.

Last **-** Press to recall the last-viewed channel.

Volume **-** Raise or lower the sound level of the zone being controlled.

Info **-** View the current channel and program information.

OK **-** Press to choose the highlighted menu option. May perform "Enter" function for devices.

Exit **-** Exit the selected device's menu, guide, or program without making a menu selection.

Control Keys **-** Skip backward, rewind, fast forward, skip forward, record, stop, pause, or play tracks on source device.

Note: All source setup and control is contained in the CA4-RC remote control. The CA4 controller does not require programming for the controller or for source setup. See Remote Control usage and programming information later in this manual.

Ventilation Requirements

IMPORTANT: The CA4 should be situated so that its location or position does not interfere with its proper ventilation. Do not block vents above or to the sides of the unit, as it requires ventilation for proper operation. Do not expose to excessive dust, and do not allow dust to build up on the unit and block vent holes. Do not place the CA4 above or below a heat-generating component such as an audio amplifier.

Be sure to leave at least 2 inches of space to the sides of the unit with open air flow above. A single-space rack mount vent or about 1.75 inches must be kept clear above and below the unit.

Installation

The CA4 controller can be rack mounted or placed on a shelf in an equipment rack. The controller will occupy one rack space with the feet removed.

The controller can be installed in an equipment rack using the included rack-mount ears and hardware to attach the ears to the controller chassis.

Two controllers may be connected and allow up to 8 keypads on the system.

Electrical Power

The CA4 operates at 100 to 240 VAC. Voltage is auto selected internally. It is recommended that the CA4 and the source equipment be plugged into a dedicated 20-amp circuit with an isolated ground. A power line conditioner can reduce interference problems caused by noise found in some electrical systems.

Warning: There is no external on/off power switch on the CA4. If the controller is plugged in to a live AC outlet, it will be powered. To cycle power, you must unplug the controller and then plug it back in.

Do not connect the controller's main power feed until all other connections have been made and verified. Live connection or removal of the keypad wiring or other wiring when the system is powered can cause communication problems in the network. Double-check terminations during each phase of the installation to prevent accidental damage. Incorrect wiring is the number one cause for non-warranty product damage.

Important Considerations

- Disconnect the power cord before making any connections to the controller.
- Verify that all connections and polarity are correct.
- Keep all power cords away from all signal cables to prevent humming from induced noise.
- Choose reliable signal cables and patch cords.
- Label all wires with the room location at both ends of the wire.
- Avoid running speaker wires or signal cables close to house electrical wiring for any distance. If you have to run them parallel, make sure to space the wires at least two feet from the AC line. If you need to cross an AC line it should be at a 90° angle.
- For dual controllers, use a keypad connected through a wall port to set the ID on the second controller before linking the controllers.

Controller / Keypad Configuration

The CA4 Wall Port jacks are located on the rear of the controller. These RJ-45 ports must be connected to the corresponding jacks on the wall port. Each keypad is then connected to the wall port.

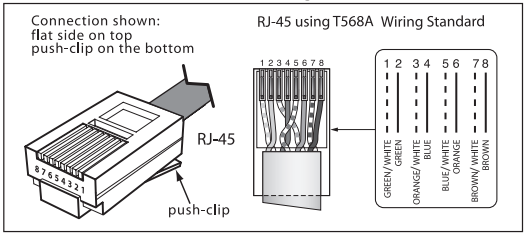
All CAT-5 connections are made with RJ-45 connectors using the T568A Wiring Standard configuration. For a clean installation use the included RJ-45 CAT-5 pass-through cables to connect from the controller wall port jack to the corresponding one on the CA4-WP. Using the same wiring configuration to terminate the ends, route a CAT-5 cable from the wall port to each of the keypads. Cables from the controller to the wall port should not exceed 6 feet (2m).

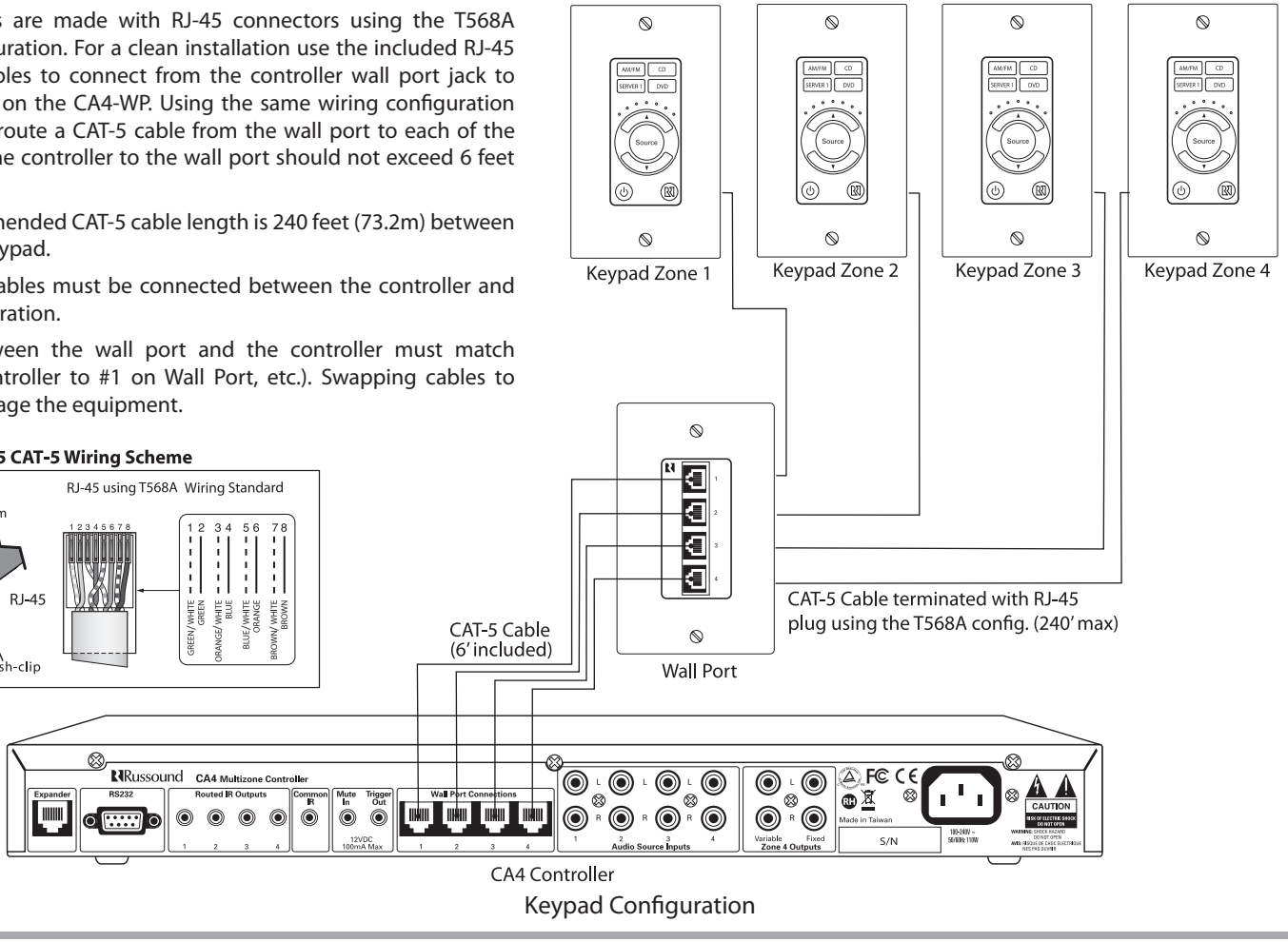
The maximum recommended CAT-5 cable length is 240 feet (73.2m) between the wall port and the keypad.

Note: All four CAT-5 cables must be connected between the controller and wall port for proper operation.

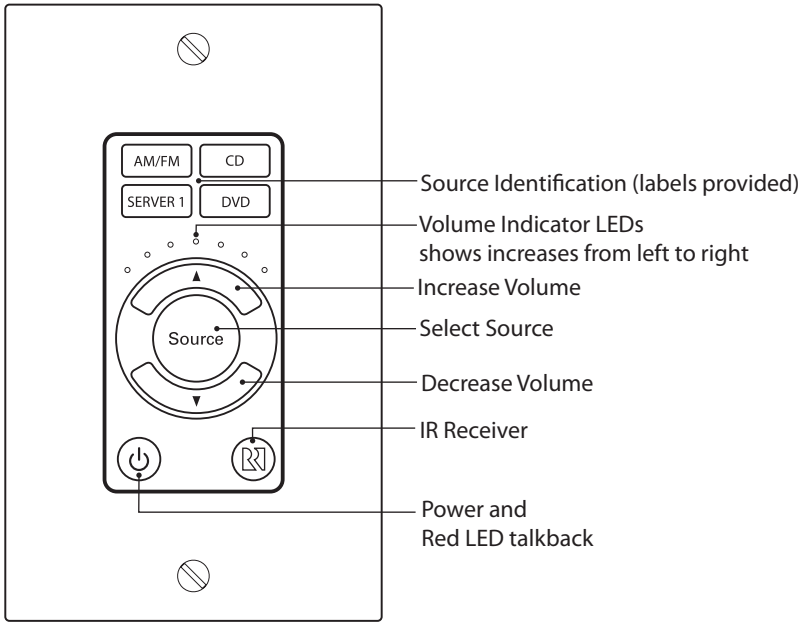
Caution: Cables between the wall port and the controller must match numerically (#1 on Controller to #1 on Wall Port, etc.). Swapping cables to different ports can damage the equipment.

RJ-45 CAT-5 Wiring Scheme

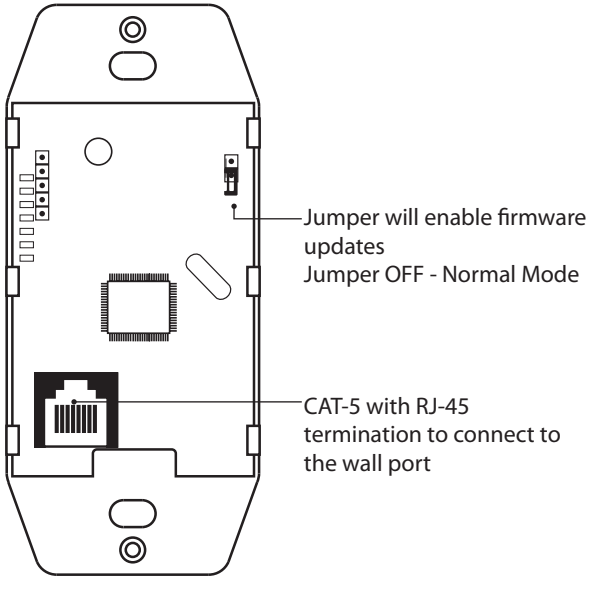




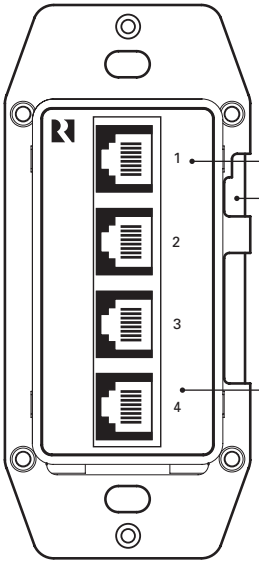
Keypad Configuration



CA4 Keypad (front)
with Decora® Trim Plate



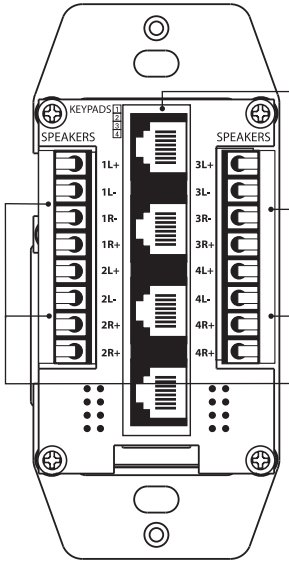
CA4 Keypad (rear)



When changing face plate colors,
the plate cutouts must be on the
same side as the zone numbers

RJ-45 Connections
Use included CAT-5 cables to connect
the controller to the Wall Port.

CA4 Wall Port (front)



RJ-45 Keypad Connections
Connect to each keypad

Speaker terminals
Four pair 8 ohm speakers
Two channels each

CA4 Wall Port (rear)

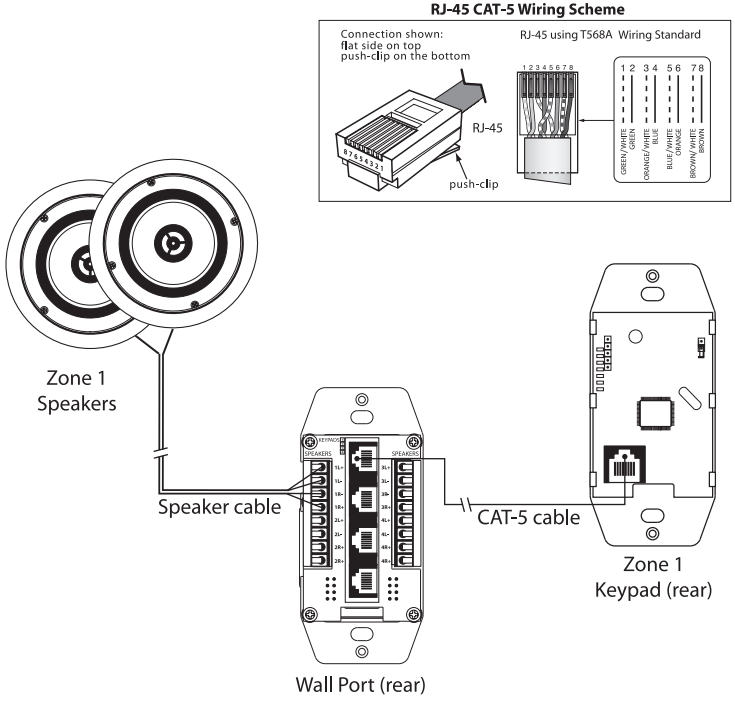
Wall Port Installation

1. Pick an unobtrusive location close to the controller that all cables (speaker and keypad) can be routed to.
2. Install an electrical box, using a UL/CSA approved plastic single-gang (18 ci or deeper) electrical box. If there will be two controllers you should use two single-gang boxes separated slightly to allow space for the cables.
3. Route CAT-5 wire from the electrical box to the four keypad locations. Route the speaker cable from the electrical box to the corresponding speaker locations. Label each set of cables with the zone and location.
4. Terminate each CAT-5 wire with a RJ-45 plug using the T568A standard configuration.
5. Strip 1 to 2 inches (2.5 to 5 cm) off the end of each speaker cable jacket. Then strip 1/4 inch (0.7 cm) of insulation off each wire.
6. Twist the speaker wire strands together so there are no strands separated from the bundle.
7. Insert the proper speaker wire, matching channel and polarity for all four wires. Tighten the screws until the wires are secured in the terminal.
   Cable as follows (standard 4-conductor):
   White -- L+ (left channel positive)
   Green -- L- (left channel negative)
   Black -- R- (right channel negative)
   Red -- R+ (right channel positive)
8. Check to make sure there are no stray strands of wire outside the terminals. If there are, remove the wire, twist the strands together, and reconnect the wire to the terminal.
9. Complete the same steps for the remaining zones. Plug each of the RJ-45 plugs into the corresponding keypad zone jack on the rear of the wall port. **Note:** All four connections from the controller to the wall port must be made, even if there are less than 4 keypads connected to the system. Cables between the wall port and the controller must match numerically (#1 on the wall port to #1 on the controller).
10. Mount the wall port in the electrical box. Push any extra cable back into the wall. Screw the wall port plate to the electrical box. Attach the trim plate to the wall port.

Speaker Outputs

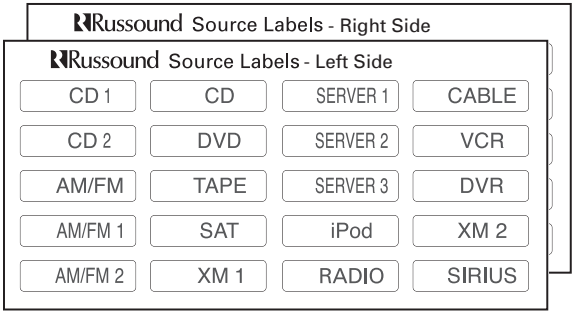
The CA4 supports speaker outputs for zones 1 through 4 for each controller with a maximum of eight zones. Each speaker connection requires a 8-ohm load and will provide 15 watts per channel. Standard 16-gauge 4-conductor stranded speaker wire can be run up to 125 feet; 14-gauge wire can be run up to 250 feet.

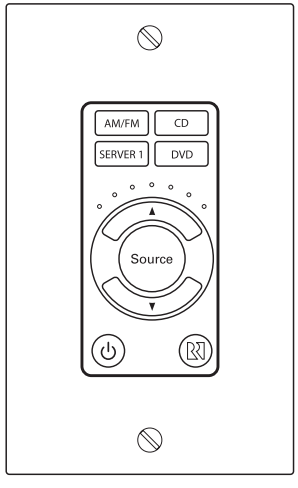
The speakers are connected to the CA4 Wall Port using fixed screw terminals. Each of these terminals is designated for the speaker set of a particular amplified zone. To avoid confusion, connect one zone speaker set at a time starting with Zone 1, taking care to keep zone and speaker wire identities straight.



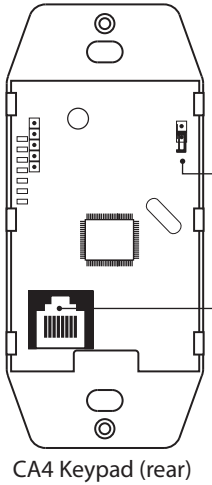
Keypad installation

1. Ensure it is possible to run the wire to the location you have chosen.
2. To install a single-gang keypad, you will need to use a UL/CSA approved plastic single-gang (18 ci) electrical box.
3. Route CAT-5 wire to the electrical box from the CA4 Wall Port and label it with the zone number.
4. Terminate the CAT-5 wire with a RJ-45 plug using the T568A standard configuration. Plug the wire into the jack on the rear of the keypad.
5. Ensure the 2-pin jumper is in the off position (on one pin only).
6. Source labels must be inserted prior to installing the trim plate on the keypad. Determine the system's source names and numbers (e.g., CD, Source 1).
7. Select the corresponding source name label from the included label sheets. Left-side labels are used for sources 1 and 3; right-side labels are used for sources 2 and 4.
8. Slide the label into the window slot until the source name is centered in the window.
9. Push any extra cable back into the wall or electrical box. Align the keypad back plate and screw the keypad to the electrical box.
10. Place the foam around the keypad face and then align and screw on the trim plate to the keypad.





CA4 Keypad (front)



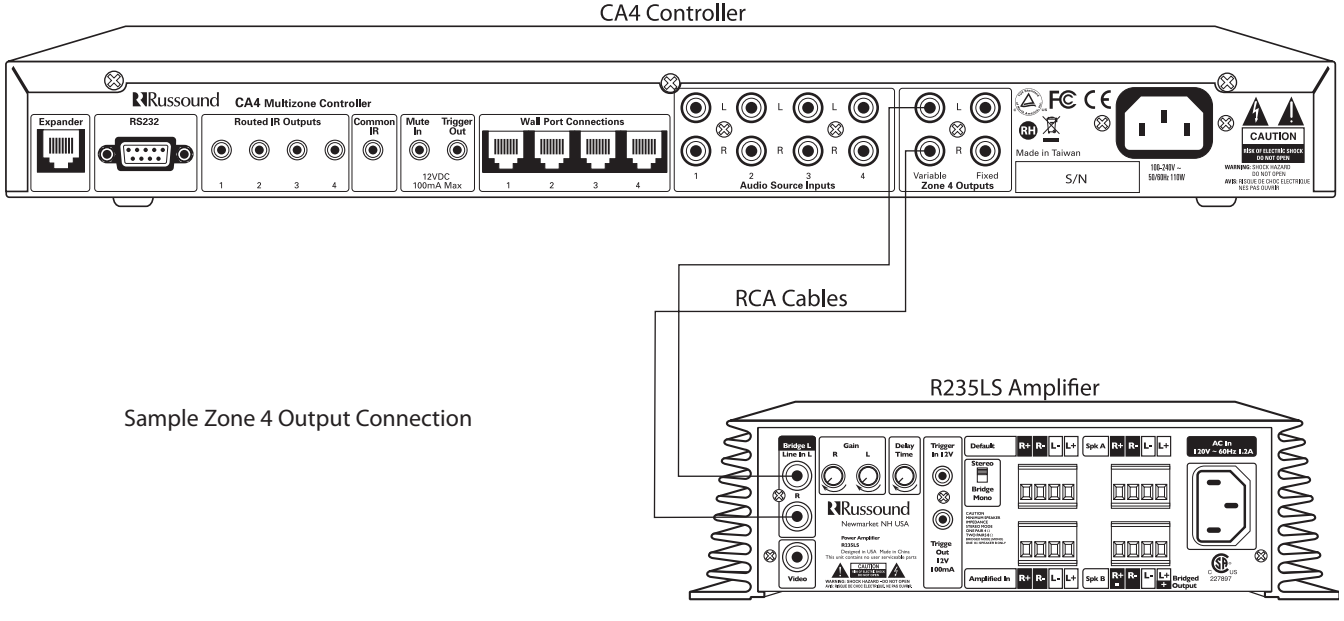
CA4 Keypad (rear)

Zone 4 Fixed/Variable Audio Output

The CA4 has two line Audio outputs on Zone 4. These zone audio output connections feature a stereo line out RCA connection for a fixed and/or a variable line level output.

When connected to Variable, the keypad volume level affects this output. In the Fixed position, the keypad volume level will not change the output level.

The fixed or variable audio outputs can be used if additional amplification is desired (e.g., Russound R235LS two-channel amplifier). Use quality RCA signal cables to ensure a constant quality audio signal.



Sample Zone 4 Output Connection

Triggers

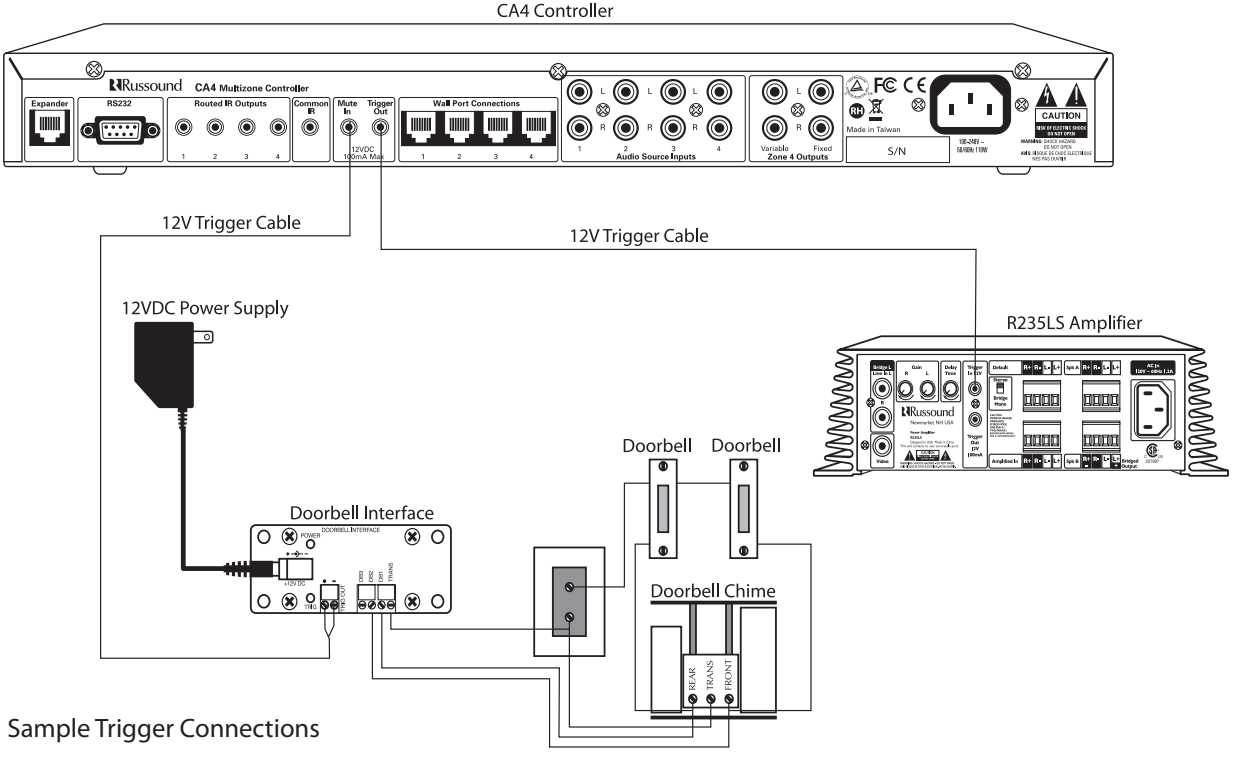
12VDC Mute Trigger In

When 12VDC is applied to the Mute In, the system will fully mute all zones on the controller. The connections for the trigger are made using a two-conductor cable with 1/8" male mini-plug jacks. The tip is positive (+) and sleeve is negative (-). This allows for the connection of an external paging or muting device. In a dual controller configuration a mini plug Y cable should be used to send the signal into both Mute In jacks so all zones will be muted.

Note: The CA4 will not accept a paging audio input; however, if used with an independent paging system with 12VDC trigger out, that can be used to trigger the mute.

12VDC System Trigger Out

Trigger Out 12VDC output is used for triggering an external amplifier or other component. The connections for the output are made using a two-conductor cable with 1/8" male mini-plug jacks at each end. The tip is positive (+) and sleeve is negative (-). The System Trigger Out supplies 12VDC when the first keypad is turned on. The 12VDC is removed 5 minutes after the last keypad is turned off.



Sample Trigger Connections

Serial Port

The CA4 supports RS-232 communication with various third party automation systems or PC for control, and potential firmware updates of the controller. The RS-232 port is located on the rear of the CA4 and uses a DB-9 cable connection. Directions will accompany any firmware updates.

Controller ID Settings

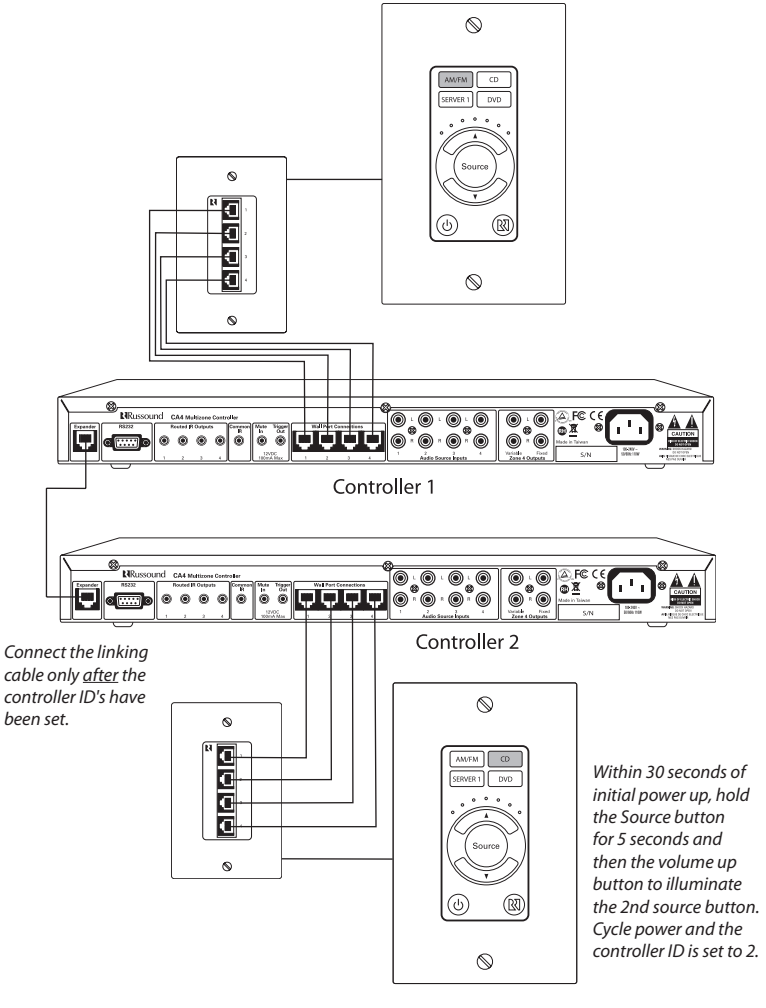
If more then 4 zones are required another CA4 controller must be used and must have its own ID. One of the controllers must be set to 1 (default) and the other to 2.

1. Power up the #2 controller (plugging the unit into an electrical outlet). The installer has 30 seconds to set the ID.
2. Press and hold the source button on a keypad connected to the #2 controller's wall port for 5 seconds and the source 1 or 2 label will start blinking, whichever the controller is set to will be displayed. If source 1 blinks then the ID is set to 1. If source 2 blinks then the controller ID is set to 2. Please note, the default setting is 1.
3. A press and release of the volume up button will set the controller ID to #2. (A press and release of the volume down button will set the ID to #1.)
4. Cycle power to complete this setting. Unplug the controller from the power source, wait 10 seconds and plug it back in.
5. Only after the controller ID's are set should the cable linking the controllers be connected.

Please note upon initial power up this parameter should be set within 30 seconds or the controller will revert to normal operation. During power failure or power cycle this mode will return for the first 30 seconds of initial power. Normal operation can still occur during this period.

Note: All four connections from the controller to the wall port must be made, even if there are less than 4 keypads connected to the system.

Caution: Cables between the wall port and the controller must match numerically (#1 on Controller to #1 on Wall Port, etc.). Swapping cables to different ports can damage the equipment.



Two Controller Configuration

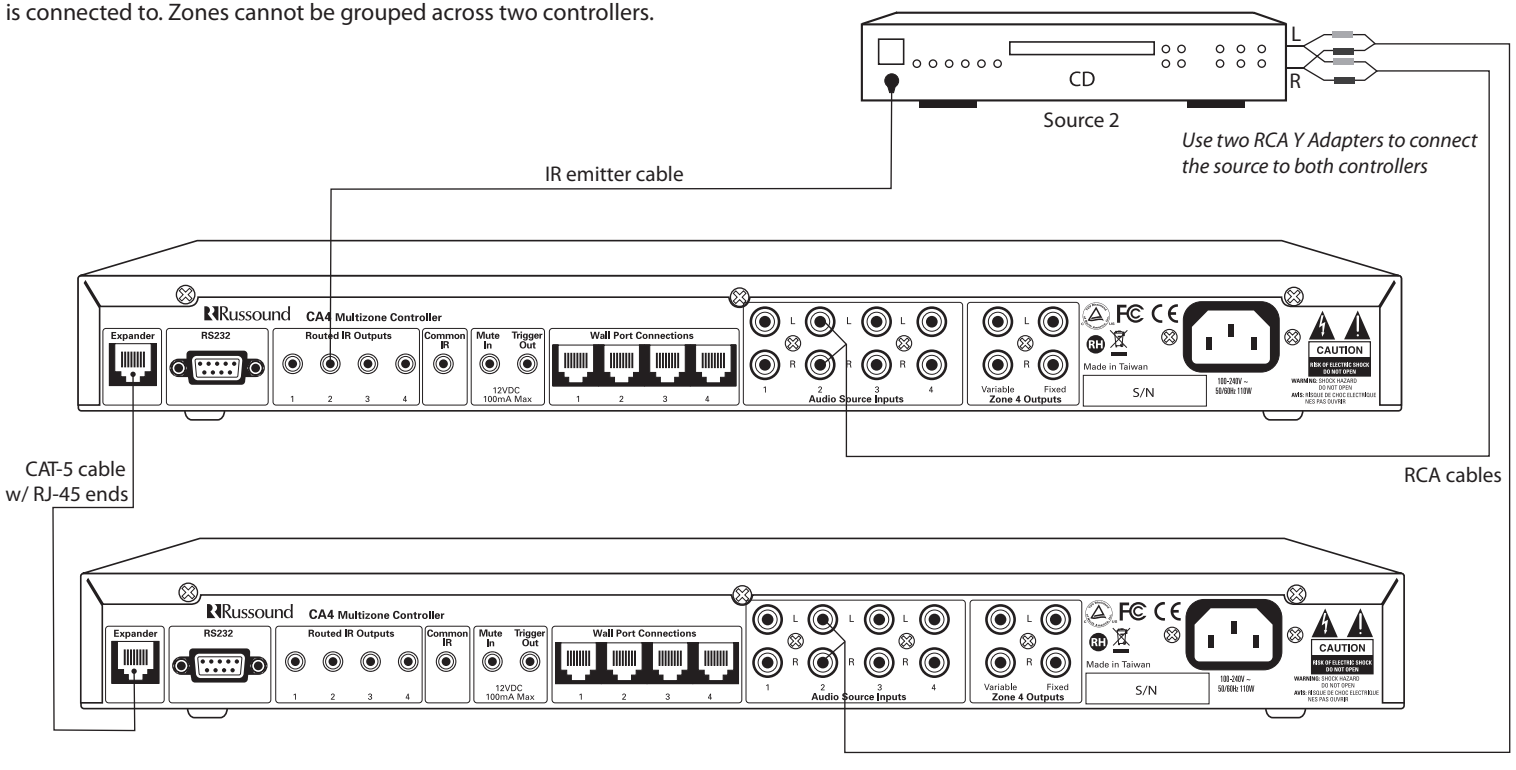
Linking Two Controllers

Two CA4 controllers can be linked together for a system that supports eight zones and four sources. This setup requires two controllers, a CAT-5 linking cable, RCA "Y" adapters, two wall ports (CA4-WP), and up to eight keypads (CA4-KP).

Establish four zones for the first controller and four zones for the second controller (keypads and speakers). Arrange the zones on each controller with an aim toward potential source grouping. Give the customer a list of which zones are on each controller. Source grouping is specific to the controller the zone is connected to. Zones cannot be grouped across two controllers.

Connect the audio from the sources (up to four) to both controllers. The audio must be split using RCA "Y" adapters to connect to both controllers. It is not necessary to link the IR outputs. The IR communication is carried to the second controller via the linking CAT-5 cable.

Refer to the diagram below for connections.



Dual Controller Source Connections

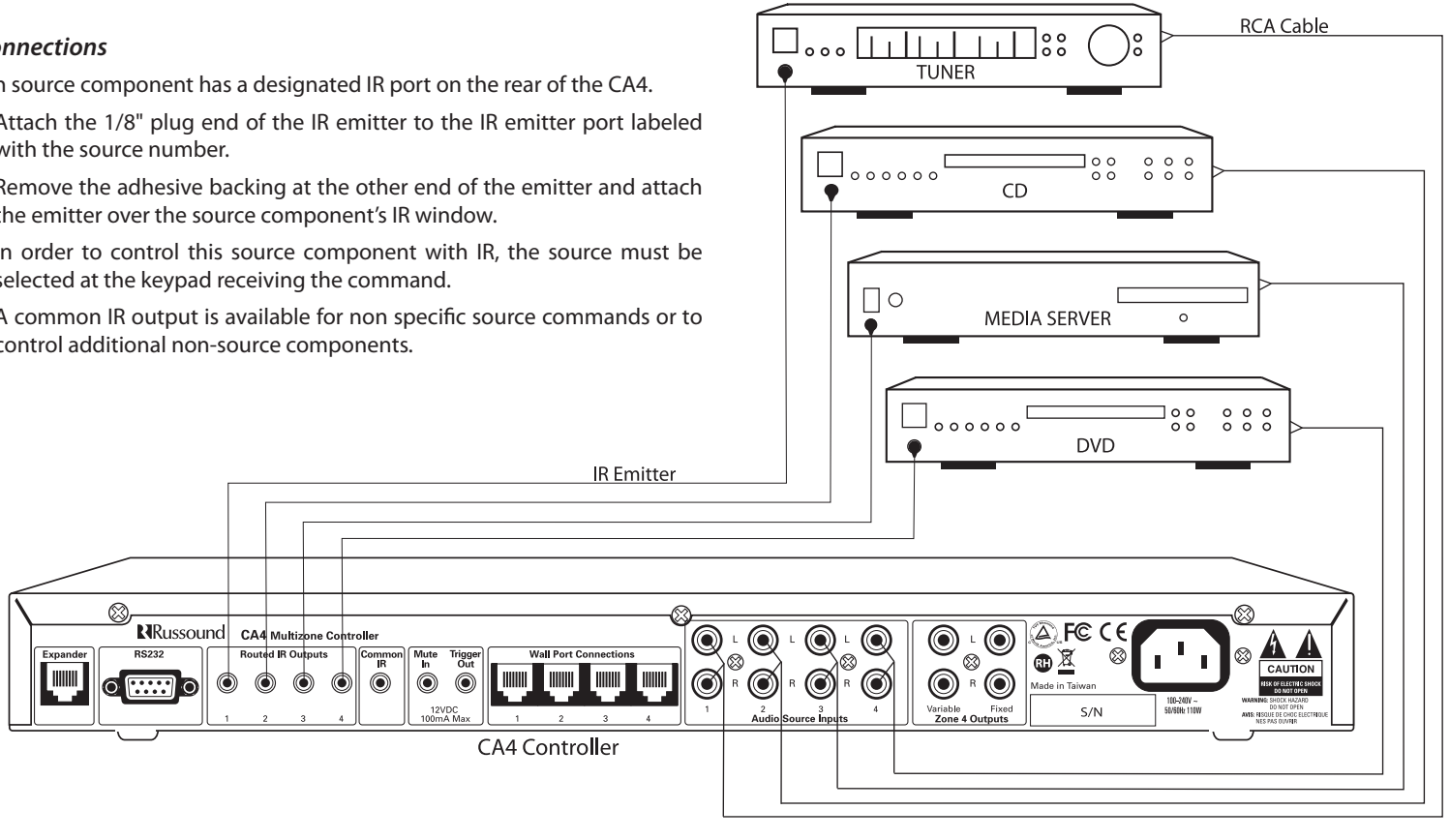
Source Audio Connections

The CA4 supports up to four audio sources. The Source Inputs are located on the rear panel. Connect each source using quality RCA signal cables. Connect the Left and Right Audio outputs from each source to the corresponding inputs on the CA4 controller. Label each cable with the name of the selected source and the Source Audio input number located on the CA4.

IR Connections

Each source component has a designated IR port on the rear of the CA4.

1. Attach the 1/8" plug end of the IR emitter to the IR emitter port labeled with the source number.
2. Remove the adhesive backing at the other end of the emitter and attach the emitter over the source component's IR window.
3. In order to control this source component with IR, the source must be selected at the keypad receiving the command.
4. A common IR output is available for non specific source commands or to control additional non-source components.



Start up

1. Connect the speakers and keypads to the wall port. Make all connections of the sources and wall port to the controller.
   Note: All four connections from the controller to the wall port must be made, even if there will be less than 4 keypads connected to the wall port.
2. If using dual controllers, power the second controller, set the ID to '2' and then unplug the controller. Use the linking cable to connect both controllers.
3. Plug in and power the sources and controllers.
4. The left LED showing power on the front panel of each controller should be lit.
5. Check operation of the keypads, power on and cycle through sources. The LED should be lit on the front of the controller if the corresponding keypad is on. The LED will not be lit if the keypad is not turned on or is absent.
6. Check operation of all keypad functions. Treble, bass, loudness, source grouping, and All ON participation can be programmed at each keypad.
7. Check for functional IR signal pass-through (if applicable).
8. The system is now ready to use.

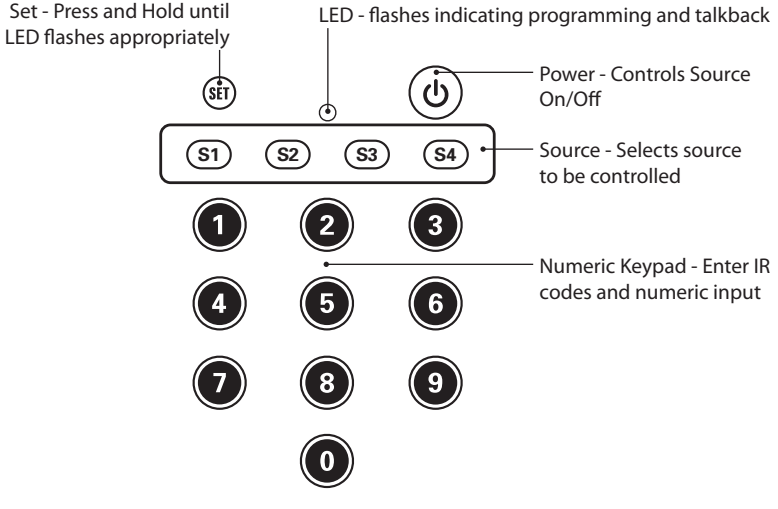
Troubleshooting

- When the controller and the keypads are powered ON all the corresponding LEDs on the face of the controller will be green. Improper connection may cause one or more LEDs not to be lit. Check all connections.
- Cycle power by unplugging the controller, waiting for 10 seconds and then plugging back into a power source.
- Check connections from the wall port to the controller, and from the keypads and speakers to the wall port.
- If the keypad doesn't respond to commands ensure the jumper on the rear of the keypad board is in the OFF position (only on one pin).
- Cables between the wall port and the controller must match numerically (#1 on Controller to #1 on Wall Port, etc.). Do NOT swap the cables to different ports. Doing so might damage the equipment or cause a malfunction.

Programing a Device

To control universal TV, VCR or DVD, cable or satellite receivers, amplifier or tuner, and auxiliary devices with the CA4-RC you need to program the remote. You will need to install the batteries and have enough room to point the CA4-RC at the various source equipment. Before proceeding, find the codes for the devices you want to program in the "Manufacturer's Codes", and write them down or highlight them. **Note**: Record which device is identified as Source 1, 2, 3, and 4.

1. Turn on the device and, if needed, load media.
2. Press the source key identified with that device.
3. Press and hold SET until the red LED blinks twice, then release.
4. Enter the first five-digit code for your device. The LED blinks once as each digit is entered. If the code is correct, the LED blinks twice. **Note:** If the LED does not blink twice, repeat steps 2 to 4 and try entering the code again.
5. Aim the remote at the device and press Power. The device should turn off. If it does not, repeat steps 3 to 5, trying each code for your brand until you find one that works. If you cannot find a code that works, see *Searching for Your Code.*
6. Repeat steps 1 to 5 for the other devices you want to control. Write down each working device code.



Searching for Your Code

If the device does not respond to the remote after trying all codes listed for your brand, or if the brand is not listed, try searching for the code:

1. Press a source key once.
2. Press and hold SET until the red LED blinks twice, then release.
3. Enter 9-9-1, then the device group number (see below). The LED blinks twice.
   0 Cable (Cable Converters, Video Accessories, Satellite Receivers)
   1 TV (TVs)
   2 VCR (VCRs, DVD players)
   3 Audio (Audio Amplifiers, Audio Amp/Tuners, CD Players)
4. Aim the remote at the device and press POWER. The remote sends IR codes from its library to the selected device, starting with the most popular code first. If the device responds, go to step 6.
5. If the device does not respond, press CH+. the remote will try the next code. Continue until the device responds. Press CH- to try the previous code.
6. Press SET to lock in code. To search for other device codes, repeat steps 1-5.

Checking the Codes

If you have set up the remote using the procedure in "Searching for Your Code," you may need to find out which five-digit code is operating your equipment. For example, to find out which code is assigned to your TV:

1. Press the source key to which the TV is assigned.
2. Press and hold SET until the red LED blinks twice, then release.
3. Enter 9-9-0. The LED blinks twice.
4. To view the code's first digit, press 1. Count the LED blinks (e.g., three blinks =3), and enter the number in the appropriate device listed in step 3 of "Programming a Device." If a code digit is 0, the LED does not blink.
5. Repeat step 4 for the remaining digits, using 2 for the second digit, and so on.
6. To check for other device codes, repeat steps 1 to 5, using the appropriate key.

Using Learning Mode

The CA4-RC includes a learning feature so you can add functions that are unique to your home entertainment devices (i.e., VCR tracking up or down). The following precautions apply.

- The original remote controls must be in working order for learning to work properly.
- Learned keys are mode specific, so each one can store a unique function for each mode.
- Do not use the following keys for learning: Device Keys, SET, Back, or Record.
- Learning capacity is approximately 16 to 25 keys, depending on the code being learned.
- Certain device codes are not learnable including multi-frequency types, some high frequency ones, and other unusual formats.
- For optimum learning, avoid high levels of ambient light such as natural sunlight or energy-efficient fluorescent lights.
- Have the original remote controls handy.
- If more than 15 seconds pass between key presses, the remote exits programming.

Programming a learned key

1. Press and hold SET until LED flashes twice.
2. Press 9-7-5.
3. Press a source key once to assign a mode for learning.
4. Place the CA4-RC head-to-head (about 2" apart) from your original remote control. Also locate the key (on original remote control) that will serve as the teaching function.
5. On the CA4-RC, press a key where the learned function will be stored.
6. On the original remote, press and hold the key to be learned. The CA4-RC LED will turn off. Continue holding the key on the original remote until the CA4-RC LED blinks twice. **Note**: If the LED displays one long blink, a learning error has occurred. Try repeating this step again until a successful capture occurs. If the function is still not captured, press and hold SET to exit programming. Review the learning precautions listed above, or the Troubleshooting tips, before beginning again at step 1.
7. Repeat steps 4 to 6 for another key on same device, or repeat steps 1 to 6 for another device.

Deleting a single learning key

1. Press and hold SET until the LED flashes twice.
2. Press SET, then 9-7-6 to delete a learned function.
3. Press the source key once.
4. Press the key (twice) containing the learned function to be deleted. The remote blinks twice.
5. Repeat steps 2 to 4 for another key on the same source, or press and hold SET to exit programming.

Deleting all learned keys in a specific mode

1. Press and hold SET until the LED blinks twice.
2. Press 9-7-6.
3. Press a source key twice to delete all the learned keys for that source. The LED blinks twice.
4. Repeat step 3 for another key for a device, or press and hold SET to exit programming.

Troubleshooting

Problem: LED blinks when you repress a key, but device does not respond.
Solution: Make sure the remote is aimed at your device or system keypad and is not more than 15 feet away.

Problem: LED blinks one long blink.
Solution: An entry error has occurred (i.e., wrong key). Try entry sequence again.

Problem: Remote does not control devices or commands are not working properly.
Solution: Try all listed codes for the device. Make sure the device operates with an infrared remote control.

Problem: Channels do not change properly.
Solution: If the original remote control required you to press ENTER to change channels., press enter on this remote after entering the channel number.

Problem: LED does not blink when you press a key.
Solution: Replace battery with two new AA batteries.

MANUFACTURER's CODES

Setup Codes for Audio Amplifiers

Accuphase	30382
Acurus	30765
Adcom	30577, 31100
Aragon	30765
AudioSource	30011
Bel Canto Design	31583
Bose	30674
Carver	30892
Curtis Mathes	30300
Durabrand	31561
GE	30078
Harman/Kardon	30892
JVC	30331
Kenwood	30356
Klipsch	30765
Left Coast	30892
Lenoxx	31561
Luxman	30165
Marantz	30321, 30892
Mark Levinson	31483
Mondial	30765
Nakamichi	30321
NEC	30264
Optimus	30300, 30395
Parasound	30246
Philips	30892
Pioneer	30013, 30300
Polk Audio	30892
PS Audio	31523
RCA	30300
Realistic	30395
Sansui	30321
Shure	30264
Sony	30689, 30815
Soundesign	30078, 30211
Victor	30331
Wards	30013, 30078, 30211
Yamaha	30133, 30143, 30354, 30504
YBA	31502

Setup Codes for Cable Converters

ABC	00001, 00003, 00007, 00008, 00011, 00013, 00014, 00017
Allegro	00153, 00315
Americast	00899
Antronix	00022, 00207
Archer	00022, 00153, 00207, 00797
Belcor	00056
Bell & Howell	00014
Bell South	00899
Cable Star	00056
Cabletenna	00022
Cableview	00022
Century	00153
Citizen	00153, 00315
Clearmaster	00883
ClearMax	00883
Cleartron	01327
Colour Voice	00025, 00031
Comtronics	00040
Contec	00019
Coolmax	00883
Digi	00637
Director	00476
Dumont	00637
Eastern	00002
Emerson	00797
Everquest	00015, 00040
Focus	00400
Garrard	00153
GC Electronics	00056, 00207
Gemini	00015, 00797
General Instrument	00003, 00011, 00276, 00476, 00810
Global	01327
GoldStar	00040, 00144
Goodmind	00797
Hamlin	00009, 00020, 00034, 00259, 00273
Hitachi	00011
Hytex	00007
Jasco	00015, 00153, 00315
Jerrold	00003, 00011, 00012, 00014, 00015, 00276, 00476, 00810
Linsay	00440
Magnavox	00027
Memorex	00000
Motorola	00014, 00276, 00476, 00810, 01106, 01254, 01376
Movie Time	00063, 00156
Multitech	00883
Novaplex	00618
NSC	00063, 00156
Oak	00007, 00019
Optimus	00021
Pace	00008, 00237, 01877
Panasonic	00000, 00021, 00107
Panther	00637
Paragon	00000
Philips	00025, 00027, 00031, 00153, 00317, 01305
Pioneer	00144, 00533, 00877, 01021, 01877
Popular Mechanics	00400
Pulsar	00000
Quasar	00000
RadioShack	00015, 00315, 00797, 00883
RCA	00021
Realistic	00207
Recoton	00400
Regal	00020, 00259, 00273, 00279
Regency	00002
Rembrandt	00011
Runco	00000
Samsung	00040, 00144
Scientific Atlanta	00008, 00017, 00477, 00877, 01877
Seam	00510
Signal	00015, 00040
Signature	00011
SL Marx	00040
Sony	01006
Sprucer	00021
Starcom	00003, 00015
Stargate	00015, 00040, 00797
Starquest	00015
Supercable	00276
Supermax	00883
Sylvania	00001
Tandy	00258
Teleview	00040
Texscan	00001
TFC	00310
Time Warner Cable	01877
Timeless	00040
Tocom	00012, 00013
Torx	00003
Toshiba	00000
Tristar	00883
Tusa	00015
TV86	00063
Unika	00022, 00153, 00207
United Artists	00007
Universal	00022, 00056, 00153, 00191, 00207
V2	00883
Viewmaster	00883
Viewstar	00027, 00063, 00258
Vision	00883
Vortex View	00883
Zenith	00000, 00525, 00899
Zentek	00400

Setup Codes For CD Players

ADC	30018
Adcom	30155, 30234
Aiwa	30012, 30124, 30157
Akai	30156
Arcam	30157
Audio Alchemy	30194
Audio-Technica	30170
BSR	30194, 30245
Burmester	30420
California Audio Labs	30029, 30303
Carrera	30194
Carver	30157, 30179, 30437
Classic	31297
Crown	30122
DAK	30245
DBX	30254
Denon	30003, 30626, 30873
DKK	30000
DMX Electronics	30157
Emerson	30155, 30164, 30305, 30469
Fisher	30088, 30174, 30179, 30342, 31325
Garrard	30245, 30280, 30393, 30420, 30425
GE	30009
Gemini	30625
Genexxa	30032, 30164, 30305
GoldStar	30417, 31208
GPX	31296
Harman/Kardon	30157, 30173, 30426, 31202
Hitachi	30032, 30155
Integra	30101
JVC	30072, 30655, 31294
Kenwood	30028, 30037, 30190, 30626, 30681, 30826
KLH	31318
Kodak	30287
Koss	31317
Krell	30157
Kyocera	30018
LG	31208
Linn	30157
Luxma	30093
LXI	30305
Magnavox	30157, 30305
Marantz	30029, 30157, 30180, 30626
Mark Levinson	31484
McIntosh	30287
MCS	30029, 30043
Miro	30000
Mission	30157
MTC	30420, 30625
Nakamichi	30147
NEC	30043, 30234
Nikko	30164, 30170, 30174, 30625
NSM	30157
Onkyo	30101, 30868
Optimus	30000, 30032, 30037, 30087, 30145, 30175, 30179, 30194, 30196, 30280, 30305, 30342, 30420, 30426, 30437, 30468, 31063, 31075
Panasonic	30029, 30303, 30752
Parasound	30194, 30420
Philips	30157, 30287, 30626
Pioneer	30032, 30305, 30468, 31062, 31063, 31087
Polk Audio	30157
Proceed	30420
Proton	30157

QED	30157
Quad	30157
Quasar	30029
RadioShack	31075
RCA	30009, 30032, 30053, 30155, 30179, 30305, 30420, 30468, 30764, 31062
Realistic	30155, 30164, 30175, 30179, 30180, 30420
Rotel	30157, 30420
SAE	30157
Sansui	30157, 30202, 30305
Sanyo	30087, 30179
Scott	30155, 30164, 30305
Sears	30305
Sharp	30037, 30180, 30861
Sherwood	30180, 30196, 30426, 31067
Shure	30043
Simaudio	30157
Sonic Frontiers	30157
Sony	30000, 30100, 30185, 30490, 30604, 30605, 31364
Soundesign	30145, 30425
STS	30018
Sugden	30157
Symphonic	30305
TAG McLaren	30157
Tascam	30420
TDK	31208
Teac	30174, 30180, 30393, 30420
Technics	30029, 30207, 30303
Tivoli Audio	31553
Vector Research	30194, 30417
Victor	30072
Wards	30053, 30157
Yamaha	30036, 30170, 30187, 30490, 30888, 31292
YBA	30625
Yorx	30461

Setup Codes For Video Accessories

ABS	01272
Alienware	01272
CyberPower	01272
Gateway	01272
Hewlett Packard	01267, 01272
Howard Computers	01272
HP	01272
Hush	01272
iBUYPOWER	01272
InterVideo	01393
Jensen	01165
JVC	01384
Keyspan	01344
KWorld	01403
LG	01415
Linksys	01272, 01365
Macro Image Technology	01383
Media Center PC	01272
Microsof	01272
Mind	01272
Motorola	01363
MyHD	01383
Niveus Media	01272
Northgate	01272
Panasonic	01120
Pinnacle Systems	01268
Pioneer	01010
Princeton	00113, 00295
Rabbit	00081
Ricavision	01272
Roku	01486
Samsung	01190, 01490
Sensory Science	01126
Sharp	01010
SMC	01456
Sony	01272, 01324, 01364
Stack 9	01272
Streamzap	01309
Systemax	01272
Tagar Systems	01272
TeleCaption	00171
Toshiba	01272
Touch	01272
Viewsonic	01272, 01329
Vizio	01126
Voodoo	01272
ZT Group	01272

Setup Codes For Audio Amp/Tuners

ADC	30531
Adcom	30616, 31616, 31617
Aiwa	30121, 30158, 30189, 30405, 31089, 31243, 31321, 31347, 31388, 31405, 31641
Akai	30076, 30224, 31255, 31512
Alco	31390
AMC	31077
Amphion Media Works	31563, 31615
Amplifier Technologies	31584
AMW	31563, 31615
Anam	31074, 31609
Apex Digital	31257, 31430
Arcam	31120, 31189
Atlantic Technology	31487
Audiophase	31387
Audiotronic	31189
Audiovox	31390, 31627
Bel Canto Design	31584
Bose	30639, 31229, 31253
Brix	31602
Cambridge Soundworks	31370, 31477
Capetronic	30531
Carver	30008, 30042, 30121, 30189, 30360, 31089, 31189, 31289
Casio	30195
Clarinette	30195
Classic	31352
Coby	31263, 31389, 31513
Compaq	31136
Criterion	31420
Curtis	30797, 31596
Curtis Mathes	30080
Daewoo	31250
Dell	31383
Denon	30004, 30121, 30273, 30771, 31104, 31142, 31311, 31360, 30023, 30302
Emerson	30255, 30424
Fisher	30042, 30219, 30360, 31409, 31801
Fosgate	31487
Garrard	30146, 30281, 30424, 30440, 30463
Gateway	31517, 31567
GE	31379
Glory Horse	31263
Go Video	31352, 31532
GoldStar	30281
GPX	31299
Hafler	30146
Harman/Kardon	30110, 30189, 30891, 31289, 31306
Hewlett Packard	31181
Hitachi	31273, 31801
Initial	31426
Inkel	30062
Integra	30135, 31298
JBL	30110, 31306
JVC	30074, 31058, 31263, 31282, 31374, 31495
Kansai	30440
Kenwood	30027, 30042, 30077, 30186, 30239, 30313, 30314, 30569, 31027, 31051, 31052, 31313, 31569, 31570
KLH	31390, 31412, 31428
Koss	30255, 30424, 31366, 31497
Lasonic	31510, 31798
Lenoxx	31437
Lexicon	31076
LG	30281, 31293
Linn	30189
Liquid Video	31497
Lloyd's	30195
LXI	30181
Magnavox	30128, 30189, 30195, 30391, 30531, 31089, 31189, 31269, 31514
Marantz	30039, 30128, 30189, 30200, 31089, 31189, 31269, 31289
McIntosh	31289
MCS	30039, 30346
Memorex	31596
Micromega	31189
Mitsubishi	31393
Modulaire	30195
Musicmagic	31089
Myryad	31189
NAD	30320
Nakamichi	30097, 30347, 31313, 31555
NEC	30235
Norcent	31389
Nova	31389
Onkyo	30135, 30380, 30842, 31298, 31531
Optimus	30042, 30080, 30177, 30181, 30186, 30219, 30440, 30531, 30670, 30738, 30797, 30801, 30849, 31023, 31074
Oritron	31366, 31497
Outlaw	31487
Outlaw Audio	31487
Panasonic	30039, 30309, 30367, 30518, 31288, 31308, 31316, 31350, 31363, 31509, 31518, 31548, 31633, 31763, 31764
Penney	30195
Philips	30189, 30391, 31089, 31120, 31189, 31266, 31268, 31269, 31283, 31365, 31368
Pioneer	30014, 30080, 30150, 30244, 30531, 30630, 30801, 31023, 31084, 31184, 31343, 31384
Polaroid	31508
Polk Audio	30189, 31289
Proscan	31254
Quasar	30039
RadioShack	31263
RCA	30054, 30080, 30346, 30360, 30530, 30531, 31023, 31074, 31154, 31254, 31390, 31511, 31609
Realistic	30163, 30181, 30195
Regent	31437
Rio	31383, 31869
Rio Audio	31383
Saba	31519
Samsung	31295, 31500
Sansui	30189, 30193, 30346, 31089, 31189, 31764
Sanyo	30219, 30801, 31251, 31469, 31801
Scott	30163, 30322
Sharp	30186, 30771, 31286, 31361, 31386
Sharper Image	30797, 31263, 31385, 31409, 31410, 31411, 31416, 31545, 31546, 31549, 31556, 31723
Sherwood	30062, 30491, 30502, 31077, 31423, 31517, 31567, 31653
Shinsonic	31426
Sirius	31602, 31627
Sonic	30281
Sonic Blue	31383, 31532, 31869

Sony	30158, 30168, 31042, 31058, 31131, 31158, 31258, 31347, 31349, 31367, 31371, 31382, 31406, 31441, 31442, 31458, 31503, 31529, 31558, 31658, 31758, 31759, 31858
Soundesign	30670
Stereophonics	31023
Sunfire	30313, 30314, 31052, 31313
Sylvania	30797
Teac	30163, 30463, 31074, 31267, 31390, 31528
Technics	30039, 30208, 30309, 30518, 31308, 31309, 31384, 31518, 31633
Techwood	30281
Thorens	31189
Toshiba	30080, 30135
Venturer	30849, 31390
Victor	30074
Wards	30014, 30054, 30080, 30158, 30189
XM	31406
Yamaha	30081, 30176, 30186, 31176, 31276, 31331, 31375
Yorx	30195
Zenith	30281, 30857, 31293

Setup Codes For Satellite Receivers

AlphaStar	00772
Chaparral	00216
Crossdigital	01109
DirecTV	00099, 00247, 00392, 00566, 00639, 00724, 00749, 00819, 01076, 01108, 01109, 01142, 01392, 01414, 01442, 01443, 01444, 01639, 01640, 01749, 01856
Dish Network	00775
Dish Network System	00775, 01005, 01170, 01505, 01775
Dishpro	00775, 01005, 01505, 01775
Echostar	00775, 01005, 01170, 01505, 01775
Expressvu	00775, 01775
Funai	00338
GE	00392, 00566
General Instrument	00869
GOI	00775, 01775
Goodmans	01246
Hisense	01535
Hitachi	00214, 00489, 00491, 00819, 01250, 00023, 00201
HTS	00775, 01775
Hughes	00749, 01442, 01749
Hughes Network Systems	00749, 01142, 01442, 01443, 01444, 01749
iLo	01535
Jerrold	00869
JVC	00492, 00775, 01170, 01775
LG	01226, 01414
Magnavox	00722, 00724
Matsushita	00214, 00340, 00500
Memorex	00724
Mitsubishi	00749
Motorola	00856, 00869
NEC	00496, 01270
Next Level	00869
Panasonic	00214, 00247, 00340, 00500, 00701
Paysat	00724
Philips	00099, 00722, 00724, 00749, 00819, 01076, 01142, 01442, 01749
Pioneer	01442
Proscan	00392, 00566
Proton	01535
RadioShack	00869
RCA	00143, 00392, 00566, 00855, 01392
Samsung	01108, 01109, 01142, 01276, 01442
Sanyo	00493, 01219
Sharp	00494
Sony	00163, 00294, 00639, 01639, 01640
Star Choice	00869
Tivo	01142, 01442, 01443, 01444
Toshiba	00486, 00749, 00790, 00819, 01285, 01749
UltimateTV	01392, 01640
Uniden	00722, 00724
US Digital	01535
USDTV	01535
Voom	00869
Zenith	01856

Setup Codes For TVs

A-Mark	10003
Abex	10032
Admiral	10093, 10463
Advent	10761, 10783, 10815, 10817, 10842, 11933
Adventura	10046
Aiko	10092
Aiwa	11910, 11911, 11914
Akai	10030, 10060, 10672, 10702, 10812, 11903, 11935
Alaron	10179
Albatron	10700, 10843
Ambassador	10177
America Action	10180
Ampro	10751
Anam	10180
Anam National	10055, 10161
AOC	10003, 10019, 10030, 10052, 10185
Apex Digital	10156, 10748, 10765, 10767, 10879, 11943
Archer	10003
Audiovox	10003, 10092, 10180, 10451, 10623, 10802, 10875, 11937, 11951, 11952
Aventura	10171
Axion	11937
Belcor	10019
Bell & Howell	10016, 10154
BenQ	11032, 11756
Boxlight	10893
Bradford	10180
Brockwood	10019
Broksonic	10003, 10180, 10236, 10463, 11905, 11911, 11929, 11935, 11938
Candle	10030, 10046, 10056, 10186
Carnivale	10030
Carver	10054, 10170
Celebrity	10000
Celera	10765
Changhong	10765
Citizen	10030, 10039, 10046, 10056, 10060, 10092, 10186, 10280, 11928
Clairtone	10185
Clarion	10180
Colt	11906
Commercial Solutions	10047, 11447
Concerto	10056
Contec	10157, 10180, 10185
Craig	10161, 10180
Crosley	10054
Crown	10039, 10180
Curtis Mathes	10016, 10030, 10039, 10047, 10054, 10056, 10060, 10093, 10145, 10154, 10166, 10451, 10466, 10702, 11147, 11347, 11919
CXC	10180
Daewoo	10019, 10039, 10092, 10451, 10623, 10661, 10672, 11661, 11909, 11928
Daytron	10019
Dell	11080, 11178, 11454
Denon	10145, 10511
Denstar	10628
Dumont	10017, 10019
Durabrand	10003, 10171, 10178, 10180, 10463, 11034, 11463
Dwin	10093, 10720, 10774
Electroband	10000, 10185
Electrograph	11755
Electrohome	10381
Emerson	10019, 10038, 10039, 10154, 10171, 10177, 10178, 10179, 10180, 10185, 10236, 10280, 10282, 10451, 10463, 10623, 11905, 11909, 11911, 11928, 11929, 11944
Envision	10030, 10813
Epson	10833, 10840
ESA	10171, 10812
Fisher	10154, 10159
Fujitsu	10179, 10186, 10683, 10809, 10853
Funai	10171, 10179, 10180, 10264, 10342, 11904, 11913
Futuretech	10180
Gateway	11755, 11756
GE	10021, 10027, 10047, 10051, 10055, 10135, 10178, 10282, 10451, 11347, 11447, 11907, 11917, 11919, 11922
General	10186
Gibralter	10017, 10019, 10030
Go Video	10886
GoldStar	10001, 10019, 10030, 10032, 10178, 11926
Goodmans	10360
Grundig	10683
Grunpy	10179, 10180
Haier	10768, 11034
Hallmark	10178
Harley Davidson	10179, 11904
Harman/Kardon	10054
Harvard	10180
Havermy	10093
Helios	10865
Hello Kitty	10451
Hisense	10748
Hitachi	10016, 10032, 10038, 10056, 10145, 10151, 10178, 10179, 11145, 11150, 11245, 11904
Hyundai	10849
Infinity	10054
Inteq	10017
Janeil	10046
JBL	10054
JCB	10000
Jensen	10761, 10815, 10817, 11933
JVC	10036, 10053, 10160, 10653, 11253, 11923
Kaypani	10052
KEC	10180
Kenwood	10019, 10030
KLH	10765, 10767
Kloss	10024, 10046
Konka	10628, 10632, 10638, 10703, 10707, 11939, 11940
KTV	10030, 10039, 10180, 10185, 10280
LG	10178, 10442, 10700, 10856, 11178, 10006, 10022
Lloyd's	11904
Loewe	10136
Logik	10016
Luxman	10056
LXI	10047, 10054, 10154, 10156, 10178
Magnasonic	11913, 11928
Magnavox	10020, 10024, 10030, 10036, 10054, 10096, 10179, 10186, 10187, 10386, 10706, 10802, 11254, 11454, 11904, 11913, 11931, 11944
Magnin	11907
Majestic	10016

Marantz	10030, 10054, 10704, 10854, 10855, 11154, 11454
Maruman	10391, 10627
Matsushita	10161, 10250, 10650
Maxent	11755
Megapower	10700
Megatron	10003, 10145, 10178
MEI	10185
Memorex	10016, 10150, 10154, 10178, 10179, 10463, 11911, 11920, 11924, 11926, 11927
MGA	10019, 10030, 10150, 10178, 11907
Midland	10017, 10032, 10039, 10047, 10051, 10135
Minutz	10021
Mitsubishi	10019, 10036, 10093, 10150, 10178, 10250, 10836, 10868, 11150, 11250, 11917
Monivision	10700, 10843
Motorola	10055, 10093
MTC	10019, 10030, 10056, 10060, 10185
Multitech	10180
NAD	10156, 10178, 10866
NEC	10019, 10030, 10036, 10056, 10156, 10170, 10474, 10497, 10882, 11704
NetTV	11755
Nikko	10030, 10092, 10178
Norcent	10748, 10824
Noshi	10018
NTC	10092
Onwa	10180
Optimus	10154, 10166, 10250, 10650, 11913, 11924, 11927
Optoma	10887
Optonica	10093, 10165
Orion	10179, 10236, 10463, 11463, 11905, 11911, 11929
Panasonic	10051, 10055, 10161, 10250, 10650, 11410, 11919, 11924, 11927, 11941, 11946, 11947
Penney	10003, 10018, 10019, 10021, 10027, 10030, 10032, 10039, 10047, 10051, 10060, 10135, 10156, 10178, 11347, 11907, 11919, 11926
Philco	10019, 10020, 10030, 10054, 10096
Philips	10037, 10054, 10690, 11154, 11454
Pilot	10019, 10030, 10039
Pioneer	10038, 10166, 10679, 10866, 11457
Polaroid	10765, 10865
Portland	10019, 10039, 10092
Prima	10761, 10783, 10815, 10817, 11933
Princeton	10700, 10717
Prism	10051
Proscan	10047, 10466, 11347, 11447, 11922
Proton	10003, 10052, 10178, 10466
Pulsar	10017, 10019
Quasar	10051, 10055, 10165, 10250, 10650, 11919, 11924
RadioShack	10019, 10030, 10032, 10039, 10047, 10056, 10154, 10165, 10178, 10180, 11904, 11920
RCA	10018, 10019, 10038, 10047, 10090, 10135, 10679, 11047, 11147, 11247, 11347, 11447, 11547, 11907, 11917, 11919, 11922, 11948, 11953, 11958
Realistic	10019, 10030, 10032, 10039, 10056, 10154, 10165, 10178, 10180
Rhapsody	10185
Runco	10017, 10030, 10497, 10603
Sampo	10030, 10032, 10039, 10052, 11755
Samsung	10019, 10030, 10032, 10056, 10060, 10178, 10587, 10702, 10766, 10812, 10814, 11060, 11903
Samsux	10039
Sansui	10463, 11904, 11911, 11929, 11935
Sanyo	10088, 10154, 10159, 10376, 10424, 10798, 10799, 10893, 11907
Scimitsu	10019
Scotch	10178
Scott	10019, 10178, 10179, 10180, 10236
Sears	10047, 10054, 10056, 10154, 10156, 10159, 10171, 10178, 10179, 11904, 11926
Sharp	10039, 10093, 10157, 10165, 10256, 10386, 10491, 10688, 10689, 10787, 10818, 10851, 11917
Sharper Image	11950
Sheng Chia	10093
Shogun	10019
Signature	10016
Simpson	10186, 10187
Sole	10813
Sony	10000, 10080, 10111, 10834, 11100, 11300, 11904, 11925
Soundesign	10178, 10179, 10180, 10186
Sova	11952
Spectricon	10003
Squareview	10171
SSS	10019, 10180
Starlite	10180
Studio Experience	10843
Superscan	10093, 10864
Supre-Macy	10046
Supreme	10000
SVA	10587, 10748, 10768, 10865, 10870, 10871, 10872
Sylvania	10020, 10030, 10054, 10096, 10171, 10381, 11931, 11944
Symphonic	10171, 10180, 11904, 11913
Tandy	10093
Tatung	10003, 10055, 11756
Technics	10051, 10250
Technol Ace	10179
Techview	10847
Techwood	10003, 10051, 10056
Teknika	10016, 10019, 10039, 10054, 10056, 10060, 10092, 10150, 10179, 10180, 10186
Telefunken	10056, 10702
Thomas	11904
TMK	10056, 10177, 10178
TNCi	10017
Toshiba	10036, 10060, 10154, 10156, 10509, 10650, 10832, 10845, 11156, 11256, 11356, 11656, 11704, 11918, 11935, 11936, 11945
Tosonic	10185
Totevision	10039
Trical	10157
TVS	10463
Ultra	10391
Universal	10027
Vector Research	10030
Victor	10036, 10053, 10160, 10653
Vidikron	10054
Vidtech	10019, 10036, 10178
Viewsonic	10857, 10864, 10885, 11755
Viking	10046
Vizio	10864, 10885, 11756
Wards	10016, 10019, 10020, 10021, 10027, 10030, 10054, 10056, 10080, 10096, 10111, 10165, 10178, 10179, 10866, 11156
Waycon	10156
Westinghouse	10000, 10451, 10885, 10889
White Westinghouse	10463, 10623, 11909
Yamaha	10019, 10030, 10769, 10833, 10838, 10839
Zenith	10016, 10017, 10092, 10178, 10463, 11145, 11904, 11909, 11911, 11929
Zonda	10003

Setup Codes For VCRs

ABS	21972
Admiral	20048, 20209, 20479
Adventura	20000
Aiko	20278
Aiwa	20000, 20037, 20124, 20307, 20348, 20406, 20468, 20479
Akai	20041, 20061, 20106, 20175
Alienware	21972
America Action	20278
American High	20035
Asha	20240
Audiovox	20037, 20278
Beaumark	20240
Bell & Howell	20104
Broksonic	20002, 20121, 20184, 20209, 20295, 20348, 20479, 21479
Calix	20037
Canon	20035, 20167, 21174
Carver	20081
CCE	20072, 20278
Citizen	20037, 20278, 21278
Colt	20072
Craig	20037, 20047, 20072, 20240, 20271
Curtis Mathes	20035, 20041, 20060, 20162, 20760, 21035
Cybernex	20240
CyberPower	21972
Daewoo	20045, 20278, 20561, 20637, 21278
Dell	21972
Denon	20042
DirecTV	20739, 21949, 21954, 21989
Dish Network	21944
Dish Network System	21943, 21944, 21945, 21946
Dishpro	21943, 21944
Durabrand	20038, 20039
Dynatech	20000
Echostar	21943, 21944, 21945, 21946
Electrohome	20037, 20043
Electrophonic	20037
Emerex	20032
Emerson	20000, 20002, 20036, 20037, 20043, 20061, 20068, 20121, 20184, 20208, 20209, 20212, 20278, 20295, 20348, 20479, 20561, 20593, 20637, 21278, 21479, 21593
Euro1	21962
Expressvu	21944
Fisher	20047, 20054, 20066, 20104
Fuji	20033, 20035
Fujitsu	20045, 20052, 20366
Funai	20000, 20593, 21593
Garrard	20000
Gateway	21972
GE	20035, 20060, 20202, 20240, 20760, 20761, 20807, 21035, 21060
General	20045, 20052, 20366
Go Video	20240, 20432, 20526, 20643
GOI	21944
GoldStar	20037, 20038, 21237
Gradiente	20000
Harley Davidson	20000
Harman/Kardon	20038, 20081
Harwood	20068, 20072
Hauppauge	21992
Headquarter	20046
Hewlett Packard	21972
HI-Q	20047
Hitachi	20000, 20037, 20041, 20042, 20089, 20105, 20166, 21037
Howard Computers	21972
HP	21972
HTS	21944

Hughes Network Systems	20042, 20739, 21949
Humax	20739
Hush	21972
Hyundai	21951
iBUYPOWER	21972
Jensen	20041
JVC	20008, 20041, 20067, 20384, 21162, 21944, 21945
KEC	20037, 20278
Kenwood	20038, 20041, 20067, 20384
KLH	20072
Kodak	20035, 20037
LG	21037, 22010
Linksys	21972
Lloyd's	20000, 20208
Logik	20072
LXI	20037
Magnasonic	20593, 21278
Magnavox	20000, 20035, 20039, 20081, 20110, 20563, 20593, 21781
Magnin	20240
Marantz	20035, 20081, 21381
Marta	20037
Matsushita	20035, 20162, 20226, 20227, 20367, 21162
Media Center PC	21972
MEI	20035
Memorex	20000, 20035, 20037, 20039, 20046, 20047, 20048, 20104, 20162, 20209, 20240, 20307, 20348, 20479, 21037, 21162, 21237, 21262
MGA	20043, 20061, 20240
MGN Technology	20240
Microsoft	21972
Mind	21972
Minolta	20042, 20105
Mitsubishi	20043, 20061, 20067, 20173, 20807
Motorola	20035, 20048
MTC	20000, 20240
Multitech	20000, 20072
NAD	20058
NEC	20038, 20040, 20041, 20067, 20104, 20370
Nikko	20037
Nikon	20034, 20253
Niveus Media	21972
Noblex	20240
Northgate	21972
Olympus	20035, 20226, 21046
Onkyo	20222
Optimus	20037, 20048, 20058, 20104, 20162, 20432, 20593, 21048, 21062, 21162, 21262
Optonica	20062
Orion	20002, 20184, 20209, 20295, 20479, 21479
Panarex	21950
Panasonic	20035, 20077, 20162, 20225, 20226, 20227, 20367, 20614, 20616, 21035, 21062, 21162, 21262
Pansat	21950
Penney	20035, 20037, 20038, 20040, 20042, 20054, 20240, 21035, 21237
Pentax	20042, 20105
Philco	20035
Philips	20035, 20062, 20081, 20110, 20618, 20739, 21081, 21181, 21381, 21949
Pilot	20037
Pioneer	20058, 20067
Polk Audio	20081
Presidian	21593
Profitronic	20240
Proscan	20060, 20202, 20760, 20761, 21060, 21954
Protec	20072
Pulsar	20039
Quarter	20046
Quartz	20046
Quasar	20035, 20077, 20162, 21035, 21162
RadioShack	20000, 21037
Radix	20037
Randex	20037
RCA	20042, 20058, 20060, 20077, 20105, 20106, 20202, 20240, 20453, 20760, 20761, 20807, 20880, 21035, 21060, 21954, 21964, 21989
Realistic	20000, 20035, 20037, 20046, 20047, 20048, 20062, 20066, 20104
ReplayTV	20614, 20616
Ricavision	21972
Ricoh	20034, 20253
Runco	20039
Samsung	20045, 20240, 20739, 21014
Samtron	20643
Sanky	20039, 20048
Sansui	20000, 20041, 20067, 20209, 20271, 20479, 21479
Sanyo	20046, 20047, 20104, 20159, 20240, 20368, 20369
Scott	20043, 20045, 20121, 20184, 20210, 20212
Sears	20000, 20035, 20037, 20042, 20046, 20047, 20054, 20066, 20104, 20105, 21237
Sharp	20048, 20062, 20363, 20738, 20807, 20848
Shintom	20072
Shogun	20240
Singer	20072
Sonic Blue	20614, 20616
Sony	20000, 20032, 20033, 20034, 20035, 20253, 20586, 20636, 20639, 20640, 21032, 21232, 21956, 21957, 21972
Stack 9	21972
STS	20042
Sunpak	20253
Sylvania	20000, 20035, 20043, 20081, 20110, 20593, 21593, 21781
Symphonic	20000, 20593, 21593
Systemax	21972
Tagar Systems	21972
Tatung	20041
Teac	20000, 20041
Technics	20035, 20162
Teknika	20000, 20035, 20037, 20052
Thomas	20000
Tivo	20618, 20636, 20739, 21956, 21957, 21503
TMK	20036, 20208, 20240
Toshiba	20042, 20043, 20045, 20066, 20209, 20210, 20212, 20366, 20828, 20845, 21008, 21145, 21972, 21503
Totevision	20037, 20240
Touch	21972
UltimateTV	21989
Unitech	20240
Vector	20045
Vector Research	20038, 20040
Victor	20041
Video Concepts	20040, 20045, 20061
Videomagic	20037
Videosonic	20240
Viewsonic	21972
Villain	20000
Voodoo	21972
Wards	20000, 20035, 20042, 20047, 20048, 20060, 20062, 20072, 20081, 20212, 20240, 20760
White Westinghouse	20072, 20209, 20637
XR-1000	20000, 20035, 20072
Yamaha	20038
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Adcom	21094
Advent	21016
Aiwa	20641, 21912
Akai	20695, 20770, 20899, 21089, 21975
Allegro	20869
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AMW	20872, 21176, 22001, 22016
Anam	21913
Apex Digital	20672, 20717, 20755, 20794, 20796, 20797, 20830, 21004, 21020, 21056, 21061, 21100, 21915, 21937
Aspire Digital	21168
Audiologic	20736
Audiovox	20717, 21041, 21071, 21072, 21121, 21122
Axion	21071, 21072
B & K	20655, 20662
Bel Canto Design	21571
Blaupunkt	20717
Blue Parade	20571
Broksonic	20695, 20868
Byd:sign	20872
California Audio Labs	20490
Cambridge Soundworks	21916
CAVS	21057
CineVision	20833, 20869, 20876
Classic	21917
Coby	20778, 20852, 21086, 21107, 21165, 21923
Criterion	22007
Curtis Mathes	21087
CyberHome	20816, 21023, 21024, 21117, 21129
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Daytek	20872
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Disney	20675
Dual	21068, 21085
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Emerson	20591, 20675, 20821
Enterprise	20591
Fisher	20670, 21919
Funai	20675
Gateway	21073, 21077, 21158
GE	20522, 20717, 20815
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Go Video	20715, 20744, 20783, 20833, 20869, 21044, 21075, 21099, 21144, 21158, 21730, 21970
Go Vision	21071, 21072
GPX	20699, 20769
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Greenhill	20717
Grundig	20539
Harman/Kardon	20582, 20702
Hitachi	20573, 20664, 21919
Hiteker	20672
Initial	20717, 21931
Integra	20571, 20627, 21924
Jamo	22003
Jaton	21078
JBL	20702, 21926
Jensen	21016
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Landel	20826
Lasonic	20798, 21173
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LiteOn	21058, 21158
Loewe	20511
Magnasonic	20651, 20769
Magnavox	20503, 20539, 20646, 20675, 20821, 21914, 21976
Malata	20782, 21159
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McIntosh	21533
Memorex	20695
Microsoft	20522
Mintek	20717, 20839, 21990
Mitsubishi	20521, 21521
Momitsu	21082
NAD	20591, 20692
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Nesa	20717
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Norcent	20872, 21003, 21107, 21923
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Onkyo	20503, 20627, 20792, 21924, 21985
Orion	20695
Oritron	20651, 21980
Panasonic	20490, 20503, 20632, 21362, 21462, 21490, 21762, 21907, 21908, 21909, 21910, 21925, 21986, 21990, 22017
Philco	22000
Philips	20503, 20539, 20646, 20675, 20854, 21914, 20885
PianoDisc	21024
Pioneer	20525, 20571, 20631, 20632, 20638, 21571, 21902, 21965
Polaroid	21020, 21061, 21086, 21200, 21998
Polk Audio	20539
Portland	20770
Presidian	20675
Prima	21016
Princeton	20674
Proceed	20672
Proscan	20522
ProVision	20778
Qwestar	20651
RCA	20522, 20571, 20717, 20822, 21022, 21132, 21193, 21913, 21965, 21974
Regent	21938
Rio	20869, 22002
Rotel	20623
Rowa	20823
Saba	21977
Sampo	20698, 20752
Samsung	20490, 20573, 20744, 20820, 20899, 21044, 21075, 21932, 21979
Sansui	20695
Sanyo	20670, 20695, 20873, 21919, 21967
Sensory Science	21158
Sharp	20630, 20675, 20752
Sharper Image	21117, 21995
Sherwood	20633, 20770, 21043, 21077
Shinsonic	20533, 20839, 21931
Sigma Designs	20674
Sonic Blue	20869, 21099, 21970, 22002
Sony	20533, 20772, 20864, 21033, 21533, 21903, 21904, 21934, 21981, 22020
Sova	21122
Sungale	21074
Superscan	20821
SVA	20860, 21105
Sylvania	20630, 20675, 20821
Symphonic	20675
Teac	20717, 20809, 21984
Technics	20490
Technosonic	20730
Techwood	20692
Terapin	21031
Theta Digital	20571
Tivo	21996
Toshiba	20503, 20695, 21045, 21154, 22006, 21988, 21996
Tredex	20799, 20800, 20803, 20804
Urban Concepts	20503
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V	21064
Vizio	21064, 21226
Vocopro	21027
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Xwave	21001
Yamaha	20490, 20539, 20545
Yamakawa	20872
Zenith	20503, 20591, 20869, 21906

TECHNICAL SPECIFICATIONS

Controller (CA4)

Dimensions:	16.9" x 8.75" x 2" (50 x 429 x 223mm)
Weight:	6.9 lbs. (3.1kg)
Power Supply:	VAC 100V to 240V @50-60Hz 110W (Auto Select)
Audio Source Inputs:	4
Max Source Audio Input:	2.3 Vms
Input Impedance:	50 kohms
Wall Port ports:	4
Routed IR ports:	4
Common IR port:	1
Amplified Audio Zone Outputs:	4 speaker level (8 ohms)
Line Audio Outputs (Zone 4 only):	2 (Fixed and Variable)
Watts per channel:	15
Frequency response:	20 Hz - 20 kHz
Communication ports:	RS232 port
Trigger Output:	12VDC 100 mA Max
Trigger Input:	12VDC

Wall Port (CA4-WP)

Dimensions:	1.9" x 1.9" x 4.1" (49 x 49 x 105mm)
Weight:	0.25 lb. (0.11kg)
Keypad ports:	4
Keypad Cables:	CAT-5 - RJ-45 termination
Speaker connections:	4
Speaker Cables:	14-18 gauge - screw termination
Max cable length:	Wall Port to controller 6' (2m) Wall Port to keypad 240' (73.2m) Wall Port to speaker 240' (73.2m)

**Speaker connections are to the Wall Port, not to the controller.

Keypad (CA4-KP)

Dimensions:	1.8" x 1.2" x 4.1" (46 x 30 x 105mm)
Weight:	0.1 lb. (0.05 kg)
Keypad ports:	1
Keypad Cables:	CAT-5 - RJ-45 termination
Max cable length:	Wall Port to keypad 240' (73.2m)

**Keypad connections are to the Wall Port. There are no direct connections from the keypad to the controller.

Warranty

The Russound CA4 controller, and CA4-WP wall port are 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.

Russound®

CA4

Multizone Controller

CA4 System Installation Manual

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