

Russound

A/V DISTRIBUTION & CONTROL SYSTEMS

A-C68 SERVICE MANUAL



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A-C68

A-BUS® Multizone Controller
Installation Manual

SAFETY INSTRUCTIONS



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

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

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

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

Safety Instructions

1. Read Instructions - All the safety and operating instructions should be read before the appliance is operated.
2. Retain Instructions - The safety and operating instructions should be retained for future reference.
3. Heed Warnings - All warnings on the appliance in the operating instructions should be adhered to.
4. Follow Instructions - All operating and user instructions should be followed.
5. Water and Moisture - The appliance should not be used near water; for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.
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 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.

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.
- B. Objects have fallen, liquid has been spilled into the appliance;

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.
 - A. 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.



Conforms to
UL 6500
Certified to
CAN/CSA

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PRODUCT OVERVIEW

Thank you for choosing the Russound® A-C68 A-BUS® multizone controller.

The A-C68 caters to end users who want more control over their multiroom systems with the ability to control the system from anywhere in the house. Six source inputs, simplified programming, IR remote control and user adjustable sound controls make listening to music throughout the home easier than ever.

This innovative product features a rack mountable form (1U) with support for six sources and eight zones. It features six buffered, fixed level audio source loop outputs. This source loop configuration allows the A-C68 to pass source signals to another component, such as a home theater receiver or to another A-C68 for sharing sources in a multiple controller system.

The onboard IR library provides control codes for thousands of source components, and supports learning new codes as well.

System setup and source programming is accomplished through a minimal step process using the system remote control and the front panel programming center.

Key features include:

- Six sources delivered to 8 rooms for sharing music throughout the home.
- Source trim for each source.
- Simplified programming and control via IR library and intelligent IR learning capabilities for quick setup.
- Scalable to 48 zones by connecting multiple A-C68 units, to make whole-house audio available to larger homes and buildings. Your system can grow as your needs grow.
- Muting and paging in each zone.
- Listening options such as Party Mode, local source input.

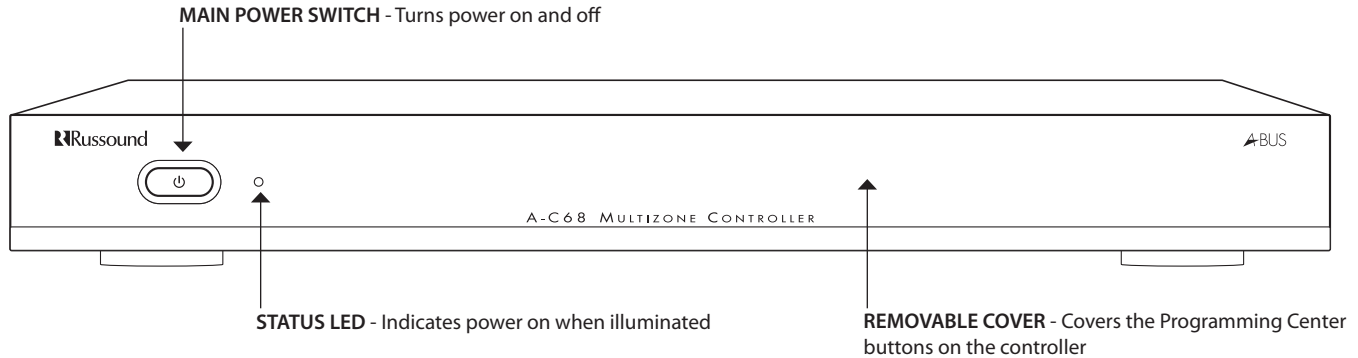
The A-C68 employs a remote control (A-SRC1) and elegant keypads (A-K5L and optional A-KSC) for home audio one-touch control. From each keypad, the user can adjust bass, treble, balance and volume. The controller includes an RS232 connection for infield upgrade capability and future use.



A-C68 CONTROLLER FRONT PANEL

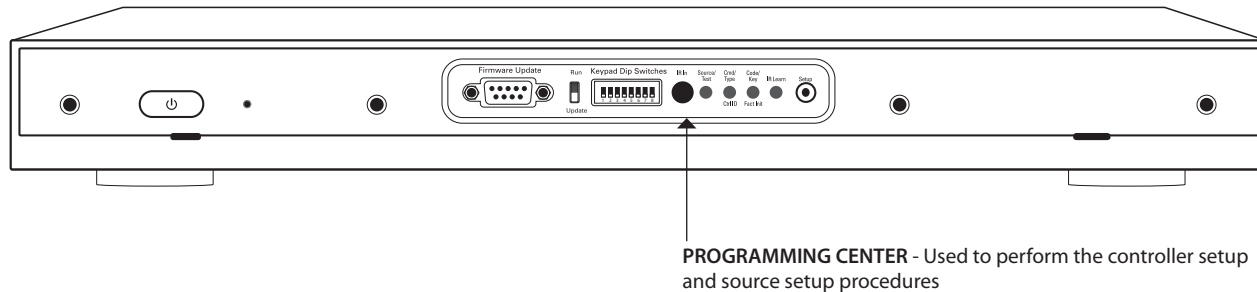
The A-C68 front panel features a removable molded plastic cover that hides the Programming Center buttons. The power switch has a push on/push off

action with a two-color LED (Status) indicator to the right. This LED is green when the unit is active, and red when the unit is in standby mode.



The A-C68 front panel cover hides the Programming Center and keypad dip switch settings. The Programming Center is used to perform the controller setup and source setup procedures. These are explained in detail in the Installer's section of this manual. The Programming Center button LEDs light

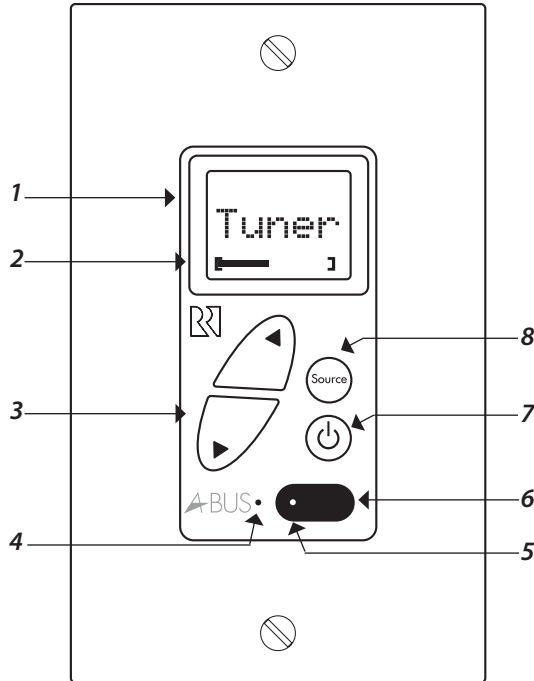
at different rates and in different colors during these procedures to indicate programming steps. It also contains an IR receiver window for remote control use during programming and RS-232 connector for firmware updates.



A-K5L KEYPAD

The A-K5L keypad provides individual zone control of the system. It has amber or green backlit soft-touch buttons for volume, power and source selection for up to 12 sources. The User Menu allows for adjustments to the audio properties

of the room, such as bass, treble, balance, etc. A built-in IR receiver with LED confirmation allows for use of remote controls.



A-K5L Keypad

- 1 LCD PANEL - 5-character amber or green backlit display shows source name and volume.
- 2 VOLUME LEVEL - 20-segment volume level bars increase from left to right to indicate volume level. Also shows user option settings.
- 3 VOLUME UP/DOWN - Raises/lowers the volume for the room/adjusts User Menu settings.
- 4 STATUS LED - Green LED lights to show Status "on" and turns off when Status is "off"
- 5 IR CONFIRMATION LED - Red LED blink confirms IR signal reception.
- 6 IR RECEIVER - Receives IR signals and passes them to the controller and source equipment. Source components attached to IR emitters in an A-BUS system can be controlled with their own remote controls, A-SRC1 (with A-C68 controller) or A-LRC2 learning remote aimed at the A-K5L's IR window.
- 7 POWER - Turns zone ON or OFF when pressed once. If connected to an A-C68 controller, when ON, press and hold will turn on all rooms (Party mode). If the A-K5L is connected to a multisource hub, an "All Off" can be performed by a press and hold of the power button when the keypad is OFF. Status LED remains lit when keypad/zone is OFF if any other zone in system is ON.
- 8 SOURCE SELECT (Multi-source controller) - Press and release toggles through the available sources. Press and hold brings up the User Options Menu for Loudness, Bass, Treble, etc.

The User Options Menu allows the user to adjust the audio properties of a particular zone. The audio features that can be adjusted are: Loudness, Bass, Treble, Balance, Turn On Volume, Local Source Volume and Page Volume. The background color and All On settings are located here as well.

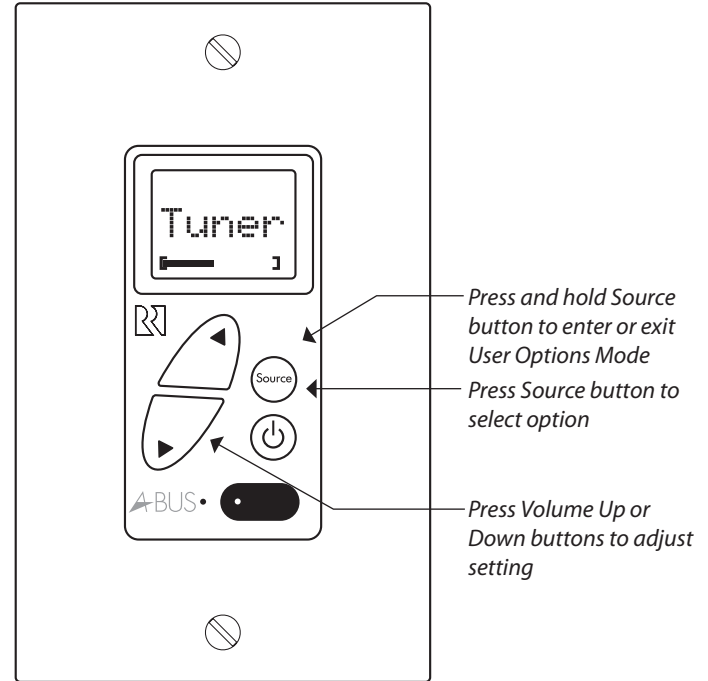
To enter the User Options mode, press and hold the Source button when the zone is on. Press and hold the Source button again (or a 12-second timeout) returns the keypad to regular operation.

The first option (Loudness) appears on the display to indicate it is ready for adjustment. Subsequent presses of the Source button toggle through Bass, Treble, Balance, Turn On Volume, Local Source Volume, Background Color, All On Enable and Page Volume.

Once an option is selected, the Volume Up/Down buttons are used to adjust settings. The volume indicator bars indicate the option setting, along with setting numbers displayed on the LCD. Some settings will simply display an "on" or "off" choice.

Options and Settings

- Loud (Loudness) (fuller sound): On or Off
- Bass: -10 to +10, Flat =0
- Treb (Treble): -10 to +10, Flat =0
- Bal (Balance): L10 - C - R10
- OnVol (Turn on Volume) (default room volume level): 0-20
- LSVol (Local Source Volume): turn on volume for the local source: 0-20 (when used with A-LC3)
- Bkgnd (Background Color) backlight color: Green, Amber, Off
- AllOn (All On Enable/Party mode): if the zone will respond to an all on command from another keypad: On or Off
- Page (Page Volume): turn on volume for paging to that zone: 0-20

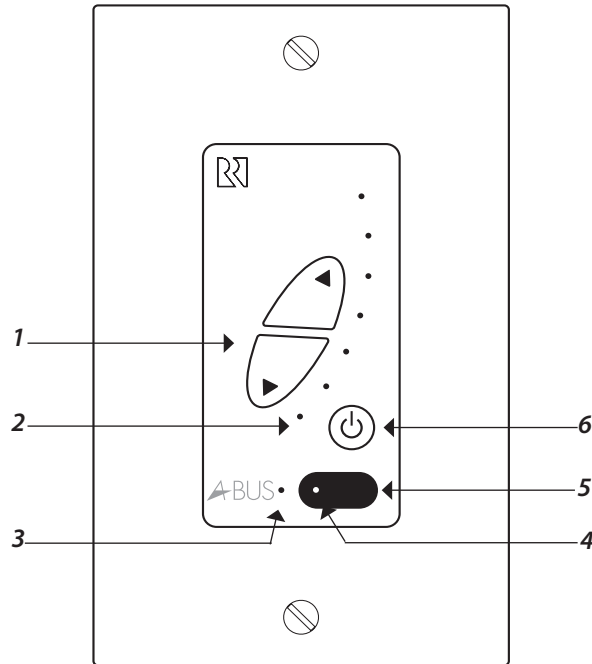


A-K5L Keypad

A-K3 KEYPAD

The A-K3 keypad provides individual zone control of the system. It has green backlit soft-touch buttons for volume, power and source selection for up to six

sources. A built-in IR receiver with LED confirmation allows for use of remote controls.



A-K3 Keypad

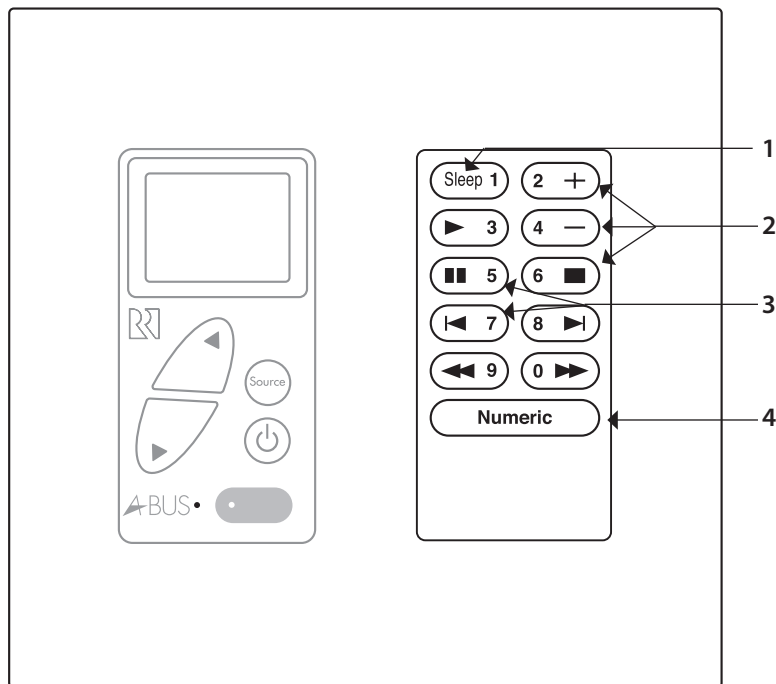
- 1** VOLUME UP/DOWN - Raises/lowers room volume
- 2** VOLUME LEVEL - Volume level indicator LEDs light up from bottom to top to indicate volume level. Also indicates source selected (1-6) when in "multi-source" mode.
- 3** STATUS LED - Green LED lights to show Status "on" and turns off when Status is "off"
- 4** IR CONFIRMATION LED - Red LED blinks to confirm IR signal reception.
- 5** IR RECEIVER - Receives IR signals from a remote control. Source components attached to IR emitters in an A-BUS system can be controlled with their own remote controls or A-LRC2 learning remote aimed at the A-K3.
- 6** POWER - Turns zone ON when pressed once. (In multi-source mode, when ON, press and hold will turn zone OFF. When OFF, press and hold will turn OFF all zones.) Status LED remains lit when keypad/zone is OFF if any other zone in system is ON.
- 6** SOURCE SELECT (Multisource controller) - When the keypad is set in "Multisource" mode, the power button is used to toggle through and select a source. Tap the power button to toggle between 1 and 6 multiple sources (once power is on). The top LEDs of the volume indicator show (from top to bottom) the source that is selected (top LED is source 1, next LED down is source 2, etc).

The A-KSC keypad connects to an A-K5L keypad to add optional source control and numeric capability. The amber or green backlit buttons provide primary source controls when pressed, such as stop, play, next, etc.

When the Numeric button is pressed, it becomes backlit in the opposite color of the backlight (green if amber backlight and vice versa), and changes the buttons to numeric entry (0 - 9).

Pressing the Numeric button also sends a Prefix command of "Disc."

A second press of the Numeric button sends a Suffix command of "Enter" and puts the keypad back into the primary control mode. If the button is not pressed the second time, a 6-second time out will send the Suffix command and exit Numeric mode.

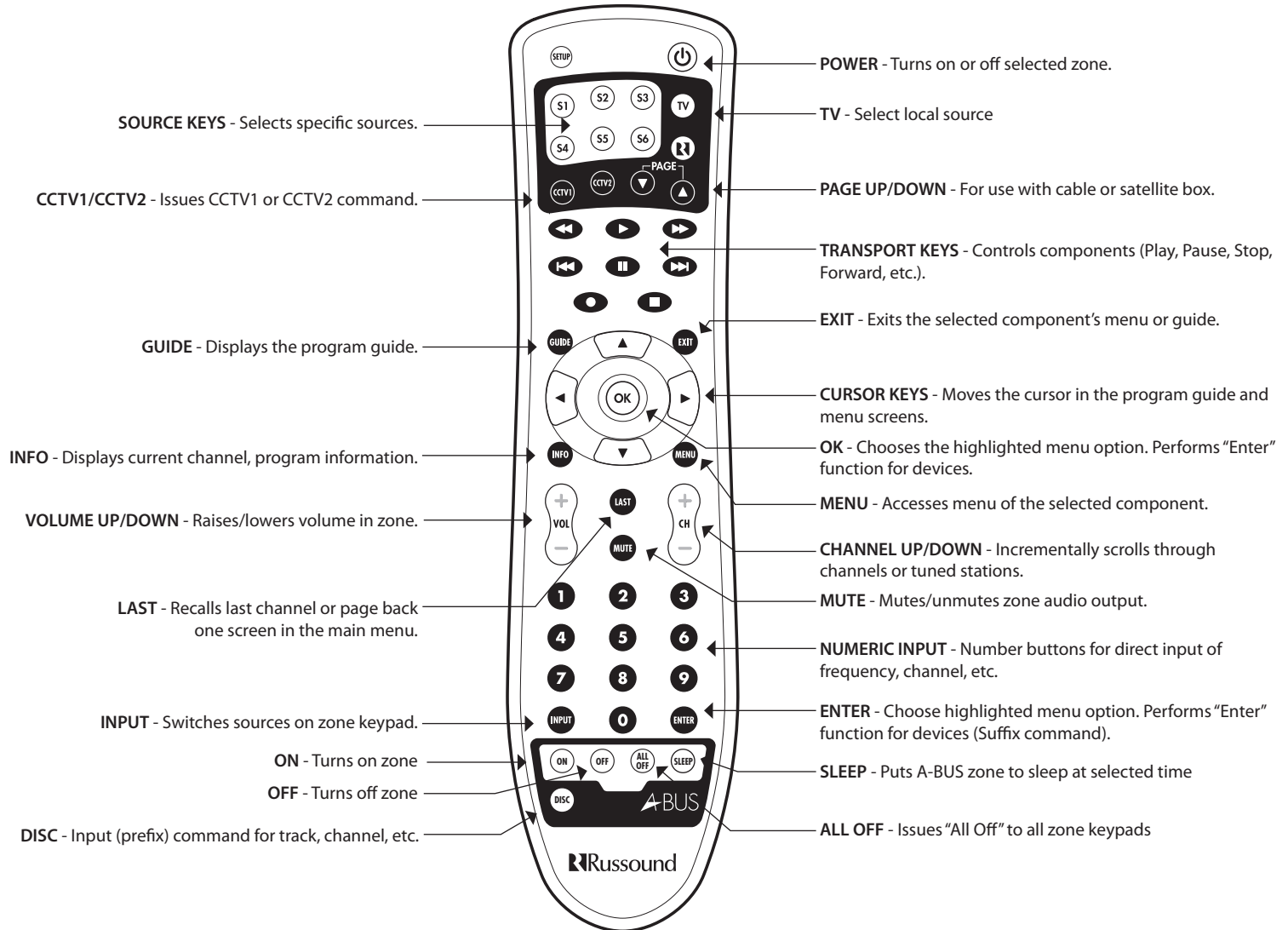


A-K5L Keypad

A-KSC Keypad

- 1 SLEEP - Sets a sleep timer for the zone. When pressed, shows time in minutes on A-K5L keypad. Press Sleep until desired time is displayed (0-60 minutes in 15 -minute increments).
- 2 PRIMARY SOURCE CONTROLS - Functions on outer edge of buttons are default or normal operation for each selected source. These include play, stop, forward, back, pause, etc.
- 3 NUMERIC CONTROLS - Once numeric control is initiated, the primary control buttons now represent the numeric value when pressed (0 - 9).
- 4 NUMERIC SHIFT - Press to shift buttons to numeric control or entry. Also issues Prefix command "Disc" and Suffix command "Enter."

A-SRC1 REMOTE CONTROL



System Installation Considerations

The A-C68 can be shelf or rack-mounted. Locate the A-C68 near the sources for RCA connections and IR emitter placement. Also allow for any other connections for Mute and Page In.

System keypads are located in various rooms and connect to the controller with CAT-5 cable. Speakers in these rooms connect directly to the keypads with standard speaker cable.

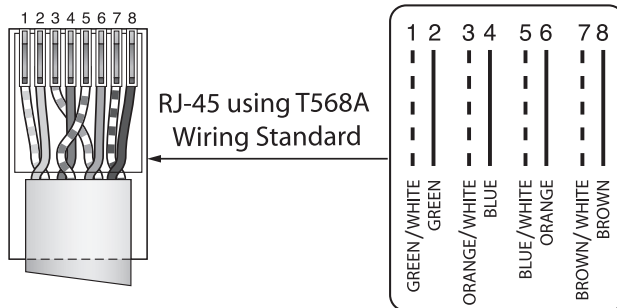
There are several factors to consider before installing the Russound A-C68 system:

- What are the intended listening zones(rooms)?
- What system options and accessories might be required for additional features such as local sources?
- From where in each zone will the user prefer to control the system? Where will the keypads be located? Where will the speakers be located?

Connection Tips

It is recommended that the A-C68 and the source equipment be plugged into a dedicated circuit with an isolated ground. A power line conditioner can reduce interference problems caused by noise found in some electrical systems.

- For all RJ45 connectors, use T568A wiring standard.



- Disconnect all live power cords before making connections to the controller.

- Check for correct connections and polarity.
- Keep all power cords away from all signal cables to prevent humming from induced noise.
- Choose reliable signal cables/patch cords.
- Label all wires with room location at both ends of the wire.

Keypad Wiring

To determine the amount of CAT-5 wire required for the system installation, first decide how many keypads will be used, then determine the distance between each intended keypad location to the planned A-C68 location. The maximum recommended wire run length from controller to keypad is 150 feet for each A-K5L or A-K3 keypad (includes use of A-LC3).

Make sure that the entire wire path between keypads and A-C68 is clear and not obstructed by a floor ceiling joist, or masonry wall which can't be drilled through. Confirm ahead of time that you can drill an outlet hole easily and in an unobtrusive spot to connect wires with the A-C68.

Label wires with keypad and room location. This simplifies A-C68 hook-up once the keypads and speakers are installed.

Speaker Wiring

Speakers in each system room connect to the keypad with standard 16-gauge 4-conductor stranded speaker cable. It can be run up to 125 feet; 14-gauge wire can be run up to 250 feet.

When running cable, avoid locations concealing pipes, heating ducts and AC wiring in the general vicinity.

Avoid running wires 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.

A-C68 BACK PANEL

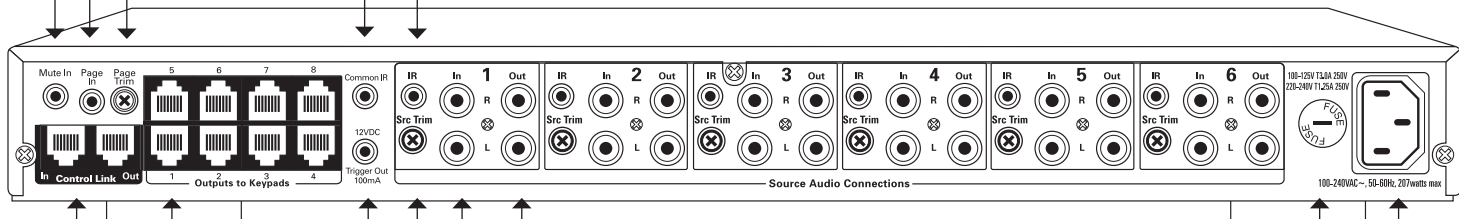
MUTE 12VDC TRIGGER IN - Applying 12VDC to the Mute In jack will mute all A-C68 Zones.

3.5mm PAGE INPUT - Applying audio (in a 3.5mm connector) to the Page In jack will activate audio page for assigned A-C68 zones and initiate a page (overrides signal sense).

PAGE TRIM - Adjust the line level audio page input

COMMON IR OUTPUT - Output jack passes all IR signals from all keypads.

SOURCE IR OUTPUTS - Six source-specific IR Output jacks allow IR control of source equipment.



FUSE HOLDER - Holds a replaceable fuse for A/C input connection:
100VAC operation - T3.0A; 240VAC operation, T1.25A.

AC 100/240 INPUT - Grounded 3-terminal plug detachable power cord connection, autoswitching A/C input voltage for 100 and 240VAC.

AUDIO SOURCE LOOP OUTPUT - Buffered audio line level loop output connection

SOURCE INPUTS - Six pair of audio line level input connections for A-C68 source components.

SOURCE VOLUME TRIM - Adjust the line level audio input

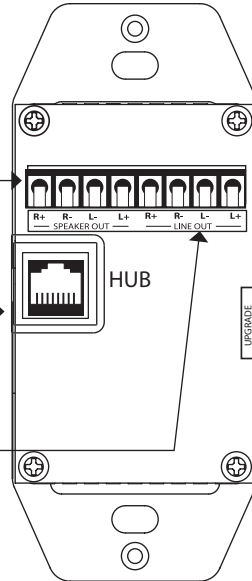
12VDC TRIGGER OUT - 12VDC 100mA Trigger Out turns on when any zone is on, and turns off 5 minutes after the last zone is turned off.

KEYPAD PORTS - One A-BUS Keypad Port for each of the eight A-C68 Zones.

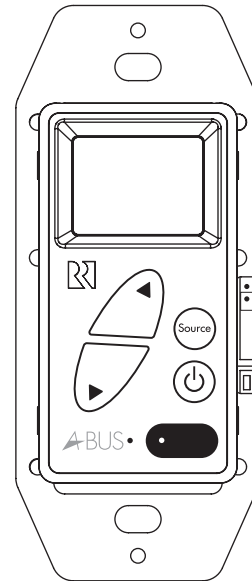
CONTROL LINK IN/OUT - RJ45 female jacks link multiple A-C68 controllers and pass IR, Status and two-way event driven commands between controllers.

Keypad Connections

- SPEAKER OUTPUT** - Speaker output connections for a pair of 8-ohm speakers. 4-pole screw down terminals accept up to 14 gauge speaker wire.
- RJ45 HUB CONNECTOR** - 8-conductor RJ45 connector for the CAT-5 connection from the keypad to the hub/controller.
- VARIABLE LINE LEVEL OUTPUT** - Line-level audio output connection for external amplifier or powered subwoofer. 4-pole screw-down terminal accepts a stripped two-conductor RCA cable.



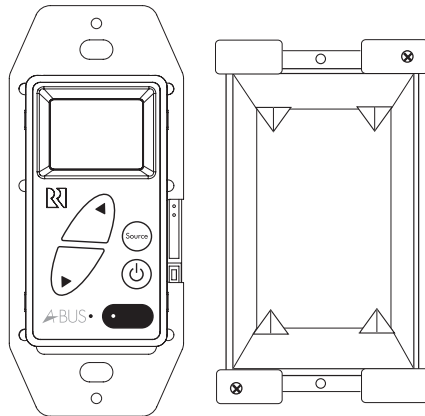
Keypad Status Jumper



- STATUS LED JUMPER** - Both pins jumpered, Status LED enabled. One or no pins jumpered, Status LED disabled
- SETUP BUTTON** - Activates Installer Setup mode and accesses update menus

Keypad Installation

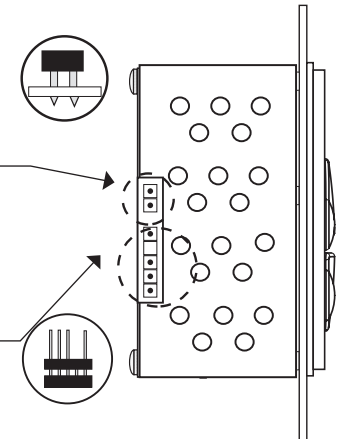
1. Ensure it is possible to route the wire to the desired location.
2. To install a single-gang keypad, use a UL/CSA approved plastic single-gang (18 ci) electrical box.
3. Route CAT-5 wire to the electrical box from the A-C68 system controller and connect to keypad via RJ45 connector.
4. Route speaker wire from room speakers to keypad. connect to screw-down terminal.
5. Mount the keypad in the electrical box and attach the trim plate.



Keypad Update Jumper

OS UPDATE/RUN JUMPER - (located on the back circuit board, left side) The pins are jumpered when performing a firmware update. with jumper removed during normal use.

OS UPDATE PORT - Used to update the A-K5L keypad operating system firmware. Uses the Russound Advanced Programming Cable, Part #2500-521065.



A-K5L / A-KSC KEYPAD CONNECTIONS / INSTALLATION

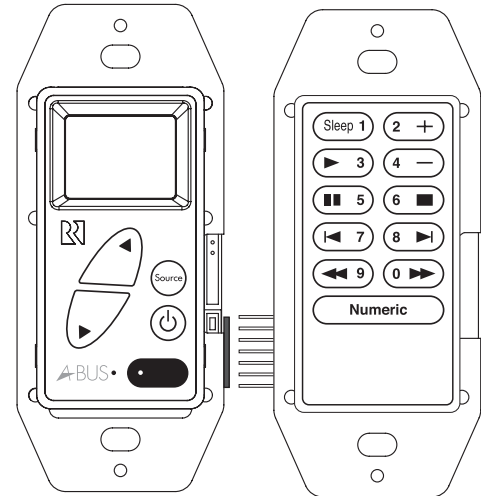
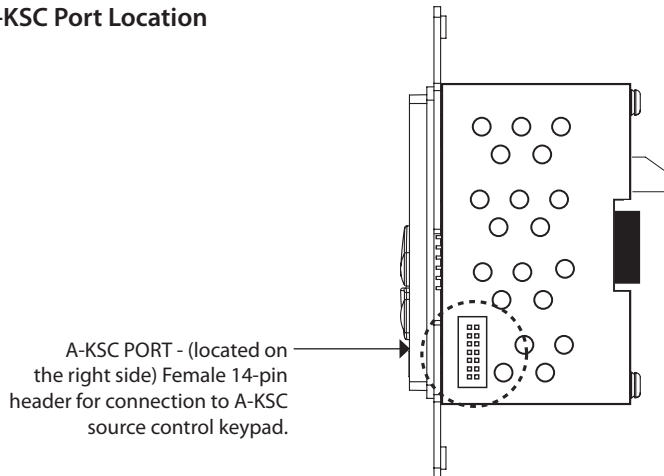
Keypad Installation

The A-KSC keypad is an accessory to an A-K5L keypad to add source control and numeric capability. The amber or green backlit buttons (follows color choice of A-K5L) provide primary source controls when pressed such as stop, play, next, etc.

The A-KSC connects to an A-K5L keypad via a 14-pin connector. A double-gang electrical box and faceplate is required for installation.

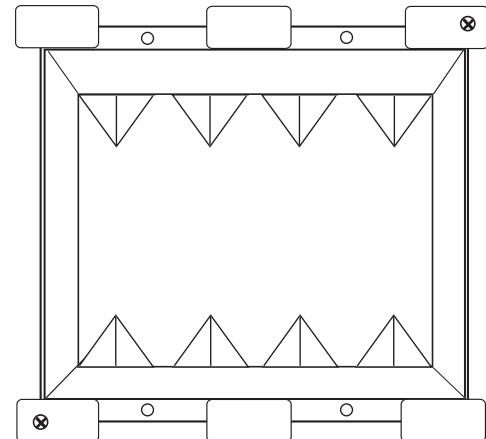
1. Check whether or not you can route the wire to the location you have chosen.
2. Use a UL/CSA approved plastic two-gang (32 ci) electrical box.
3. Route CAT-5 wire to the electrical box from the A-C68 system controller.
4. Insert the A-KSC 14-pin connector into the 14-pin header on the AK5L keypad.
5. Connect the CAT-5 cable to the A-K5L as shown in the A-K5L installation manual.
6. Mount the joined keypads in the electrical box and attach the trim plate.

A-KSC Port Location



A-K5L Keypad

A-KSC Keypad



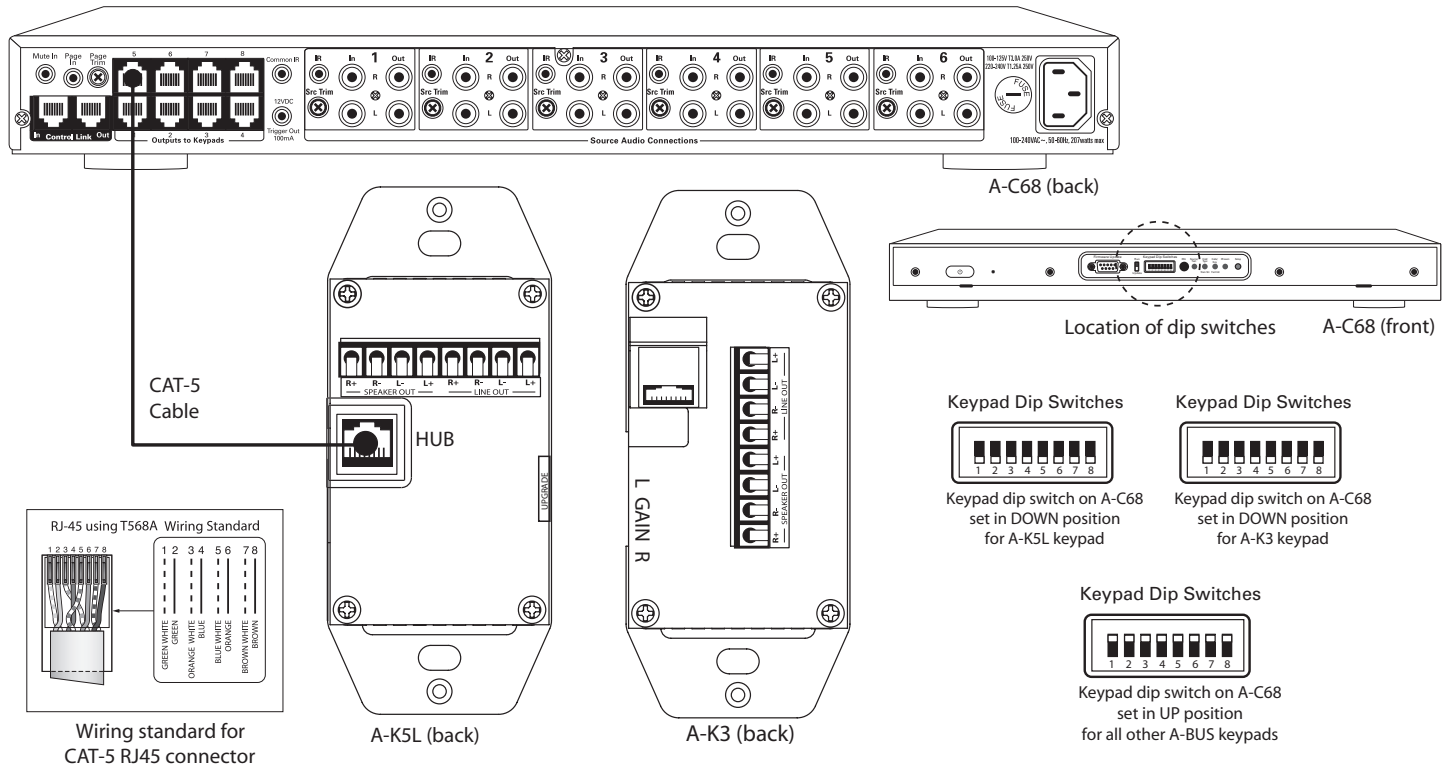
Double-gang Electrical Box

KEYPAD PORT CONNECTION

The Keypad Ports are located on the back of the A-C68 on the left. Connections at the Keypad Ports are made with RJ45 connectors using T568A CAT-5 wire configuration. CAT-5 cable length should be no longer than 150 feet from controller to keypad (also applies when using A-LC3).

If connecting A-K5L or A-K3 keypads to the A-C68, the keypad dip switches on the front programming center must be set in the DOWN position. For other A-BUS keypad connections, the dip switch must be set in the UP position. Dip switches correspond to numbered keypad ports.

For a clean installation when wiring from a Keypad Port, use an RJ45 CAT-5 patch cable to connect from the keypad port to an RJ-45 wall plate (optional). Using the same RJ45 T568A CAT-5 wiring configuration, use CAT-5 from the RJ45 wall plate to the keypad.



SOURCE AUDIO AND IR CONNECTIONS

Source Audio Connections

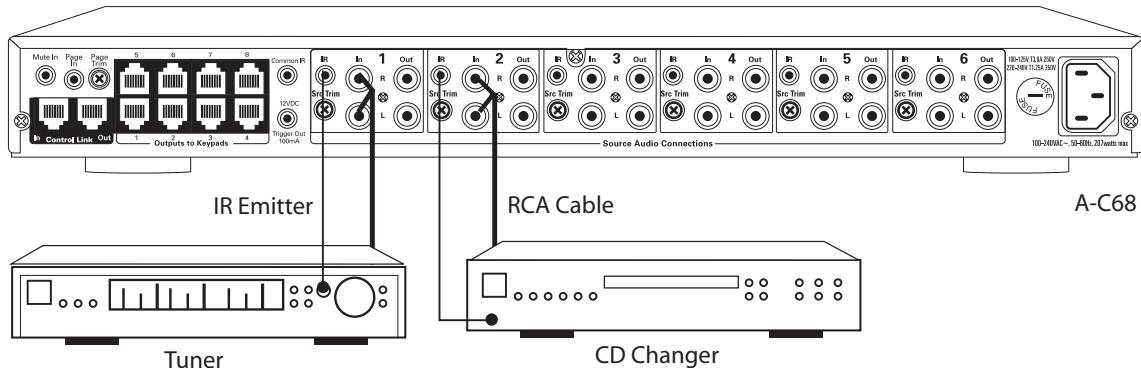
The A-C68 supports up to six audio sources. The source audio connections are located on the back panel. Connect each source using quality RCA signal cables. Connect the Left and Right Audio outputs from each source to the corresponding "In" inputs on the A-C68 controller. Label each cable with the name of the selected source and the source input number located on the A-C68.

Source IR Connections

Each source component has a designated IR port on the back of the A-C68.

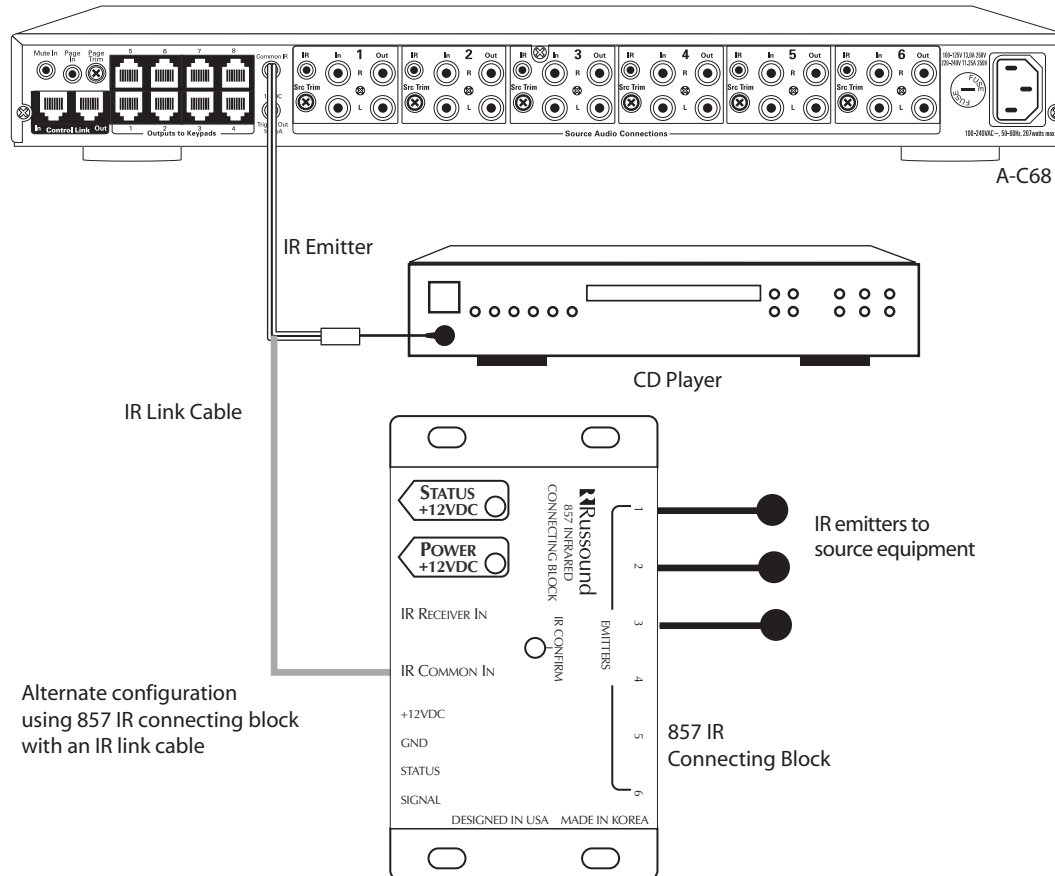
This IR port is next to the source audio input connections.

1. Using an IR emitter (the Russound 845.1 is recommended) attach the end of the emitter with the 1/8" plug to the IR emitter port next to the source input.
2. Remove the adhesive back 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.



The Common IR jack on the rear of the A-C68 allows control of any source equipment without that source being selected on the keypad. The connection for the Common IR jack is made using an IR emitter with a 1/8" plug or IR link cable.

The Russound 845.1 single IR emitter is recommended, or use an IR connecting block such as the Russound 857 which allows multiple units to be controlled through the COM IR Port.



KEYPAD TO SPEAKER CONNECTION

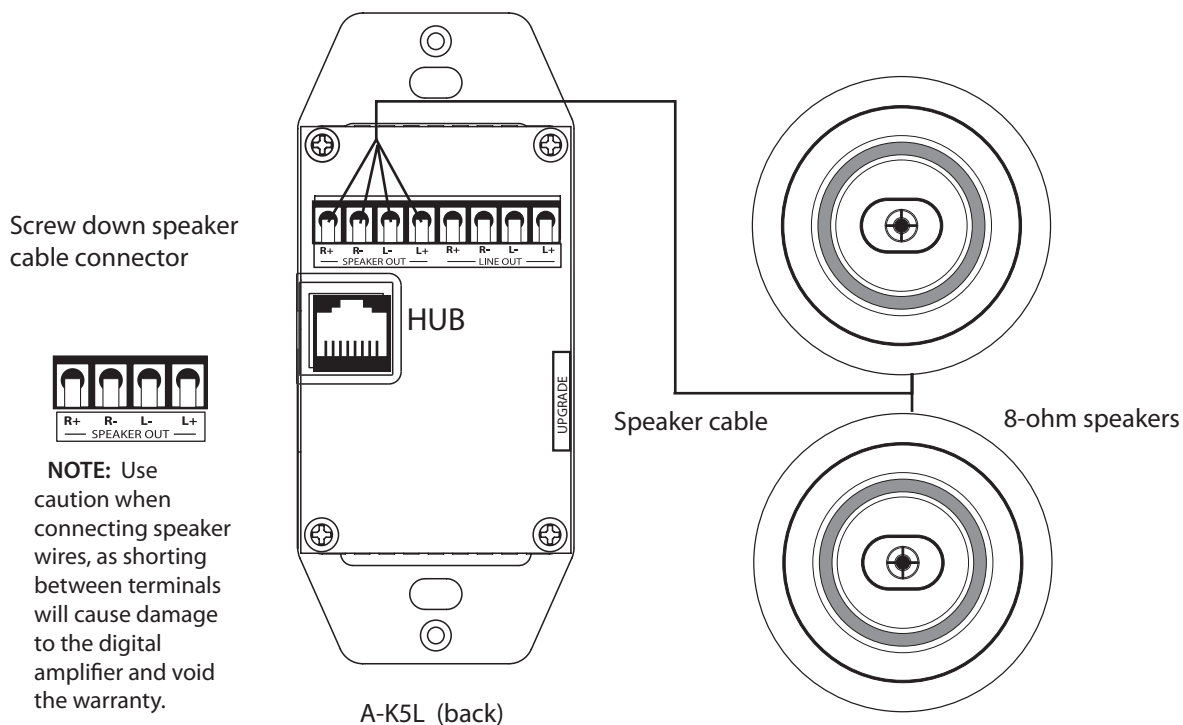
The speakers in each room are connected to the A-BUS keypad using 4-pole screw down terminals.

NOTE: An 8 Ohm minimum speaker is required for each amplified output.

1. Pull the speaker wire conductors apart so they're separated for the first two inches from their ends.
2. Using a wire stripper, remove 1/4 inch of insulation from each conductor. Twist the strands in each conductor into tight spirals.

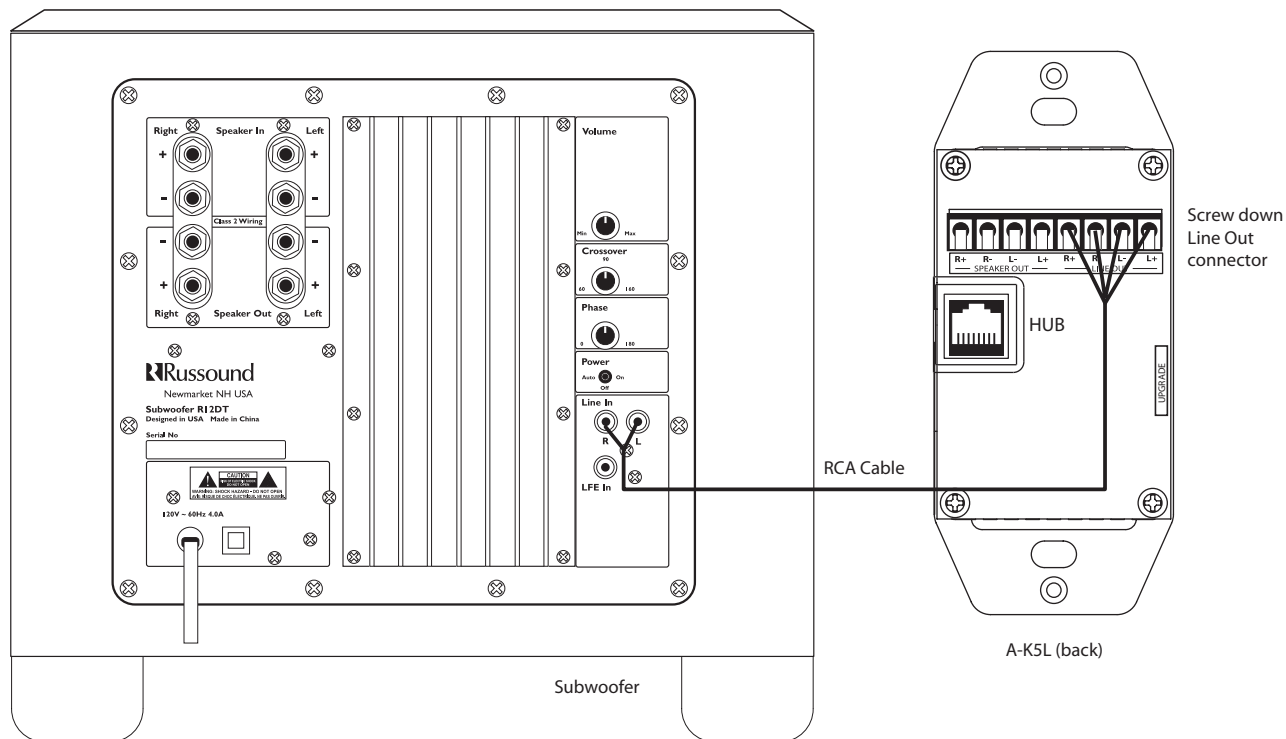
3. Insert the speaker wire conductor into the appropriate Speaker Out screw-down terminal opening, matching channel and polarity for all four wires. Tighten the connection for each conductor.

NOTE: Use caution when connecting speaker wires, as shorting between terminals will cause damage to the digital amplifier and void the warranty.



The A-K5L keypad provides a stereo line-level audio output connection for an external amplifier or powered subwoofer. An amplifier provides more power to a large listening area, and a powered subwoofer adds extended bass response.

The screw-down terminal on the back of the A-K5L keypad accepts a two-conductor RCA cable stripped of the RCA connectors or any four conductor linelevel cable. The cable's positive (+) conductor connects to the positive terminal (+) and the negative (-) shield conductor connects to the negative terminal (-) on the A-K5L.



MUTE IN / TRIGGER OUT / PAGE IN

12VDC Mute Trigger In

When 12VDC is applied to the Mute In, the system will fully mute all zones in the system. 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.

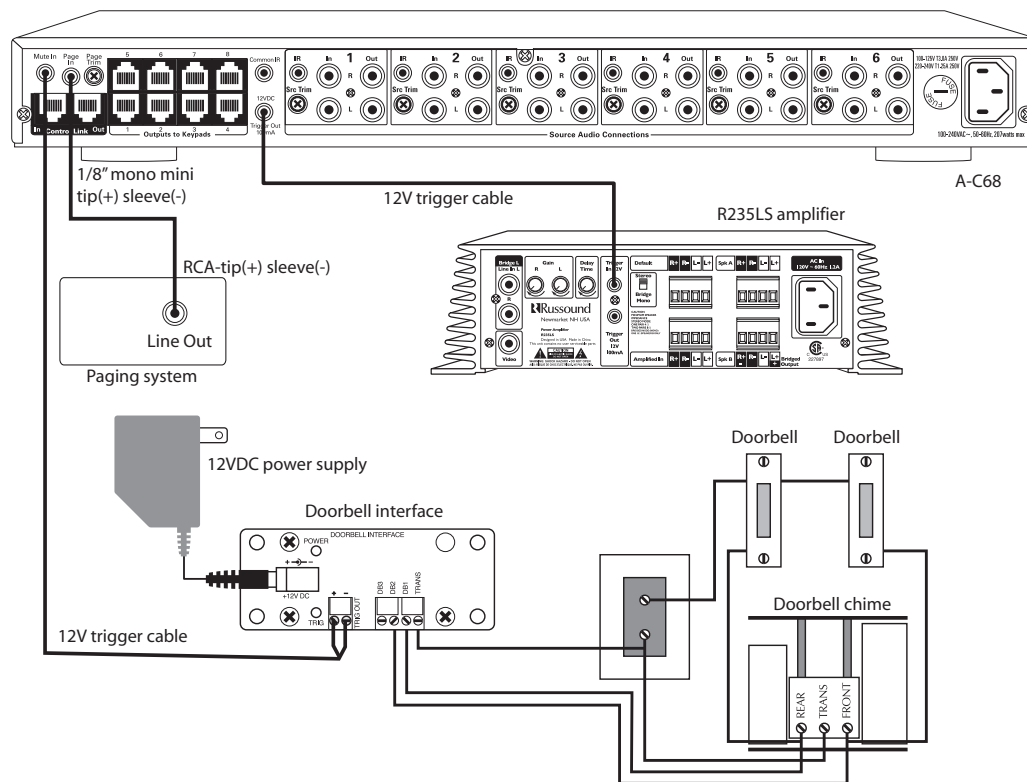
12VDC System Trigger Out

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 100mA when the first keypad is turned on. The 12 VDC is removed after the last keypad is turned off.

Page Audio Input

When audio is applied to the Page In, the system will page to all enabled zones. The connections for the audio are made using a two-conductor cable with 1/8" male mono mini-plug jacks. The tip is positive (+) and sleeve is negative (-). This allows for the connection of an external paging or muting device.



Controller Link In/Out

NOTE: The Controller Link Out of the LAST controller must be connected with a CAT-5 straight-through patch cable (MAX LENGTH 13 INCHES) to the Link In of the FIRST controller to complete the communication link.

The Control Link In and Out are used to connect up to six A-C68 controllers. The Control Link In and Link Out jacks pass Status and the six source IR signals. These link ports also communicate the two-way event driven commands between controllers.

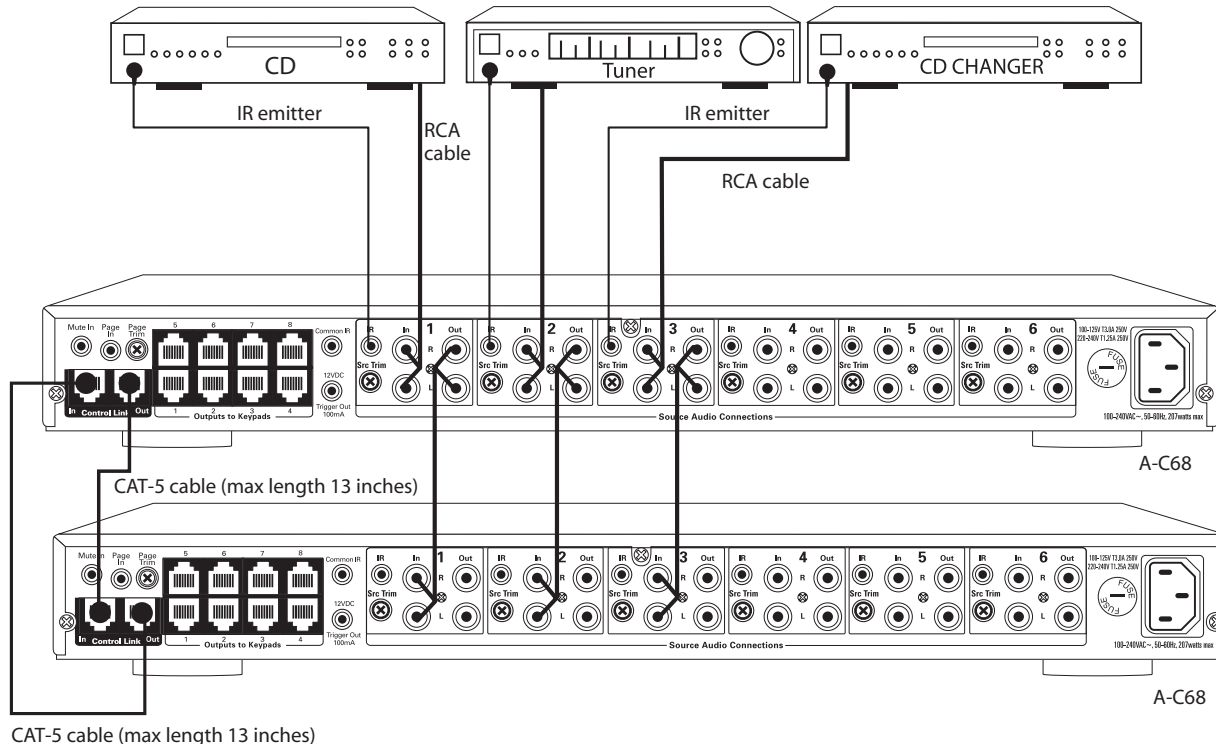
NOTE: The Control Link In and Out are for A-C68 controllers only.

The connection is made using a CAT-5 patch cable from the Link Out of the first A-C68 and into the Link In of the next controller. The link cable between each controller MUST NOT exceed 13 inches in length.

Source Audio Loop Out

The A-C68 has six buffered, fixed-level audio source loop outputs. This source loop configuration allows the A-C68 to pass source signals to another controller for sharing sources in a multiple controller system.

The Source Loop Outputs are located directly to the right of the Source Audio Inputs. Use quality RCA signal cables to ensure quality transference of audio signals.

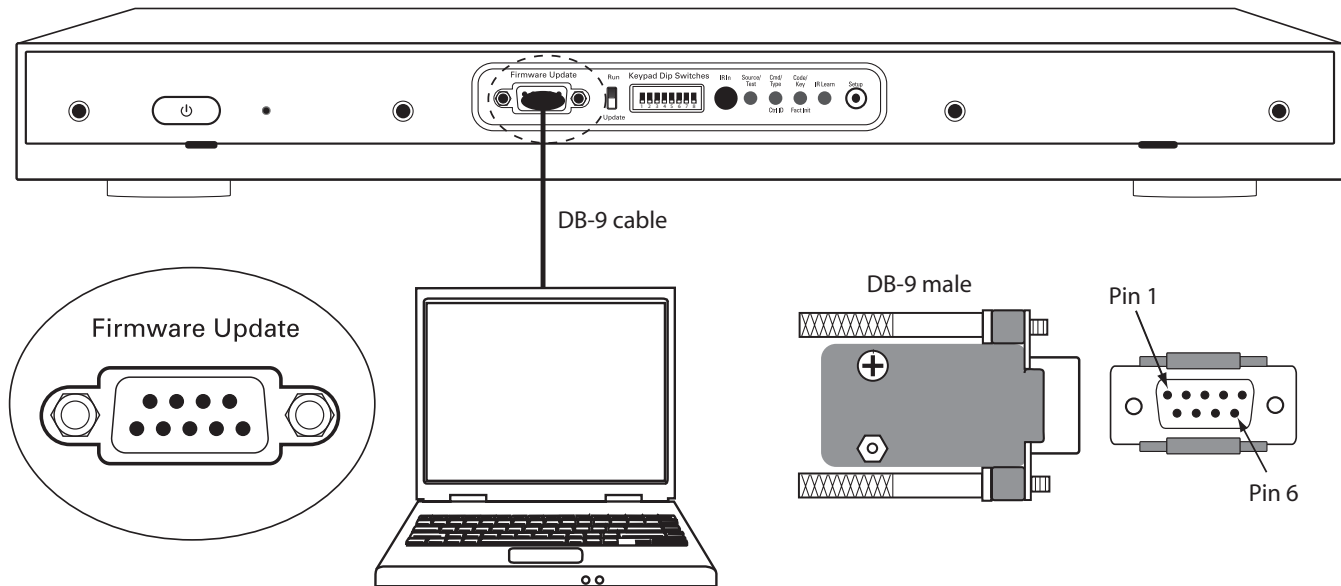


RS232 CONNECTION

The RS232 port in the A-C68's front panel programming center is used for firmware updates only. It supports controller firmware updates from a PC. The RS232 COM port is located behind the removable front panel and uses a DB-9 cable connection.

For firmware updates, be sure the CPU Update switch next to the the RS232 interface is set in the "Update" position.

For firmware updates, see the Document Center at www.russound.com. Look for the Technical Documents under A-BUS Systems.



Before proceeding with system programming section, it's important to conduct an initial test to determine that the hardware components are working properly.

1. Connect the speaker wires from Zone #1 to that zone's keypad's speaker output connectors.
2. Connect the Zone #1 keypad to Keypad Port #1 on the rear of the A-C68.
3. Connect a source to the Source #1 Input on the A-C68 using RCA Audio patch cables.
4. Plug an 845.1 IR emitter into the Source #1 IR Out Jack and adhere the emitter end to the source equipment's IR window.
5. Plug in the main power cord for the the A-C68 and the source.
6. Turn on the main power switch on the A-C68 and the source.
7. Manually command the source to provide audio or use the source remote control.
8. Press the power button on the keypad and select Source #1.

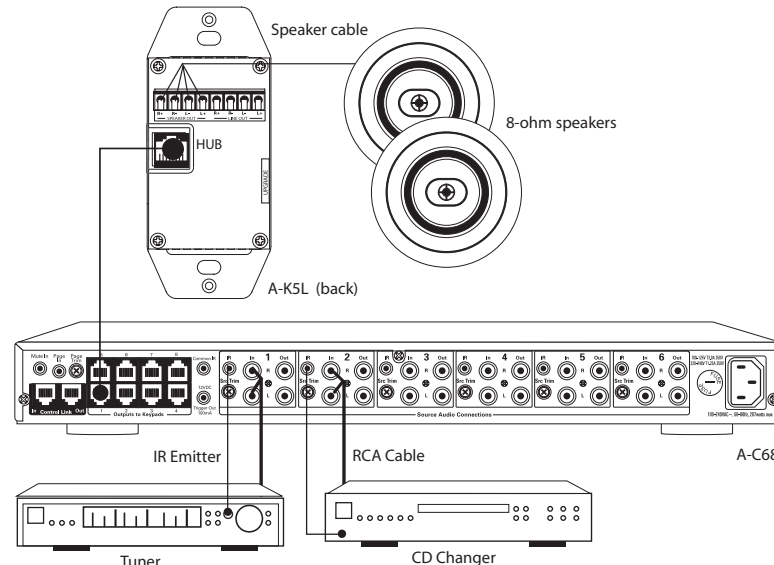
9. To be sure of proper placement of the IR emitter on the source component, aim the source remote control at the keypad for Source #1 and try to control the source. Adjust the emitter over the source's IR receiver if necessary.

Congratulations – you should now hear the source through the speakers in Zone #1.

If there is no sound, follow these diagnostic steps:

1. Check the source to see that it is operating properly.
2. Check the RCA Audio cable connections from the source to the Source #1 Input on the A-C68.
3. Check the speaker connections and verify that they are correct and are connected to the Zone #1 keypad's speaker outputs.
4. Check to see that the keypad is connected to the Zone #1 Keypad Port and verify the CAT-5 is properly terminated at both ends.

If none of these steps produce successful results, call Russound Tech Support for further assistance.



PROGRAMMING CENTER

The A-C68 sources are configured through the Programming Center, located on the front of the A-C68 behind the removable lower panel. The LEDs are dual purpose with different colors to indicate different modes.

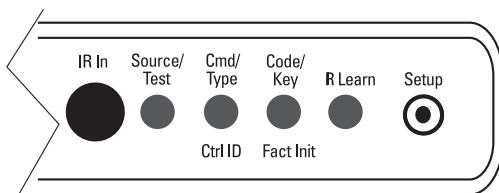
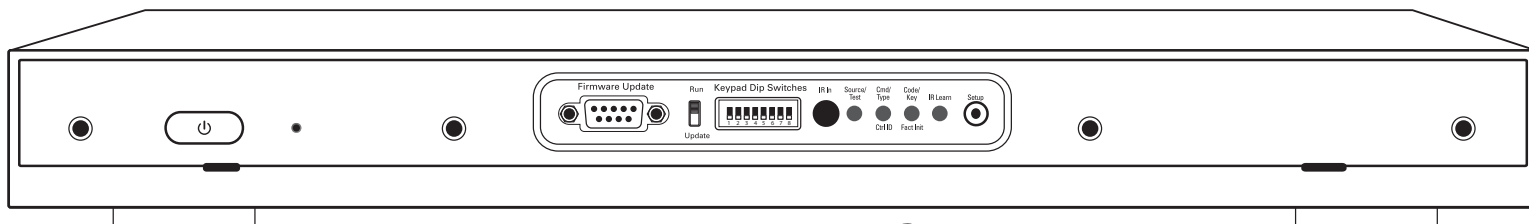
NOTE: To remove cover panel, press in right and left tab at the cover's bottom edge, then lift out and up.

The A-C68 has two main programming modes: Controller Setup Mode and Source Setup Mode. The functions used in Controller Setup Mode (Ctrl ID and Fact Init) are accessed with a press and HOLD of the Setup button. The functions

used in Source Setup Mode (Source/Test, Cmd/Type, Code/Key and IR Learn) are accessed with a press and RELEASE of the Setup button.

The A-SRC1 system remote control is used to enter information during the setup procedures, and the LEDs show solid, blinking or off to indicate what is being programmed and when to enter information.

To exit either setup mode, press the Setup button until no LEDs are illuminated in the Programming Center.



Indicator LEDs turn on/off and blink slow/fast to indicate setup process steps and to indicate when to enter information via the A-SRC1

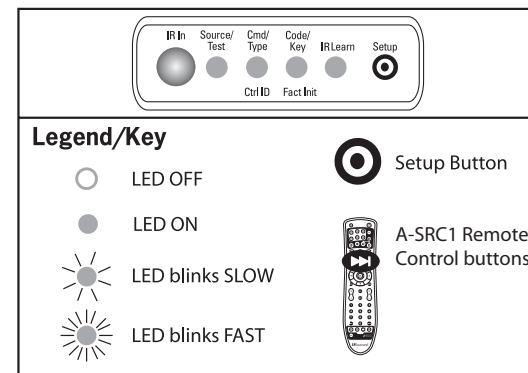


A-SRC1 Remote Control is aimed at IR In on A-C68 during setup

Controller Setup - Controller ID Menu

The Controller ID procedure identifies main (factory default setting) and non-main controllers when using multiple A-C68 controllers in a system.

1.  Press and HOLD Setup button
UNTIL
2.  Ctrl ID (yellow) turns ON
3.  Aim A-SRC1 remote control at IR In
4.  Enter "1" for the main controller OR  Enter "0" for the non-main controller(s)
5.  Ctrl ID (yellow) BLINKS TWICE and stays ON  Ctrl ID (yellow) BLINKS ONCE and stays ON
6.  Press and RELEASE Setup button to EXIT

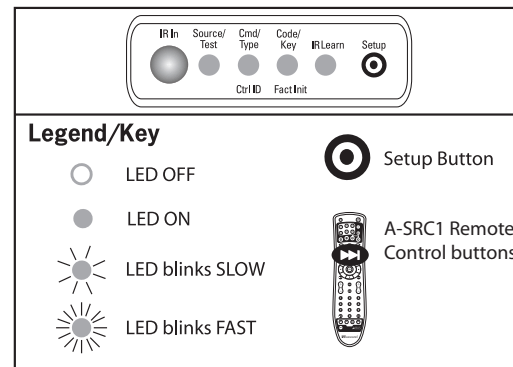


FACTORY INITIALIZATION PROCEDURE

Controller Setup - Factory Initialization Procedure

The Factory Initialization procedure returns the controller to its factory settings and sets all programming and settings back to factory default.

1.  Press and HOLD Setup button
UNTIL
2.  Ctrl ID (yellow) turns ON
3.  Press and HOLD Setup button
UNTIL
4.  Fact Init (orange) turns ON
5.  Aim A-SRC1 remote control at IR In
6.  Press "ALL OFF" then "ON" (A-BUS zone commands, bottom of A-SRC1)
7.  Fact Init (orange) blinks SLOWLY TWICE
8.  All LEDs turn OFF (for 3 seconds or less)
9.  Source/Test (green) turns ON
 Ctrl ID (yellow) turns ON
 Fact Init (orange) turns ON
THEN
10.  Cycle power on controller

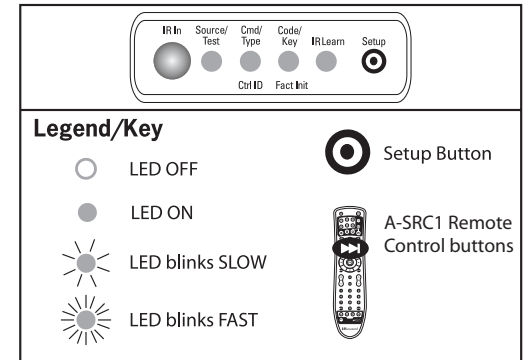


Source Setup - Source Setup Procedure Basics

The Source Setup procedure is used to assign source numbers, and command types for IR learning and IR device codes. Below are the primary source setup steps.

1.  Press and RELEASE Setup button.
2.  Source/Test (green) turns ON
3.  Aim A-SRC1 remote control 2 inches away from IR In
4.  Enter source number (S1 to S6)
5.  Source/Test (green) blinks # to match source #
6.  Source/Test (green) turns OFF
7.  Cmd/Type (yellow) blinks SLOWLY
8. Proceed to page listed below for each procedure

Device Code	Learn IR	Invalid Entry	Clear Codes
01 - 11	99	##	00
(page 28)	(page 29)	(page 31)	(page 32)



Command Type	Device Name	Command Type	Device Name
00	Clear	07	DVD
01	TV	08	Tuner
02	Cable	09	Amplifier
03	Video Accessory	10	CD
04	Satellite/DSS	11	Home Control
05	VCR	99	Learn IR
06	Laser Disk		

Valid Command Type Code Entries

Source Setup - Device Type and Code Procedure

The Device Type and Code procedure assigns a command type and IR device code for each source. IR device codes are listed on pages 35-37.

- 1. Complete primary source setup on page 27
- 2.  Cmd/Type (yellow) blinks SLOWLY
- 3.  Aim A-SRC1 remote control at IR In
- 4.  Enter command type number (see chart at right)
- 5.  Cmd/Type (yellow) turns OFF
- 6.  Code/Key (orange) blinks SLOWLY
- 7.  Enter four-digit device code from list on pages 35 - 37
- 8.  Code/Key (orange) turns OFF
- 9.  Source/Test (green) blinks FAST
- 10.  Test code - press a command button
- 11.  IR Learn (red) blinks to confirm IR code sent
If IR Learn doesn't blink, code is invalid, go to step 12.
- 12.  Press and RELEASE Setup button TWICE.
- 13. For next source, complete primary source setup on page 27

IR In

Source/
Test

Cmd/
Type

Code/
Key

IR Learn

Setup

Ctrl ID

Fact Init

Legend/Key

 LED OFF

 LED ON

 LED blinks SLOW

 LED blinks FAST

 Setup Button

 A-SRC1 Remote Control buttons

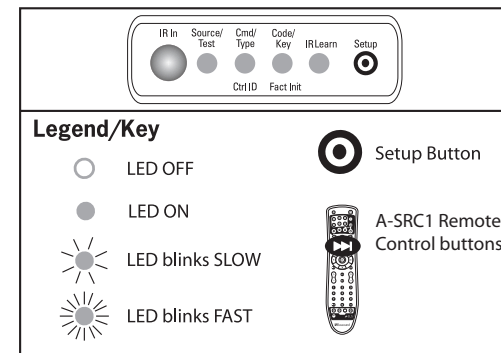
Valid Command Type Code Entries

Command Type	Device Name	Command Type	Device Name
01	TV	07	DVD
02	Cable	08	Tuner
03	Video Accessory	09	Amplifier
04	Satellite/DSS	10	CD
05	VCR	11	Home Control
06	Laser Disk		

Source Setup - Learn IR Procedure

The Learn IR procedure is used to add missing source control commands using the source's factory remote control.

1. Complete primary source setup on page 27
2.  Cmd/Type (yellow) blinks SLOWLY
3.  Aim A-SRC1 remote control at IR In
4.  Enter command type 99
5.  Cmd/Type (yellow) turns OFF
6.  Code/Key (orange) blinks FAST
7.  Press command button to be LEARNED
8.  Code/Key (orange) turns OFF
9.  IR Learn (red) blinks FAST
10.  Aim SOURCE remote control at IR In
11.  Press command button to be LEARNED
12.  IR Learn (red) blinks ONCE then turns OFF



13.  Source/Test (green) blinks FAST
14.  Aim A-SRC1 remote control at IR In
15.  Test code - press learned command
16.  IR Learn (red) blinks ONCE
17.  Source/Test (green) turns OFF
18.  Code/Key (orange) blinks FAST
19. To relearn button or learn another button for the SAME source, go to step 7
20.  To EXIT, press and RELEASE Setup button TWICE.

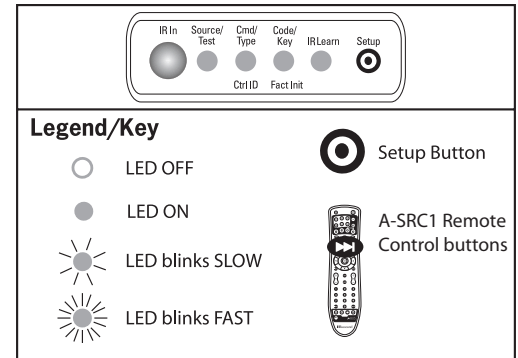
Source Setup - Numeric IR Procedure

The A-C68 controller can be programmed to automatically issue numeric IR prefix and/or suffix commands when using the “Numeric” button on the A-KSC. The prefix will be sent when the Numeric button is pressed and the suffix will be sent out on a second press or when the numeric mode times out (3 seconds).

NOTE: Numeric commands requiring macros are not supported.

See Learning IR procedure on page 29

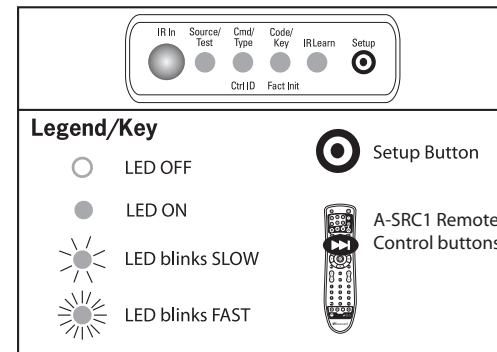
1.  Use these buttons on the A-SRC1 remote control to learn
2.  Numeric Prefix
3.  Numeric Suffix



Source Setup - Invalid Command Type Entry Procedure

The Invalid Command Type procedure allows you to re-enter a correct command type number after an incorrect entry.

1. Complete primary source setup on page 27
2.  Cmd/Type (yellow) blinks SLOWLY
3.  Aim A-SRC1 remote control at IR In
4.  Enter command type number
5.  If number is invalid (not in chart)
Cmd/Type (yellow) blinks FAST for 1 second
6.  Cmd/Type (yellow) blinks SLOWLY
7.  Enter correct command type number
8. **OR**
9.  To EXIT, press and RELEASE Setup button TWICE



Command Type	Device Name	Command Type	Device Name
00	Clear	07	DVD
01	TV	08	Tuner
02	Cable	09	Amplifier
03	Video Accessory	10	CD
04	Satellite/DSS	11	Home Control
05	VCR	99	Learn IR
06	Laser Disk		

Valid Command Type Code Entries

CLEAR CODE PROCEDURE

Source Setup - Clear Code Command Type Procedure

The Clear Code Command Type procedure allows you to clear the current command type of a selected source.

1.

Complete primary source setup on page 27
2.

 Cmd/Type (yellow) blinks SLOWLY
3.

 Aim A-SRC1 remote control at IR In
4.

 Enter command type 00
5.

 Cmd/Type (yellow) turns OFF
6.

 Source/Test (green) blinks SLOWLY
7.

Returns to source selection
8.

Repeat primary source setup on page 27
- OR
9.

 To EXIT, press and RELEASE Setup button

IR In

Source/
Test

Cmd/
Type

Code/
Key

IRLearn

Setup

Ctrl ID

Fact Init

Legend/Key

 LED OFF

 LED ON

 LED blinks SLOW

 LED blinks FAST

 Setup Button

 A-SRC1 Remote Control buttons

Command Type	Device Name	Command Type	Device Name
00	Clear	07	DVD
01	TV	08	Tuner
02	Cable	09	Amplifier
03	Video Accessory	10	CD
04	Satellite/ DSS	11	Home Control
05	VCR	99	Learn IR
06	Laser Disk		

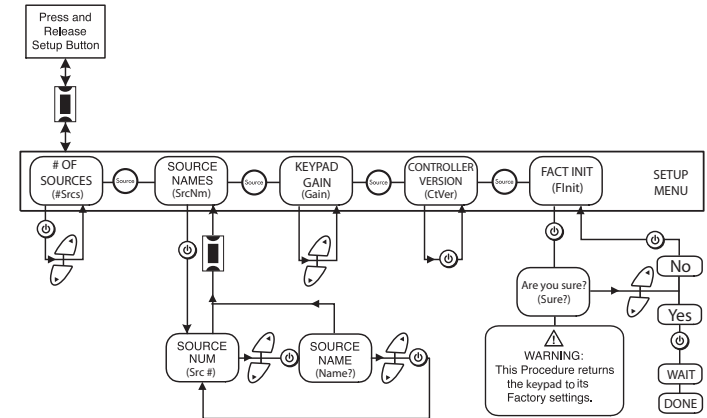
Valid Command Type Code Entries

A-K5L Setup Menu

The A-K5L Setup menu is used to choose source names, check the version number and perform a Factory Initialization of the A-C68 controller. The menu is outlined in the diagram below.

To access the Setup menu, press and release the Setup button on the right side of the keypad until "SrcNm" (source name) appears on the display. Press the Source button to toggle through the menu options, and use the Volume Up/Down buttons to scroll through the selections. Press the Power button to enter a selection.

When finished, press and release the Setup button again.



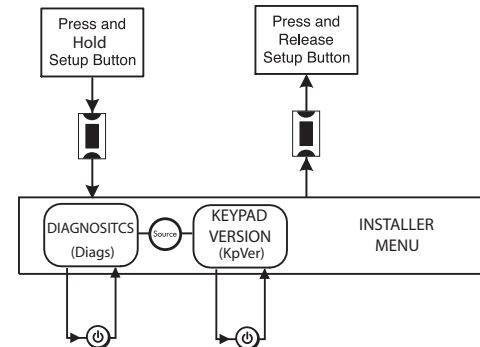
A-K5L Setup Menu

A-K5L Version Menu

The A-K5L Version menu is used to view the current firmware version installed on the A-K5L keypad. The menu is outlined in the diagram to the right.

To access the Version Menu, press and release the Setup button on the right side of the keypad until "KpVer" (Keypad Version) appears on the display. Press the Power button to view the keypad version number.

When finished, press and release the Setup button again.



A-K5L Version Menu

5-CHARACTER SOURCE NAMES FOR A-K5L KEYPAD

A-K5L Display	Description	A-K5L Display	Description	A-K5L Display	Description	A-K5L Display	Description
Aux	Auxiliary	DVDC1	DVD Changer 1	Relig	Religious	TV	TV
Aux 1	Auxiliary 1	DVDC2	DVD Changer 2	RepTV	Replay TV	VCR	VCR
Aux 2	Auxiliary 2	DVDC3	DVD Changer 3	Rock	Rock	VCR 1	VCR 1
Blues	Blues	DVD	DVD Player	Sat	Satellite	VCR 2	VCR 2
Cable	Cable	DVD 1	DVD Player 1	Sat 1	Satellite 1	(XM)	<<<XM>>>
Cbl 1	Cable 1	DVD 2	DVD Player 2	Sat 2	Satellite 2	XM 1	XM 1
Cbl 2	Cable 2	DVD 3	DVD Player 3	Sat 3	Satellite 3	XM 2	XM 2
Cbl 3	Cable 3	FDoor	Front Door	SatRD	Satellite Radio	XM 3	XM 3
CDCh	CD Changer	Hers	Her Music	Src 1	Source 1	XMRad	XM Radio
CDCh1	CD Changer 1	His	His Music	Src 2	Source 2		
CDCh2	CD changer 2	www	Internet Radio	Src 3	Source 3		
CDCh3	CD Changer 3	iPod	iPod	Src 4	Source 4		
CD	CD Player	Jazz	Jazz	Src 5	Source 5		
CD 1	CD Player 1	Kids	Kids Music	Src 6	Source 6		
CD 2	CD Player 2	LD	Laser Disk	Src 7	Source 7		
CD 3	CD Player 3	MSvr.	Media Server	Src 8	Source 8		
Clsc1	Classical	MSvr1	Media Server 1	Spec1	Special		
Cmptr	Computer	MSvr2	Media Server 2	Tape	Tape		
Cntry	Country	MSvr3	Media Server 3	Tape1	Tape 1		
Dance	Dance	MiniD	Mini Disk	Tape2	Tape 2		
DigCb	Digital Cable	Mood	Mood Music	TiVo	TiVo		
DSS	DSS Receiver	MornM	Morning Music	Tuner	Tuner		
DSS 1	DSS 1	MP3	MP3	Tun 1	Tuner 1		
DSS 2	DSS 2	Oldes	Oldies	Tun 2	Tuner 2		
DSS 3	DSS 3	Pop	Pop	Tun 3	Tuner 3		

Device Code For Audio Amplifiers

Durabrand	1561
GE	0078
Harman/Kardon	0892
JVC	0331
Left Coast	0892
Lenox	1561
Marantz	0892
Optimus	0395
Philips	0892
Polk Audio	0892
Realistic	0395
Soundesign	0078
Victor	0331
Wards	0078
Yamaha	0354

Device Code For Audio Amp/ Tuners

ADC	0531
Aiwa	1405, 0158, 0189, 0121
Anam	1609, 1074
Audiotronic	1189
Bose	1229
Capetronic	0531
Carver	1189, 0189
Coby	1263
Dell	1383
Denon	1360, 1142
Gateway	1517
Glory Horse	1263
Harman/Kardon	0110, 0189
Hewlett Packard	1181
Integra	0135
JBL	0110
JVC	0074, 1263
Kenwood	1313, 1569, 0027
KLH	1428
Linn	0189
Magnavox	1189, 1269, 0189, 0531
Marantz	1189, 1269, 0039, 0189
MCS	0039
Mitsubishi	1393
Onkyo	0135
Optimus	1023, 0670, 0531, 1074
Panasonic	0039, 0309
Philips	1189, 1269, 0189
Pioneer	1023, 0150, 0014, 0630, 0531
Polk Audio	0189
Proscan	1254
Quasar	0039
RadioShack	1263

RCA	1023, 1609, 1254, 1074, 0531
Rio	1383
Sansui	0189
Sharper Image	1263
Sonic Blue	1383
Sony	1058, 1759, 0158, 1406
Soundesign	0670
Stereophonics	1023
Sunfire	1313
Teac	1074
Technics	1308, 0039, 0309
Thorens	1189
Victor	0074
Wards	0158, 0189, 0014
Yamaha	0176, 1276, 1176

Device Code For Cable Converters

ABC	0003, 0008
Americast	0899
Bell South	0899
Clearmaster	0883
ClearMax	0883
Coolmax	0883
Director	0476
General Instrument	0476, 0810, 0276, 0003
GoldStar	0144
Hamlin	0009, 0273
Jerrold	0476, 0810, 0276, 0003
Memorex	0000
Motorola	0476, 0810, 0276, 1254, 1376
Multitech	0883
Pace	1877, 0237
Panasonic	0000, 0107
Paragon	0000
Philips	0317, 1305
Pioneer	1877, 0877, 0144, 0533
Pulsar	0000
Quasar	0000
RadioShack	0883
Regal	0279, 0273
Runco	0000
Samsung	0144
Scientific Atlanta	1877, 0877, 0477, 0008
Sony	1006
Starcom	0003
Supercable	0276
Supermax	0883
Torx	0003
Toshiba	0000

Tristar	0883
V2	0883
Viewmaster	0883
Vision	0883
Vortex View	0883
Zenith	0000, 0525, 0899

Device Code For CD Players

Aiwa	0157
Burmester	0420
California Audio Labs	0029
Carver	0157, 0179
Denon	0873, 0003
DKK	0000
DMX Electronics	0157
Emerson	0305
Fisher	0179
Garrard	0420
Genexxa	0032, 0305
Harman/Kardon	0157, 0173
Hitachi	0032
Integra	0101
JVC	0072
Kenwood	0681, 0028, 0037, 0190
KLH	1318
Krell	0157
Linn	0157
LXI	0305
Magnavox	0157, 0305
Marantz	0029, 0157
MCS	0029
Miro	0000
Mission	0157
MTC	0420
NSM	0157
Onkyo	0868, 0101
Optimus	1063, 0000, 0032, 0037, 1075, 0179, 0145, 0420, 0087, 0305
Panasonic	0029
Parasound	0420
Philips	0157
Pioneer	1063, 0032, 0305
Polk Audio	0157
Proton	0157
QED	0157
Quad	0157
Quasar	0029
RadioShack	1075
RCA	0032, 0305, 0179, 0053, 0420
Realistic	0420, 0179
Rotel	0157, 0420
SAE	0157

Sansui	0157, 0305
Sanyo	0087, 0179
Scott	0305
Sears	0305
Sharp	0861, 0037
Sherwood	1067
Sonic Frontiers	0157
Sony	0490, 0000, 0100
Soundesign	0145
Symphonic	0305
TAG McLaren	0157
Tascam	0420
Teac	0420
Technics	0029
Victor	0072
Wards	0157, 0053
Yamaha	0888, 0036

Device Code For DVDs

Allegro	0869
Apex Digital	0672, 0717, 0797, 1061, 0796, 1056, 0794, 1020
Aspire Digital	1168
Blaupunkt	0717
Blue Parade	0571
Broksonic	0695
CineVision	0869
Coby	1086
CyberHome	0816, 1129
Daewoo	0784, 0833, 1172, 0869
Denon	0490
DVD2000	0521
Emerson	0591, 0675
Enterprise	0591
Fisher	0670
Funai	0675
Gateway	1073, 1194, 1158, 1077
GE	0522, 0717
Go Video	0744, 0715, 0833, 1099, 0783, 1075, 1730, 0869, 1158
Greenhill	0717
Hitachi	0573, 0664
Hiteker	0672
Initial	0717
JVC	0558, 0623, 0867
Kenwood	0490, 0534
KLH	0717, 1020
Koss	0651
Lasonic	0798
LG	0591, 0869
Lite-On	1158, 1058
Magnavox	0503, 0539, 0675

Marantz	0539
Memorex	0695
Microsoft	0522
Mintek	0839, 0717
Mitsubishi	1521, 0521
Nesa	0717
Onkyo	0503
Oritron	0651
Panasonic	0490, 1762
Philips	0503, 0539, 0646, 0675, 0885
Pioneer	0525, 0571
Polaroid	1086, 1061
Polk Audio	0539
Proscan	0522
Qwestar	0651
RCA	0522, 0571, 0717, 0822
Rio	0869
Rotel	0623
Sampo	0752
Samsung	0490, 0573, 1075, 0820
Sansui	0695
Sanyo	0695, 0670, 0873
Sharp	0630, 0752
Sherwood	1077
Shinsonic	0533, 0839
Sonic Blue	0869, 1099
Sony	0533, 0864, 1033
Sylvania	0675
Symphonic	0675
Technics	0490
Theta Digital	0571
Toshiba	0503, 1154, 0695
Urban Concepts	0503
US Logic	0839
Xbox	0522
Yamaha	0490, 0539, 0545
Zenith	0503, 0591, 0869

Device Code For Satellite Receivers

AlphaStar	0772
Century	0856
Chaparral	0216
Crossdigital	1109
DirecTV	0392, 0566, 0639, 1639, 1142, 0247, 0749, 1749, 0724, 0819, 1856, 1076, 1109, 0099, 1640, 1108, 1392, 1442, 1414
Dish Network System	1005, 0775, 1775, 1505
Dishpro	1005, 0775, 1505, 1775

Continued next page

MANUFACTURERS' IR DEVICE CODES

Device Code For Satellite Receivers (continued)

Echostar	1005, 0775, 1775, 1505
Expressvu	0775, 1775
GE	0566
General Instrument	0869
GOI	0775, 1775
Hisense	1535
Hitachi	0819, 1250
HTS	0775, 1775
Hughes Network Systems	1142, 0749, 1749, 1442
I-Lo	1535
JVC	0775, 1775
LG	1414
Magnavox	0724, 0722
Memorex	0724
Mitsubishi	0749
Motorola	0869
Next Level	0869
Panasonic	0247, 0701
Paysat	0724
Philips	1142, 0749, 1749, 0724, 1076, 0722, 0099, 1442, 0856
Proscan	0392, 0566
Proton	1535
RadioShack	0869
RCA	0392, 0566, 0855, 0143, 1392
Samsung	1276, 1109, 1108
Sony	0639, 1639, 1640
Star Choice	0869
Tivo	1142, 1442
Toshiba	0749, 1749, 0790, 1285
UltimateTV	1392, 1640
Uniden	0724, 0722
US Digital	1535
USDTV	1535
Voom	0869
Zenith	1856, 0856

Device Code For TVs

Admiral	0093, 0463
Advent	0761, 0842
Aiko	0092
Akai	0812, 0702, 0030, 0672
Albatron	0843, 0700
America Action	0180
Anam	0180
AOC	0030
Apex Digital	0748, 0765, 1943, 0879, 0767
Audiovox	0451, 0180, 0092, 0623

Bell & Howell	0154
BenQ	1032
Bradford	0180
Broksonic	0236, 0463, 1935, 1911
Candle	0030
Carnivale	0030
Carver	0054
Celebrity	0000
Celera	0765
Changhong	0765
Citizen	0060, 0030, 0092
Clarion	0180
Commercial Solutions	1447, 0047
Contec	0180
Craig	0180
Crosley	0054
Crown	0180
Curtis Mathes	0047, 0054, 0154, 0451, 0093, 0060, 0702, 0030, 0145, 0166, 1147, 1347
CXC	0180
Daewoo	0451, 1661, 0672, 0092, 0661, 0623
Dell	1080
Denon	0145
Dumont	0017
Durabrand	0463, 0180, 0178, 0171, 1034
Electroband	0000
Emerson	0154, 0236, 0463, 0180, 0178, 0171, 1911, 0623
Envision	0030
ESA	0812, 0171
Fisher	0154
Fujitsu	0853, 0809, 0683
Funai	0180, 0171, 1904
Futurtech	0180
Gateway	1756, 1755
GE	1447, 0047, 0051, 0451, 0178, 1347, 1922, 1147, 1917
Gibralter	0017, 0030
Go Video	0886
GoldStar	0030, 0178
Grumpy	0180
Haier	1034
Hallmark	0178
Harley Davidson	1904
Harman/Kardon	0054
Harvard	0180
Havermy	0093
Helios	0865

Hello Kitty	0451
Hisense	0748
Hitachi	1145, 0145, 1960, 1904
Hyundai	0849
Infinity	0054
Inteq	0017
JBL	0054
JCB	0000
Jensen	0761
JVC	0053, 1253, 1923, 0731
KEC	0180
Kenwood	0030
KLH	0765, 0767
KTV	0180, 0030
LG	0178, 0700, 0856
Lloyd's	1904
LXI	0047, 0054, 0154, 0156, 0178
Magnavox	1454, 0054, 0030, 0706, 1904, 1254
Marantz	0054, 0030
Matsushita	0250
Maxent	1755
Megapower	0700
Megatron	0178, 0145
Memorex	0154, 0463, 0150, 0178, 1911
MGA	0150, 0030, 0178
Midland	0047, 0017, 0051
Mitsubishi	0093, 1250, 0150, 0178, 1917
Monivision	0843, 0700
Motorola	0093
MTC	0060, 0030
Multitech	0180
NAD	0156, 0178, 0866
NEC	0030
Nikko	0030, 0178, 0092
Norcent	0748, 0824
NTC	0092
Onwa	0180
Optimus	0154, 0250, 0166
Optonica	0093
Orion	0236, 0463, 1911, 1463
Panasonic	0250, 0051, 1941
Penney	0047, 0156, 0051, 0060, 0030, 0178, 1347
Philco	0054, 0030
Philips	1454, 0054, 1961, 0690
Pilot	0030
Pioneer	0166, 0679, 0866
Portland	0092
Prima	0761

Princeton	0700
Prism	0051
Proscan	1447, 0047, 1347, 1922
Proton	0178
Pulsar	0017
Quasar	0250, 0051
RadioShack	0047, 0154, 0180, 0030, 0178, 1904
RCA	1447, 0047, 1047, 1347, 1917, 0679, 1247, 1547, 1948, 0090, 1147, 1922
Realistic	0154, 0180, 0030, 0178
Runco	0017, 0030
Sampo	0030, 1755
Samsung	0060, 0812, 0702, 0030, 0178, 0766, 1959, 1060
Sansui	0463, 1935, 1911, 1904
Sanyo	0154, 0088
Scotch	0178
Scott	0236, 0180, 0178
Sears	0047, 0054, 0154, 0156, 0178, 0171, 1904
Sharp	0093, 1917
Sheng Chia	0093
Sony	1100, 0000, 1904
Soundesign	0180, 0178
Squareview	0171
SSS	0180
Starlite	0180
Studio Experience	0843
Supreme	0000
SVA	0748, 0865
Sylvania	0054, 0030, 0171
Symphonic	0180, 0171, 1904
Tandy	0093
Tatung	1756
Technics	0250, 0051
Techwood	0051
Teknika	0054, 0180, 0150, 0060, 0092
Telefunken	0702
Thomas	1904
TMK	0178
TNCi	0017
Toshiba	0154, 1256, 0156, 0060, 1156, 1656, 1356, 1945, 1935
TVS	0463
V Inc.	1756
Vector Research	0030
Victor	0053
Vidikron	0054
Vidtech	0178

Viewsonic	1755
Wards	0054, 0030, 0178, 0866, 1156
Waycon	0156
Westinghouse	0889
White Westinghouse	0463, 0623
Yamaha	0030
Zenith	0017, 0463, 0178, 1911, 0092, 1904

Device Code For VCRs

ABS	1972
Admiral	0048, 0209
Adventura	0000
Aiko	0278
Aiwa	0037, 0000
Akai	0041
Alienware	1972
America Action	0278
American High	0035
Asha	0240
Audiovox	0037, 0278
Beaumarck	0240
Bell & Howell	0104
Broksonic	0184, 0121, 0209, 0002, 0479
Calix	0037
Canon	0035
Carver	0081
CCE	0072, 0278
Citizen	0037, 0278
Colt	0072
Craig	0037, 0047, 0240, 0072
Curtis Mathes	0060, 0035, 0162, 0041
Cybermex	0240
CyberPower	1972
Daewoo	0045, 0278
Dell	1972
Denon	0042
DirecTV	0739
Durabrand	0039, 0038
Dynatech	0000
Electrohome	0037
Electrophonic	0037
Emerex	0032
Emerson	0037, 0184, 0000, 0121, 0043, 0209, 0002, 0278, 0479
Fisher	0047, 0104
Fuji	0035, 0033
Funai	0000
Garrard	0000
Gateway	1972
GE	0060, 0035, 0240

Go Video	0432	Penney	0035, 0037, 0240, 0042, 0038	Vector Research	0038
GoldStar	0037, 0038	Pentax	0042	Video Concepts	0045
Gradiente	0000	Philco	0035	Videomagic	0037
Harley Davidson	0000	Philips	0035, 0081, 0618, 0739	Videosonic	0240
Harman/Kardon	0081, 0038	Pilot	0037	Viewsonic	1972
Harwood	0072	Pioneer	0067	Villain	0000
Hewlett Packard	1972	Polk Audio	0081	Wards	0060, 0035, 0048, 0047, 0081, 0240, 0000, 0042, 0072, 0149
HI-Q	0047	Proform	0240	White Westinghouse	0209, 0072
Hitachi	0000, 0042, 0041, 0089	Proscan	0060	XR-1000	0035, 0000, 0072
Howard Computers	1972	Protec	0072	Yamaha	0038
HP	1972	Pulsar	0039	Zenith	0039, 0033, 0000, 0209, 0479
Hughes Network Systems	0042, 0739	Quasar	0035, 0162	ZT Group	1972
iBUYPOWER	1972	RadioShack	0000		
Jensen	0041	Radix	0037		
JVC	0067, 0041	Randex	0037		
KEC	0037, 0278	RCA	0060, 0240, 0042, 0149, 0880		
Kenwood	0067, 0041, 0038	Realistic	0035, 0037, 0048, 0047, 0000, 0104		
KLH	0072	ReplayTV	0616		
Kodak	0035, 0037	Runco	0039		
Lloyd's	0000	Samsung	0240, 0045		
Logik	0072	Sanky	0048, 0039		
LXI	0037	Sansui	0000, 0067, 0209, 0041, 0479		
Magnavox	0035, 0039, 0081, 0000, 0149	Sanyo	0047, 0240, 0104		
Magnin	0240	Scott	0184, 0045, 0121, 0043		
Marantz	0035, 0081	Sears	0035, 0037, 0047, 0000, 0042, 0104		
Marta	0037	Sharp	0048		
Matsushita	0035, 0162	Shintom	0072		
Media Center PC	1972	Shogun	0240		
MEI	0035	Singer	0072		
Memorex	0035, 0162, 0037, 0048, 0039, 0047, 0240, 0000, 0104, 0209, 0479	Sonic Blue	0616		
MGA	0240, 0043	Sony	0035, 0032, 0033, 0000, 0636, 1972		
MGN Technology	0240	STS	0042		
Microsoft	1972	Sylvania	0035, 0081, 0000, 0043		
Mind	1972	Symphonic	0000		
Minolta	0042	Systemax	1972		
Mitsubishi	0067, 0043	Tagar Systems	1972		
Motorola	0035, 0048	Tatung	0041		
MTC	0240, 0000	Teac	0000, 0041		
Multitech	0000, 0072	Technics	0035, 0162		
NEC	0104, 0067, 0041, 0038	Teknika	0035, 0037, 0000		
Nikko	0037	Thomas	0000		
Noblex	0240	Tivo	0618, 1503, 0739, 0636		
Northgate	1972	TMK	0240		
Olympus	0035	Toshiba	0045, 0043, 1008, 1972, 1503		
Optimus	1062, 0162, 0037, 0048, 0104, 0432	Totevision	0037, 0240		
Orion	0184, 0209, 0002, 0479	Touch	1972		
Panasonic	1062, 0035, 0162, 0225, 0616	Unitech	0240		
		Vector	0045		

Device Code For Video Accessories

ABS	1272
Alienware	1272
CyberPower	1272
D-Link	1554
Escient	1151, 1371, 1370, 1373, 1372
Gateway	1272
Hewlett Packard	1272, 1267
Howard Computers	1272
HP	1272
iBUYPOWER	1272
LG	1415
Linksys	1365
Media Center PC	1272
Microsoft	1272
Mind	1272
Motorola	1363
Northgate	1272
Panasonic	1120
Pioneer	1010
Samsung	1190, 1490
Sensory Science	1126
Sharp	1010
SMC	1456
Sony	1272, 1324, 1364
Systemax	1272
Tagar Systems	1272
Toshiba	1272
Touch	1272
Viewsonic	1272, 1329
ZT Group	1272

TECHNICAL SPECIFICATIONS

A-C68 Controller

Dimensions:	16.75"W x 10.5"D x 2.125"H (42.5 x 26.7 x 5.4 cm)
Weight:	12.7 lbs. (5.8 kg)
Power Supply:	100 - 240VAC 50-60Hz
Fuse Rating:	100V input; T3.0A US and Canada 240V input; T1.25A Europe
Frequency Response:	20Hz-20kHz +/- 0.1dB
Total Harmonic Distortion:	<0.3%
Signal to Noise Ratio:	105dB A-weighted / 101dB unweighted
Audio Source Inputs:	6
Input Impedance:	60 Kohms
Max Source Audio Input:	3.5 Vrms
Audio Zones/Keypad Ports	8 RJ45 T568A standard
Trigger Output:	12VDC 100mA Max
Trigger Input:	12VDC

The Russound A-C68 is fully guaranteed against all defects in materials and workmanship for two (2) years from the date of purchase. During this period, Russound will replace any defective parts and correct any defect in workmanship without charge for either parts or labor.

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

This Warranty does not cover:

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

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

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

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

Russound
ATTN: Service
5 Forbes Road
Newmarket, NH 03857



A-C68

A-BUS® Multizone Controller Installation Manual

Russound, Inc.
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A-BUS is a registered trademark of LeisureTech Electronics Pty Ltd Australia.
This product may be covered by one or more of the following patents:
US #7,181,023, #6,389,13; EP #1004222, AU #739808, NZ #502982
Mexico #241196, Canada #CA2301062
28-1255 Rev. 1 04/01/08

Russound®

A-C68

A-Bus® Multizone Multisource Audio Controller Test Procedure

Revision 2.2



The A-C68 provides the ability to control audio from anywhere in the house with six source inputs, eight zone outputs (scalable to 48 zones), simplified programming, IR remote control and user adjustable sound controls.

The purpose of this document is to provide a standardized full functional test process for the Russound® A-C68 Multizone Multisource Audio Controller.

The approximate time needed to perform this test is 30 minutes.

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Inspection

Russound customers expect the best; defects are unacceptable. Inspect the Unit Under Test (UUT) visually for any blemishes, missing pieces and visual indications that may cause concern. Passing visual inspection is a condition of passing full test. Correct *any* defect before passing the UUT; if the UUT has defects that cannot be corrected, notify your supervisor. Inspect the UUT before and after functional testing.

Equipment Needed

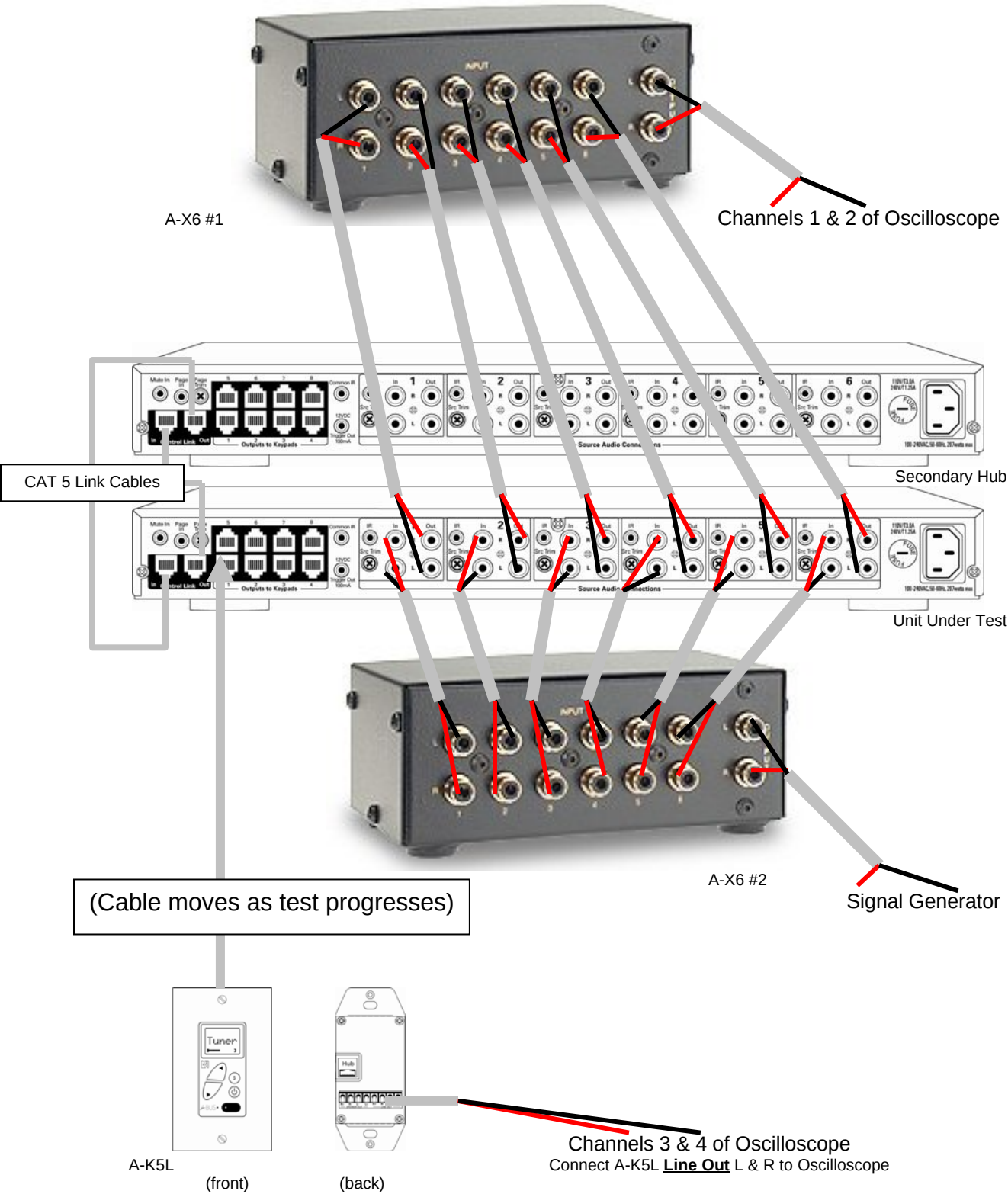
1. (1) PC running Flash Development Toolkit Version 3.3 and the current firmware† installed.
2. (2) Russound A-X6 Auxiliary Line-Level Source Selector
3. (2) Signal generator
4. (1) 4 channel Oscilloscope
5. (7) Russound CA-LCD2 modified with 845.1 emitter.*
6. (1) Russound A-SRC1 Remote
7. (8) Russound A-K5L LCD Keypad
8. (17) Stereo RCA cable
9. (1) 1/8" mono mini jack patch cord
10. (1) RS232 DB9 cable
11. (2) 13 inch maximum T568A CAT-5 straight-through link cable.
12. (2) 150 foot maximum T568A CAT-5 straight-through patch cable.
13. (3) IEC C13 Detachable 3-terminal AC line cord
14. (1) 12VDC power pack with a 1/8" mini jack with positive tip polarity.
15. (1) Volt Meter
16. (1) Known good A-C68 controller for Link Test

*CALCD's can be replaced by any IR controlled devices

†Contact Russound SQA for current firmware.

*[See Appendix](#)

Setup



Connections

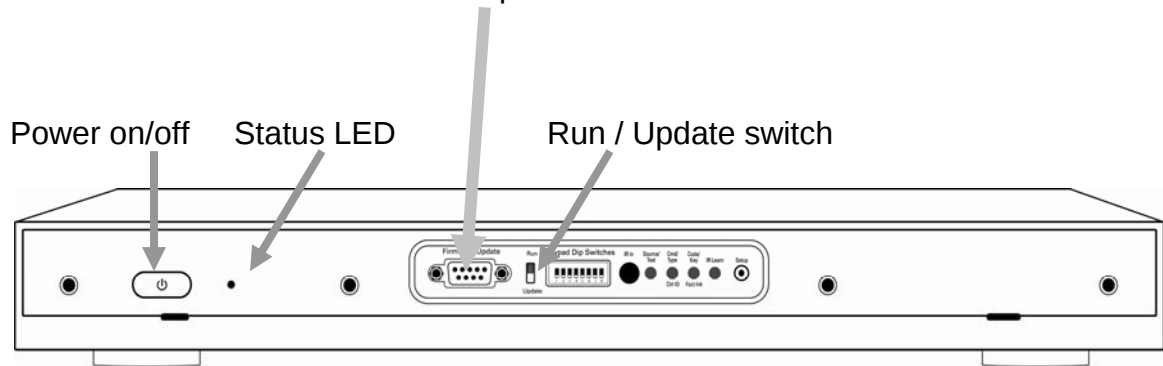
- Connect the Oscilloscope channel 1 & 2 to the A-X6 #1.
- Connect audio source loop outputs from the UUT to the A-X6 #1.
- Connect the Signal Generator into A-X6 #2 outputs L & R.
- Connect the six inputs of the A-X6 #2 to the six respective audio source inputs of the UUT via stereo RCA cables.
- Connect an A-K5L keypad to keypad port 1 on the UUT with patch cable.
- Connect the keypad Line Level outputs to Oscilloscope channel 3 & 4.
- Connect the IR controlled source equipment (modified CA-LCD2s) to their respective IR outputs on the UUT (please refer to diagram in Link Test).
- Connect an AC power cord from a 110 AC source into the AC input on the back of the R235LS and one into the back of the UUT& Secondary Hub.
- Connect UUT to Secondary Hub via two 13 inch link cables.

NOTE:

- Keypad Dip Switches on the UUT should be set in the DOWN position when testing with A-K5L keypads and UP when testing A-KP3 Keypads.
- The update/run switch should be set to run position when testing.

Firmware Update Test

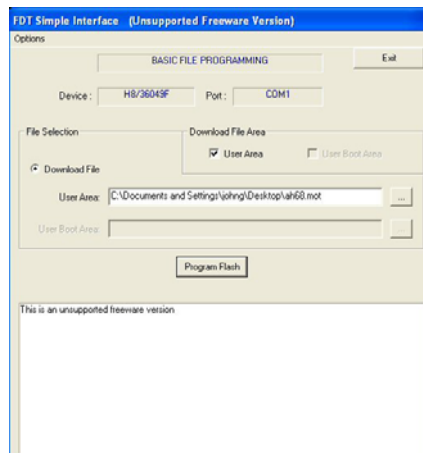
1. Power up the UUT Test by pressing the power button on the front panel.
 - Open the removable molded plastic front cover.
 - Verify that the Status LED illuminates to indicate power is applied. The LED will be Green (on) or Red (stand-by).
2. Power down the UUT by pressing the power button on the front panel.
 - Verify that the Status LED is now off.
3. Set the Run / Update switch of the UUT to “Update” then power up UUT.
4. Connect the RS232 cable from the PC running Flash Development Toolkit Version 3.3 to the UUT RS232 port.



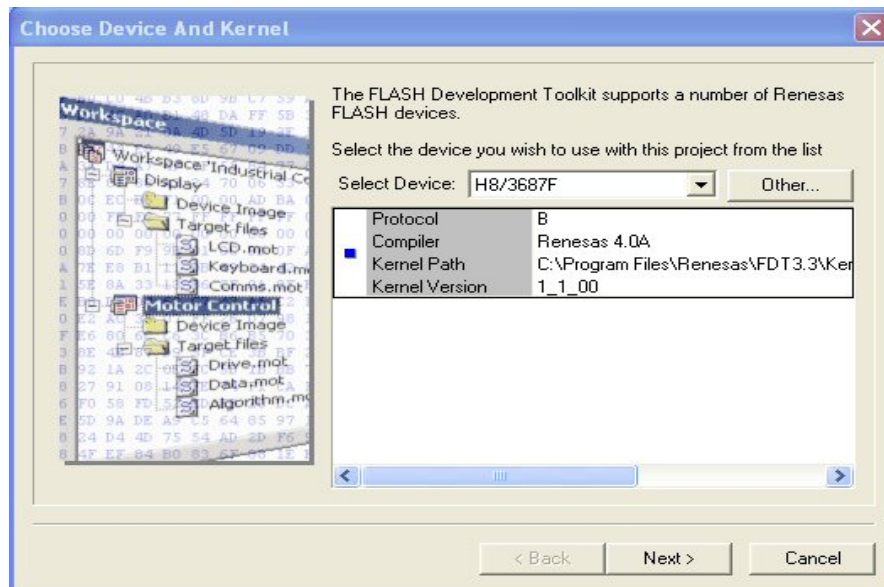
5. On the PC, double click the FDT3.3 programming icon.



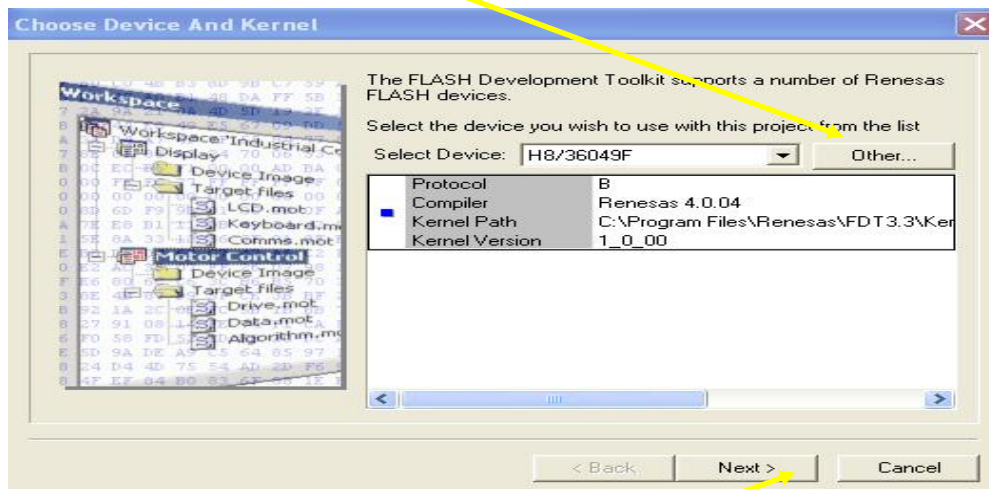
6. If the “**FDT Simple Interface**” dialog box appears showing “**H8/36049F**” in the “**Device:**” window, go to **Step 21**. If not, go to **Step 7**.



7. Click the **“Options”** menu then **“New Settings”**.
8. The **“Choose Device and Kernel”** dialog box will open.

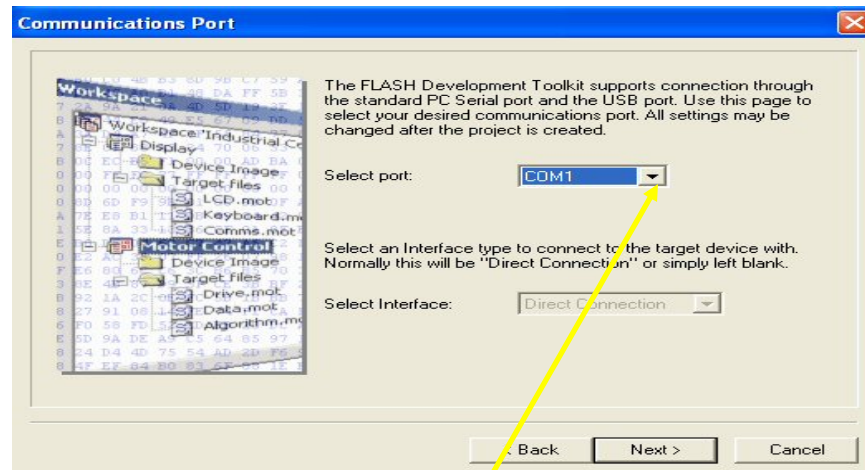


9. Click the button in the **“Select Device:”** window of the **“Choose Device and Kernel”** dialog box and from the pull down menu select **“H8/36049F”**.



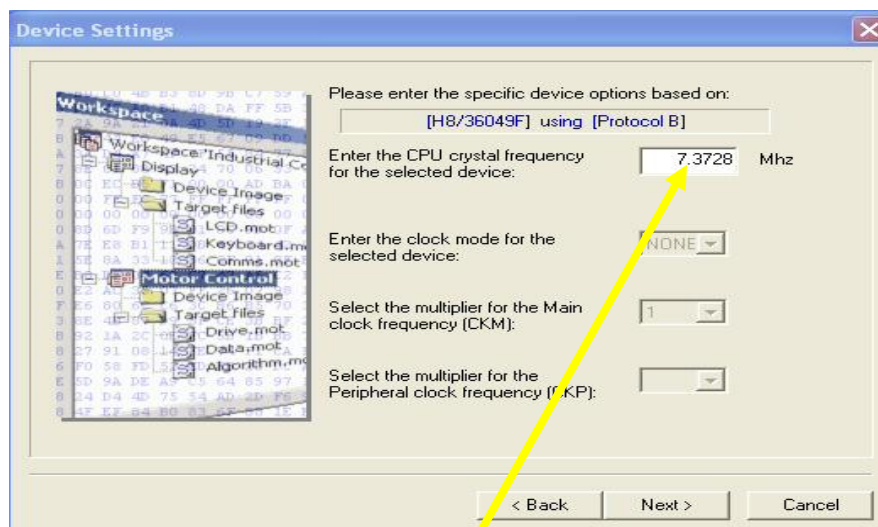
Then click **Next >**.

10. The “**Communications Port**” dialog box will open.



11. Click the button for the “**Select Port:**” window and select the communications port you are using from the pull down menu. Then click “**Next**”

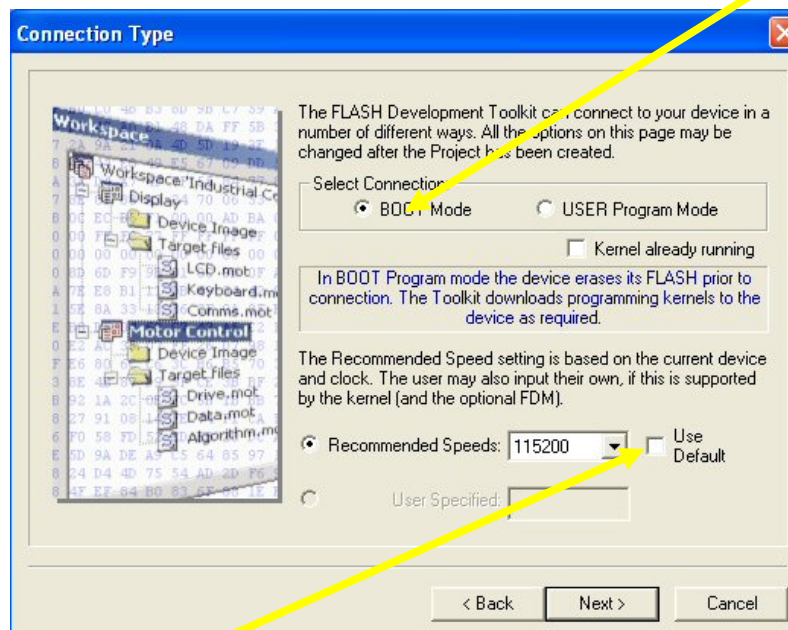
12. The “**Device Settings**” dialog box will appear.



13. Set the “**Enter the CPU crystal frequency**” window to **7.3728 Mhz**.

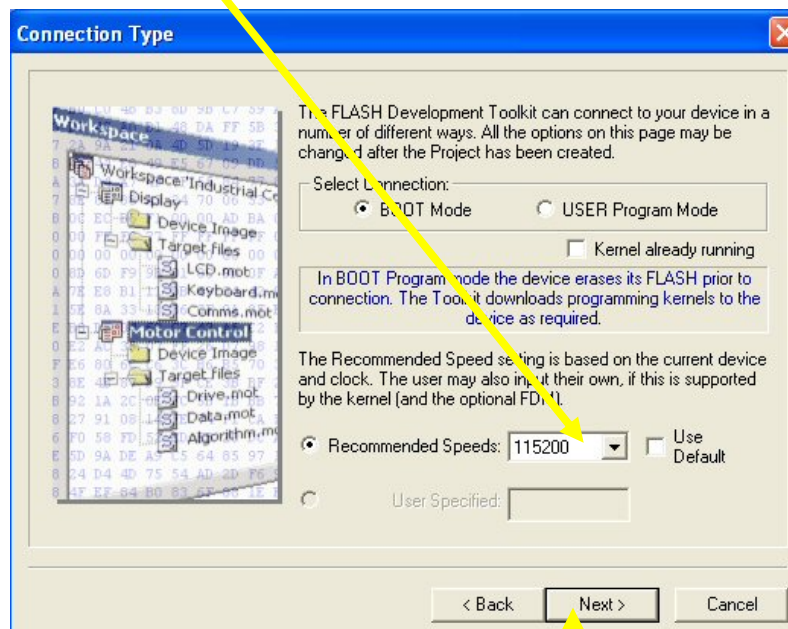
14. Ensure the “**Specific device options**” window displays “[H8/36049F] using [Protocol B]” and click “**Next >**”

15. The “**Connection Type**” dialog box will appear. Select “**Boot Mode**”.



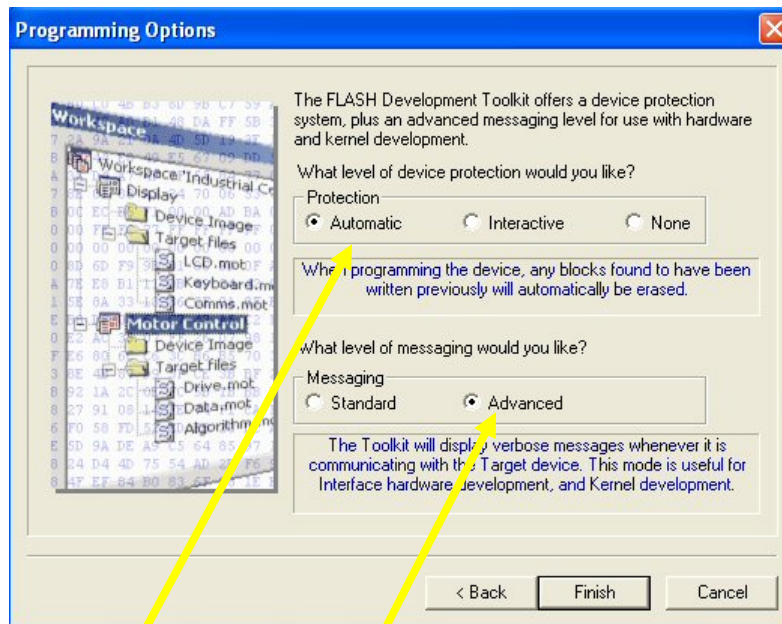
16. Make sure the “**Use Default**” window **does not** have a checkmark in it by clicking its window.

17. Ensure the “**Recommended Speeds:**” window displays 115200, if not click the button and select 115200 from the pull down menu.



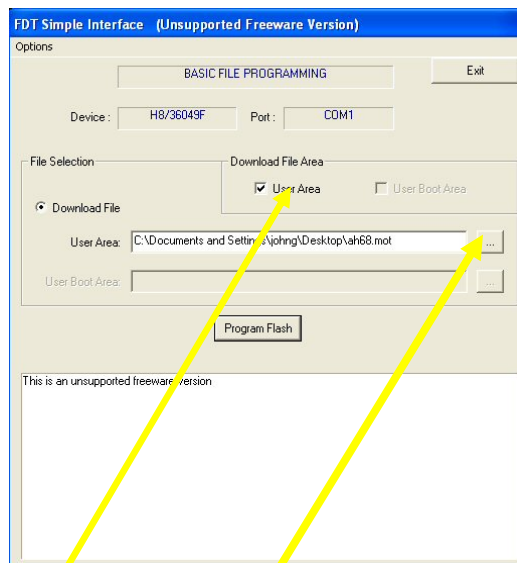
18. Click “**Next >**”

The “**Programming Options**” dialog box will appear.



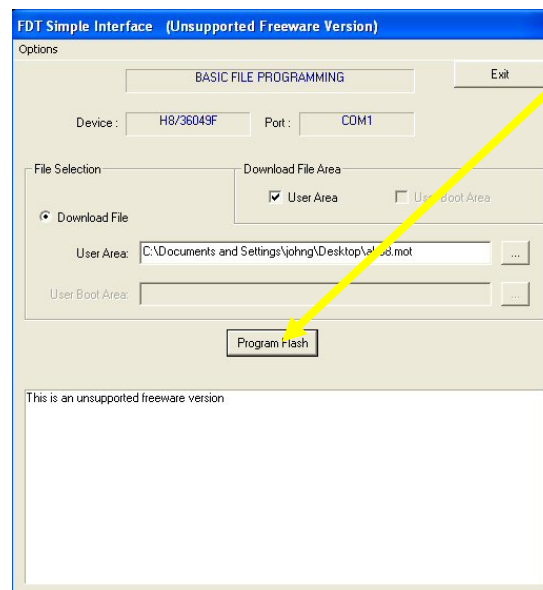
19. Ensure the “**Automatic**” and “**Advanced**” buttons are selected. Then Click “**Finish**”

20. The “**FDT Simple Interface**” dialog box appear



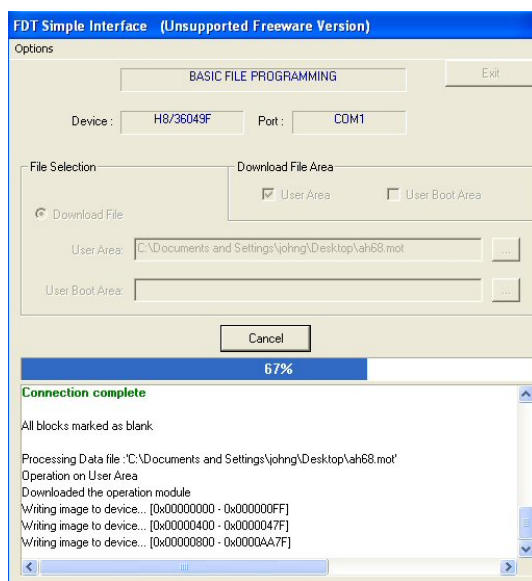
21. Click “**User Area**” to place a checkmark in its window. Click “...” and navigate to the directory where the current file for the A-H68 is stored and select it in the “**User Area:**” window.

22. On the “FDT Simple Interface” dialog box click “Program Flash”.

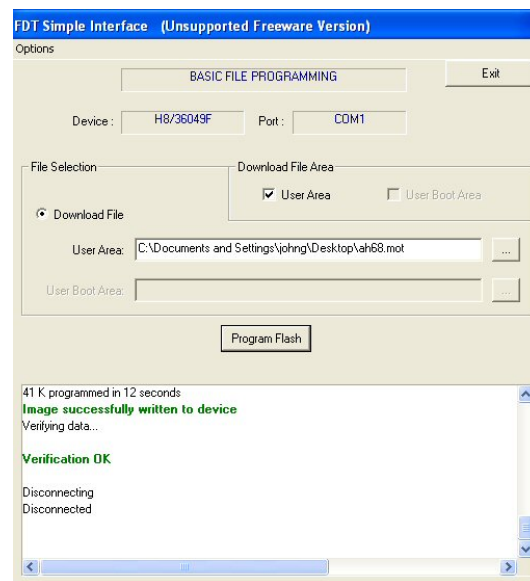


The A-H68 is now being programmed.

Here are some examples of the dialog boxes during programming:



MCU being programmed



MCU successfully programmed.

23. Press the power button on the UUT to turn off the unit.
24. Disconnect the RS232 cable from the A-H68 Firmware Update port.
25. Set the Run/Update switch of the UUT to the “Run” position.

Loop Test

With the UUT connected to the [Test Set Up](#), follow the steps below to verify the audio loop out ports work properly:

1. Set all UUT src Trim adjusters to full (clockwise).
2. Set the 1st Signal Generator to send a 1 kHz 2 volt rms signal to the right output port of A-X6 #2.
3. Set the 2nd Signal Generator to send a 1.5 kHz 2 volt rms signal to the left output port of A-X6 #2.
4. Set the AX-6 #2 to position number 1.
5. Turn on the UUT.
6. Set the AX-6 #1 to position number 1.
7. Turn on the Oscilloscope and set each channel to 2 volts / division, and frequency to measure the signals sent from the Signal Generator via the UUT.
8. Verify that the right channel reads 1 kHz 2 volts and left is 1.5 kHz 2 volts undistorted.
9. Verify that the signals in channel 1 & 2 attenuate as you move the channel 1 src Trim adjuster counter-clockwise, then clockwise back to full.
10. Set A-X6 #1 to 2 and verify there is no signal on the Oscilloscope.
11. Set A-X6 #2 to 2 and verify that the right channel reads 1 kHz 2 volts and left is 1.5 kHz 2 volts undistorted.
12. Verify that the signals in channel 1 & 2 attenuate as you move the channel 2 src Trim adjuster counter-clockwise, then clockwise back to full.
13. Set A-X6 #1 to 3 and verify there is no signal on the Oscilloscope.
14. Set A-X6 #2 to 3 and verify that the right channel reads 1 kHz 2 volts and left is 1.5 kHz 2 volts undistorted.
15. Verify that the signals in channel 1 & 2 attenuate as you move the channel 3 src Trim adjuster counter-clockwise, then clockwise back to full.
16. Set A-X6 #1 to 4 and verify there is no signal on the Oscilloscope.
17. Set A-X6 #2 to 4 and verify that the right channel reads 1 kHz 2 volts and left is 1.5 kHz 2 volts undistorted.
18. Verify that the signals in channel 1 & 2 attenuate as you move the channel 4 src Trim adjuster counter-clockwise, then clockwise back to full.
19. Set A-X6 #1 to 5 and verify there is no signal on the Oscilloscope.
20. Set A-X6 #2 to 5 and verify that the right channel reads 1 kHz 2 volts and left is 1.5 kHz 2 volts undistorted.
21. Verify that the signals in channel 1 & 2 attenuate as you move the channel 5 src Trim adjuster counter-clockwise, then clockwise back to full.
22. Set A-X6 #1 to 6 and verify there is no signal on the Oscilloscope.
23. Set A-X6 #2 to 6 and verify that the right channel reads 1 kHz 2 volts and left is 1.5 kHz 2 volts undistorted.
24. Verify that the signals in channel 1 & 2 attenuate as you move the channel 6 src Trim adjuster counter-clockwise, then clockwise back to full.

Source Input Test

While connected to Test Set Up and Signal Generator input running, verify all source ports:

NOTE: Connect A-K5L Line Out L & R to Oscilloscope

Source 1

1. Set the AX-6 #2 to position number 1.
2. Power-Up the UUT and press the Power button on the A-K5L.
3. Press the Source button until "Src 1" is displayed.
4. Oscilloscope channel 3 & 4 were connected to the A-K5L Line-Out in the Initial Setup.
5. Press the volume button on the A-K5L to set the volume level to 2 volts peak to peak on scope.
6. Verify undistorted signals (1 kHz right, 1.5 kHz left) in Channel 3 & 4 of scope.
7. Aim CA-LCD remote at A-K5L IR window, press "On" button; CA-LCD #1 and COM IR will illuminate.
8. Press the "Off" button of the CA-LCD remote and CA-LCD number 1 and COM IR will go dark.

Source 2

1. Set the AX-6 #2 to position number 2.
2. Signal on the scope will not be present.
3. Press the "Source" button on the A-K5L.
4. The A-K5L will display "Src 2".
5. Verify undistorted signals (1 kHz right, 1.5 kHz left) in Channel 3 & 4 of scope.
6. Aim CA-LCD remote at A-K5L IR window, press "On" button; CA-LCD #2 and COM IR will illuminate.
7. Press the "Off" button of the CA-LCD remote and CA-LCD number 2 and COM IR will go dark.

Source 3

1. Set the AX-6 #2 to position number 3.
2. Signal on the scope will not be present.
3. Press the "Source" button on the A-K5L.
4. The A-K5L will display "Src 3".
5. Verify undistorted signals (1 kHz right, 1.5 kHz left) in Channel 3 & 4 of scope.
6. Aim CA-LCD remote at A-K5L IR window, press "On" button; CA-LCD #3 and COM IR will illuminate.
7. Press the "Off" button of the CA-LCD remote and CA-LCD number 3 and COM IR will go dark.

Source 4

1. Set the AX-6 #2 to position number 4.
2. Signal on the scope will not be present.
3. Press the "Source" button on the A-K5L.
4. The A-K5L will display "Src 4".
5. Verify undistorted signals (1 kHz right, 1.5 kHz left) in Channel 3 & 4 of scope.
6. Aim CA-LCD remote at A-K5L IR window, press "On" button; CA-LCD #4 and COM IR will illuminate.
7. Press the "Off" button of the CA-LCD remote and CA-LCD number 4 and COM IR will go dark.

Source 5

1. Set the AX-6 #2 to position number 5.
2. Signal on the scope will not be present.
3. Press the "Source" button on the A-K5L.
4. The A-K5L will display "Src 5".
5. Verify undistorted signals (1 kHz right, 1.5 kHz left) in Channel 3 & 4 of scope.
6. Aim CA-LCD remote at A-K5L IR window, press "On" button; CA-LCD #5 and COM IR will illuminate.
7. Press the "Off" button of the CA-LCD remote and CA-LCD number 5 and COM IR will go dark.

Source 6

1. Set the AX-6 #2 to position number 6.
2. Signal on the scope will not be present.
3. Press the "Source" button on the A-K5L.
4. The A-K5L will display "Src 6".
5. Verify undistorted signals (1 kHz right, 1.5 kHz left) in Channel 3 & 4 of scope.
6. Aim CA-LCD remote at A-K5L IR window, press "On" button; CA-LCD #6 and COM IR will illuminate.
7. Press the "Off" button of the CA-LCD remote and CA-LCD number 6 and COM IR will go dark.

Zone 2 through 8 Test

1. Press the power button to turn off the UUT*.
2. Move the A-K5L keypad from Keypad Port 1 to Port 2.
3. Repeat the Source Input Test.
4. Move the A-K5L to each port (2-8) repeating the previous Step 3 on each port
 - ***Turn OFF power each time *BEFORE* you plug or unplug a keypad.**
 - **You have a total of 8 Keypad ports to test.**

IMPORTANT: Step 3 of this section must be completed on each of the eight keypad ports before full functional test is considered complete.

Mute Test

While connected to Test Set Up and Signal Generator is running, verify Mute control:

1. Plug the 1/8" mini jack of the energized 12VDC power pack into the "Mute In" on the rear of the UUT.
2. The signal will be muted. No signal should be read on the Oscilloscope.
3. Remove the 1/8" mini jack from the "Mute In" of the UUT.
4. After 3 seconds, the signal should return to the level previous to muting.

Page Test

While connected to Test Set Up and 1ST Signal Generator running @ 1kHz 2V volts rms, verify Page control:

1. Set 2ND Signal Generator to 1 kHz 2 volts rms.
2. Insert signal from the 2nd Signal Generator into the Page In port on the UUT.
3. The A-K5L display "Page" as long as page signal is applied.
4. The 1.5 kHz signal from the 2nd Signal Generator should be read on the scope.
5. Adjust the "Page Trim" control on the UUT counterclockwise.
6. The Page signal amplitude will decrease.
7. Adjust the "Page Trim" control full clockwise.
8. The Page signal will increase.
9. Disconnect page signal, source audio and display should return.
10. In a few seconds you should read the 1kHz signal connected to Source 1.

Trigger Out Test

1. Place the 1/8" mini jack cord into the Trigger Out jack on the UUT.
2. Adjust the Voltmeter to read VDC.
3. Connect the other end of the 1/8" mini jack tip lead to the + of a Voltmeter.
4. Connect the ground end of the 1/8" jack to the – of a Voltmeter.
5. With the A-K5L powered on the Voltmeter should read +11.5VDC to +12VDC.
6. Press the power button on the A-K5L to turn off the keypad.
7. The Voltmeter should read Zero Volts DC.

Keypad Dip Switch Test

Set the Keypad Dip Switches on the A-C68 to the UP position

1. Power-Up all eight A-K5L keypads in UUT A-C68 port 1-8 and verify source 1 is selected.
2. Insert page signal into UUT A-C68.
3. Wait 5 seconds to verify that the displays on the A-K5Ls do **NOT** change to page.
4. Toggle the keypad dip switches to the DOWN position and remove the page signal from the UUT A-C68.
5. Power cycle the UUT A-C68.
6. Insert page signal into UUT A-C68.
7. Wait 5 seconds to verify that the displays on the A-K5Ls change to "page".
8. Remove the page signal from the UUT A-C68.
9. Verify that all A-K5L keypads turn off.

Learned IR Test

Program Hub:

ON BUTTON

1. Power-Up the UUT.
2. Press and RELEASE Setup button on the faceplate of the UUT.
3. Source/Test LED turns ON (green).
4. Aim A-SRC1 remote 2 inches away from IR In on faceplate of UUT.
5. Enter source number "S1".
6. Source/Test (green) blinks # to match source # then, turns OFF.
7. Cmd/Type (yellow) blinks SLOWLY
8. Enter command type "99" with A-SRC1.
9. Cmd/Type (yellow) turns OFF
10. Code/Key (orange) blinks FAST
11. Press command button to be LEARNED (button 1 on A-SRC1)
12. Code/Key (orange) turns OFF
13. IR Learn (red) blinks FAST
14. Aim SOURCE remote control (CA-LCD remote) at IR In
15. Press command button to be LEARNED (On command on CA-LCD)
16. IR Learn (red) blinks ONCE then turns OFF
17. Source/Test (green) blinks FAST
18. Aim A-SRC1 remote control at IR In
19. Test code - press learned command (1 on A-SRC1)
20. IR controlled device in port 1 and device in common IR port (CA-LCD2s) turn On.
21. IR Learn (red) blinks ONCE
22. Source/Test (green) turns OFF
23. Code/Key (orange) blinks FAST
24. Press Set-Up button twice, all LEDs turn off.
25. Use CA-LCD remote to turn off CA-LCD2s.

Test Learned IR:

1. Press the power button on the A-K5L to turn on the keypad.
2. Aim the A-SRC1 remote at the A-K5L and press 1 to turn On the IR controlled device.
3. Verify IR controlled device in port 1 and device in common IR port (CA-LCD2s) turn On.
4. Use CA-LCD remote to turn off CA-LCD2s.

Routed IR Test

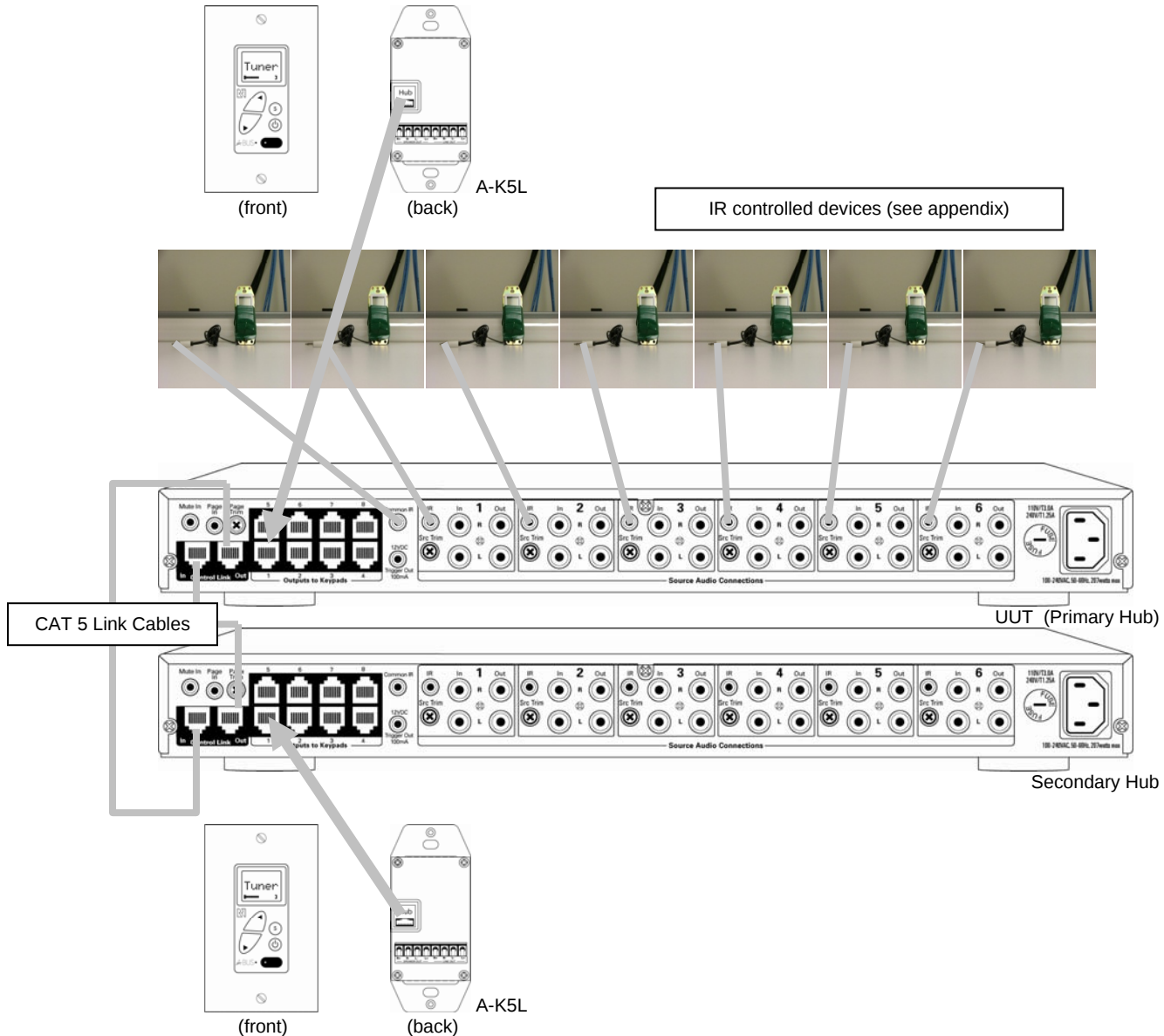
NOTE: Please refer to the diagram on the following page for IR Set-Up.

While connected to Test Set Up, verify IR control:

1. Press the power button on the A-K5L to turn on the keypad.
2. Press the "Source" button on the A-K5L until "Src 1" is displayed.
3. Press the "On" button of the CA-LCD remote.
4. CA-LCD number 1 and COM IR will illuminate.
5. Press the "Off" button of the CA-LCD remote.
6. CA-LCD number 1 and COM IR will go dark.
7. Press the "Source" button on the A-K5L to display "Src 2".
8. Press the "On" button of the CA-LCD remote.
9. CA-LCD number 2 and COM IR will illuminate.
10. Press the "Off" button of the CA-LCD remote.
11. CA-LCD number 2 and COM IR will go dark.
12. Press the "Source" button on the A-K5L to display "Src 3".
13. Press the "On" button of the CA-LCD remote.
14. CA-LCD number 3 and COM IR will illuminate.
15. Press the "Off" button of the CA-LCD remote.
16. CA-LCD number 3 and COM IR will go dark.
17. Press the "Source" button on the A-K5L to display "Src 4".
18. Press the "On" button of the CA-LCD remote.
19. CA-LCD number 4 and COM IR will illuminate.
20. Press the "Off" button of the CA-LCD remote.
21. CA-LCD number 4 and COM IR will go dark.
22. Press the "Source" button on the A-K5L to display "Src 5".
23. Press the "On" button of the CA-LCD remote.
24. CA-LCD number 5 and COM IR will illuminate.
25. Press the "Off" button of the CA-LCD remote.
26. CA-LCD number 5 and COM IR will go dark.
27. Press the "Source" button on the A-K5L to display "Src 6".
28. Press the "On" button of the CA-LCD remote.
29. CA-LCD number 6 and COM IR will illuminate.
30. Press the "Off" button of the CA-LCD remote.
31. CA-LCD number 6 and COM IR will go dark.

Link Test Set-Up

The Link Out of the LAST controller must be connected with a CAT-5 patch cable to the Link In of the FIRST controller to complete the link.



1. Press and hold setup on the faceplate of the UUT (Primary Hub) until the Ctrl ID LED turns amber, aim remote at controller, press "1" to set the hub, press the setup button to exit.
2. Press and hold setup on the faceplate of the Secondary Hub until the Ctrl ID LED turns amber, aim remote at controller, press "0" to set the hub, press the setup button to exit. Power-cycle Hubs.

Link Test

1. Perform an All On command by turning on the keypad in zone 1 of the UUT and then, press and hold it's power button until display says "Master". Verify that the A-K5L in the Secondary Hub turns on and the status LEDs on both Hubs turn green.
2. Perform an All Off command by turning off the A-K5L in the Secondary Hub and then, press and hold it's power button until display says "All Off". Verify the keypads in both Hubs are off and status LEDs for both Hubs are now red.
3. Perform the Routed IR test with the keypad connected to the Secondary Hub to control the IR equipment connected to the UUT (Primary Hub).

NOTE: Refer to the instructions given in the previous Routed IR Test.

Factory Initialization

Factory Initialization

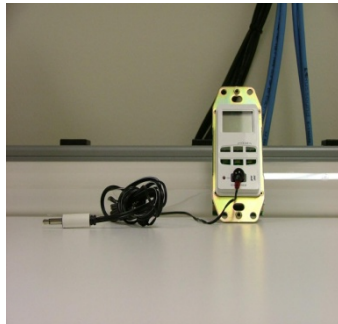
The following procedure will bring the A-H68 hub back to factory settings and erases all programming and user settings

1. Press and hold the setup button
 - The Ctrl ID Yellow LED will light up to indicate Controller ID mode
2. Press and hold the setup button again
 - The Fact Init orange LED will light up to indicate factory init mode
3. To perform the factory init, press the "All Off" and then "On" button on the A-SRC1 remote control under the A-BUS section of the remote control
 - Fact Init LED (orange) blinks very slowly twice at the start of the factory initialization. All LEDs will be off during the Fact. Init. All LEDs on the programming center are off during the factory init and once complete the Source/Test, Cmd/Type, and Fact Init LEDs will turn on steady.
4. Cycle power on the UUT.

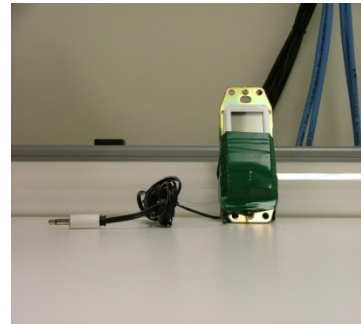
Appendix

- If FDT3.3 is not installed on your PC, go to the procedure for obtaining and installing “Flash Development Toolkit Version 3.3”.
- A-C68 A-Bus® Multizone Multisource Audio Controller Preliminary Testing Manual.
- R235LS User Manual
- A-K5L Manual
- **NOTE:** The Russound CA-LCD2 modified with 845.1 emitter set-up can be replaced by any IR controlled device system. It is provided here as an example:

Make 7 CA-LCD2 keypads with button elastomer removed and electrical tape over the area to keep IR light from bleeding into the next keypad. 12VDC must be wired to each keypad.



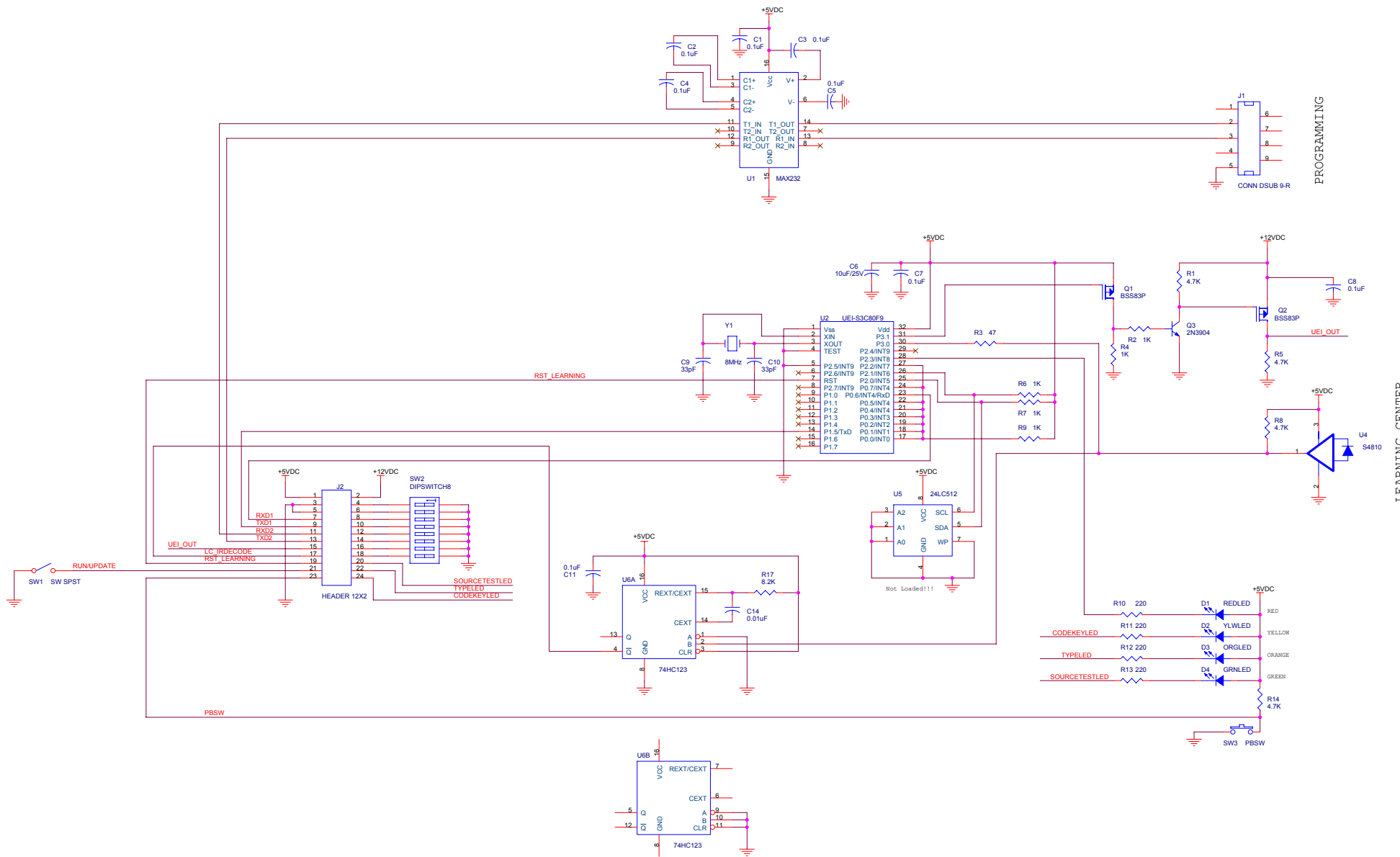
Keypad buttons removed
and IR845.1 placed over IR window



Electrical tape over button holes

Revision History

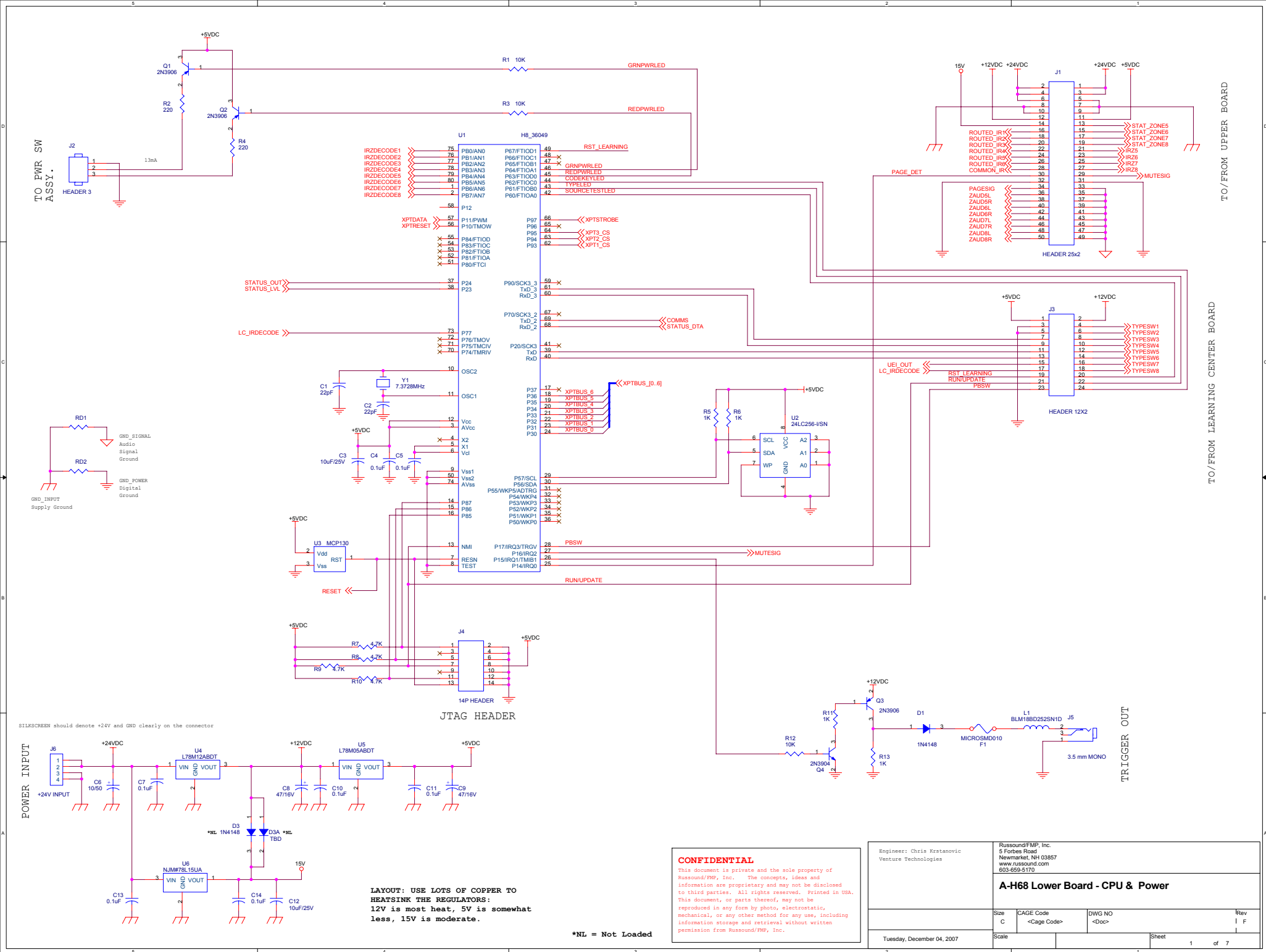
A-C68 Test Procedure Revision History			
Revision	Date	Revision Summary	Initial
1.1	4/30/07	Initial release (missing link test)	TomS
1.2	6/22/07	IR Device explained	TomS
1.3	7/26/07	Changed to A-SRC1 remote	TomS
1.4	8/08/07	Edit to correct small typos	TomS
1.5	10/22/07	Added Link Test	TomS
1.6	11/01/07	240VAC Test	TomS
1.7	12/05/07	Edit to Mute Test	TomS
1.8	12/06/07	Edit 240VAC Test	TomS
1.9	12/14/07	Edit Link Test	TomS
2.0	3/24/08	Edit Link Test	TomS
2.1	3/27/08	Edit Source Test	TomS
2.2	4/08/08	Keypad dip switch Test	TomS

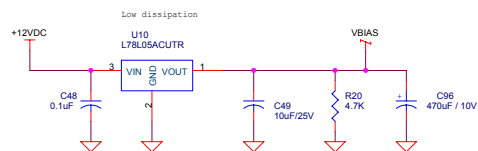
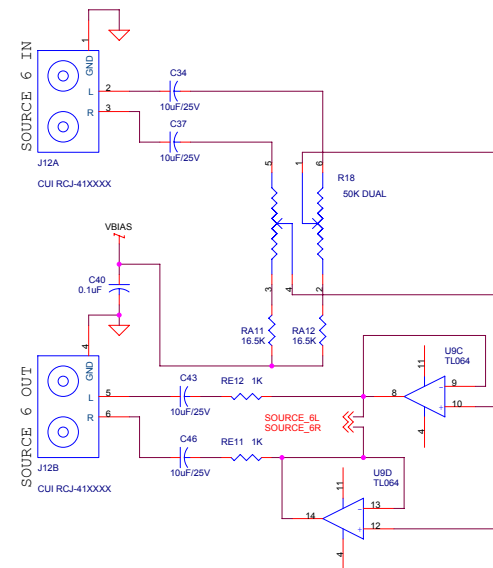
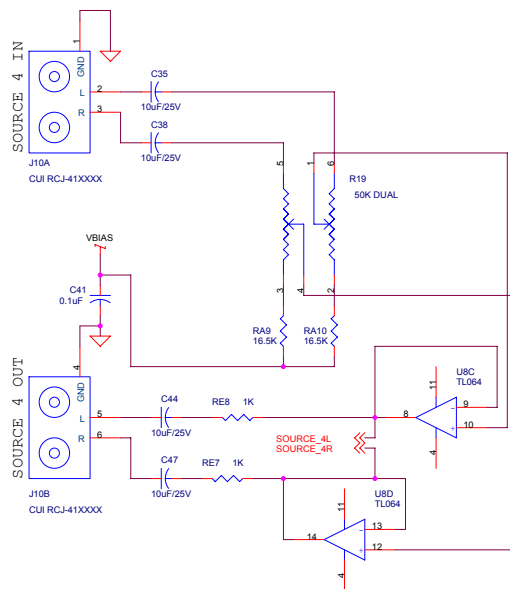
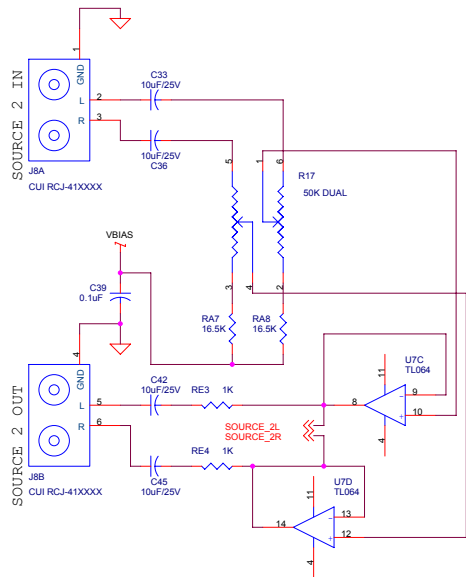
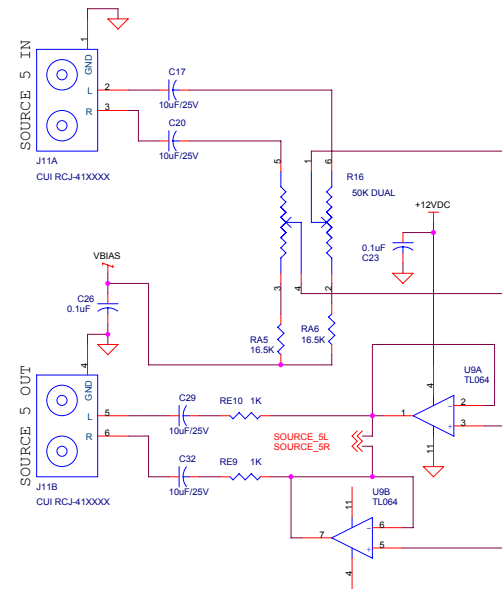
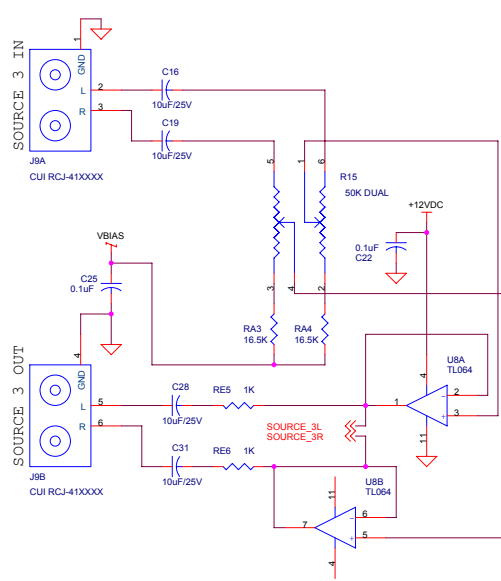
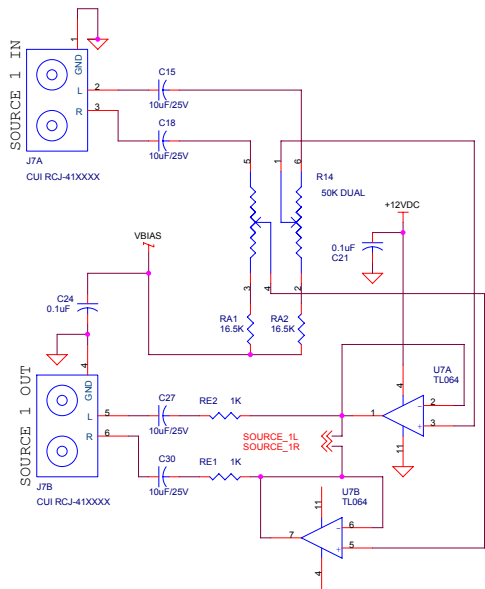


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A-H68 Learning Board			
Size C	CAGE Code <Cage Code>	DWG NO <Doc>	Rev I F
Tuesday, August 07, 2007	Scale	Sheet 1 of 1	



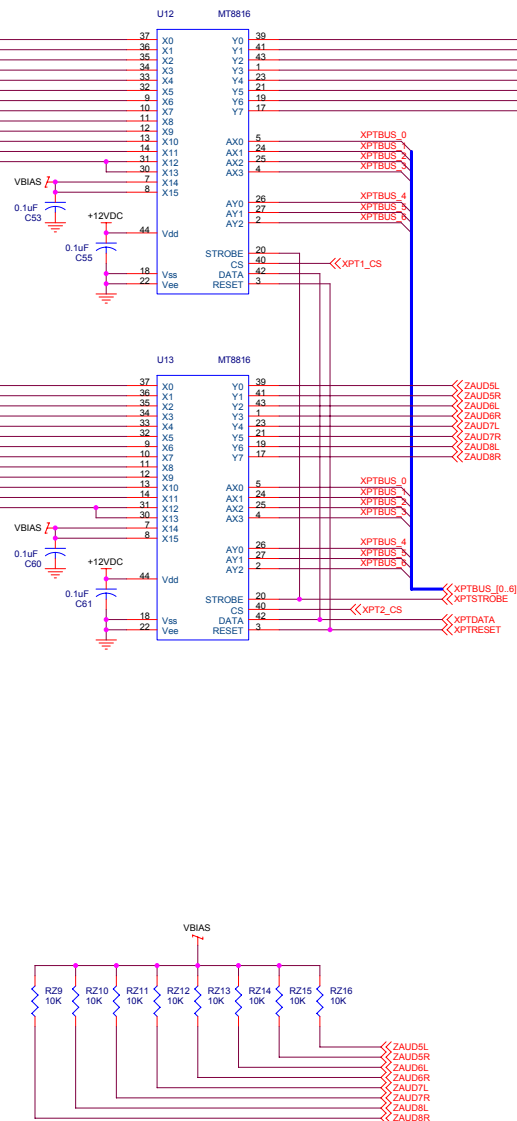


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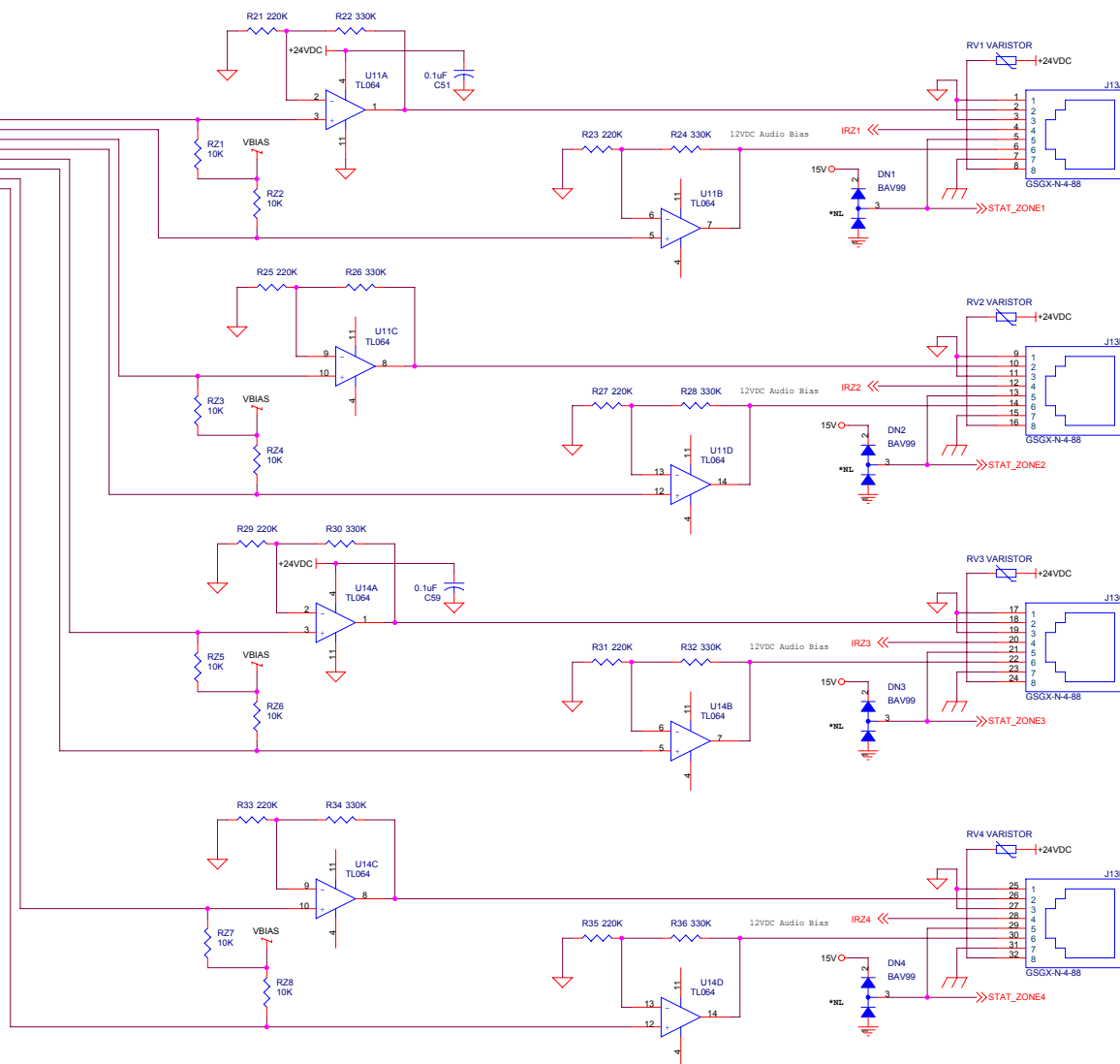
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		A-H68 Lower Board - Source audio inputs/loop outputs		
	Size C	CAGE Code <Cage Code>	DWG NO <Doc>	Rev I F
Tuesday, December 04, 2007	Scale		Sheet 2 of 7	

SOURCE_1L
SOURCE_1R
SOURCE_2L
SOURCE_2R
SOURCE_3L
SOURCE_3R
SOURCE_4L
SOURCE_4R
SOURCE_5L
SOURCE_5R
SOURCE_6L
SOURCE_6R
PAGESIG



Switch Load terminators (TMD).



*NL = Not Loaded

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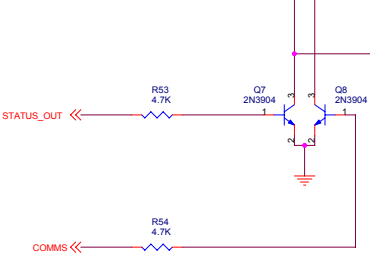
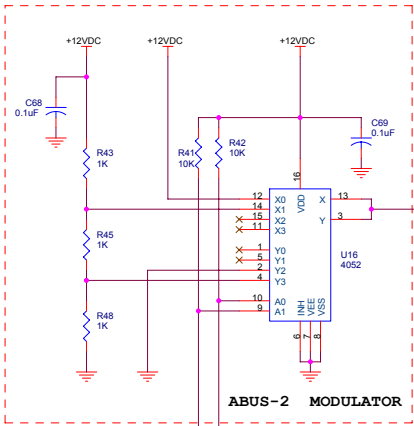
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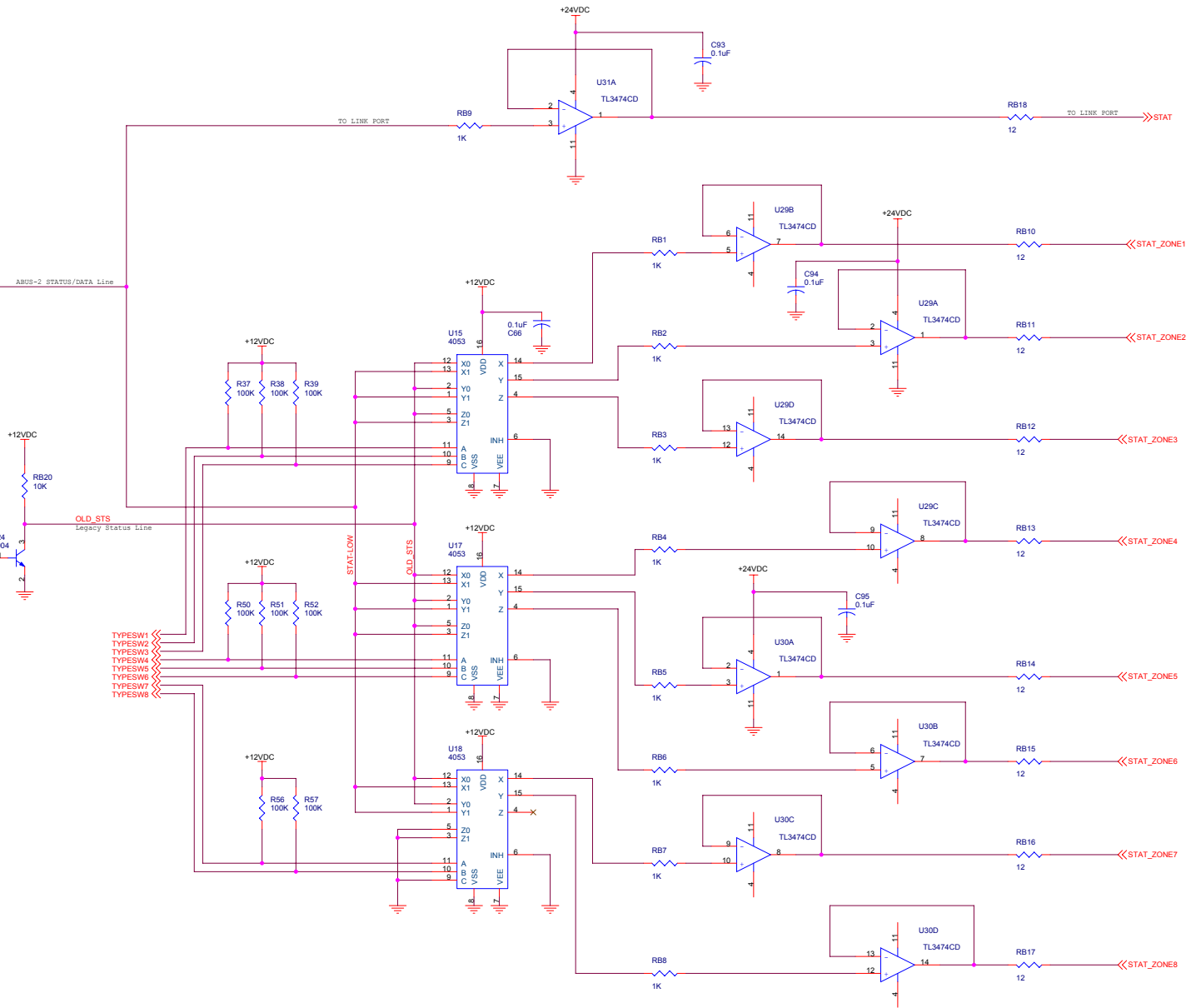
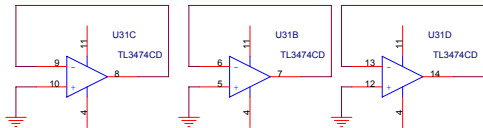
A-H68 Lower Board - Audio Distribution

Size	CAGE Code	DWG NO	Rev
C	<Cage Code>	<Doc>	F
Tuesday, December 04, 2007	Scale	Sheet	3 of 7

STATUS_OUT	COMMS (TX)	OUT_LEVEL
HI	1	12V
HI	0	8V
LO	1	0V
LO	0	4V



LEGACY MODULATOR



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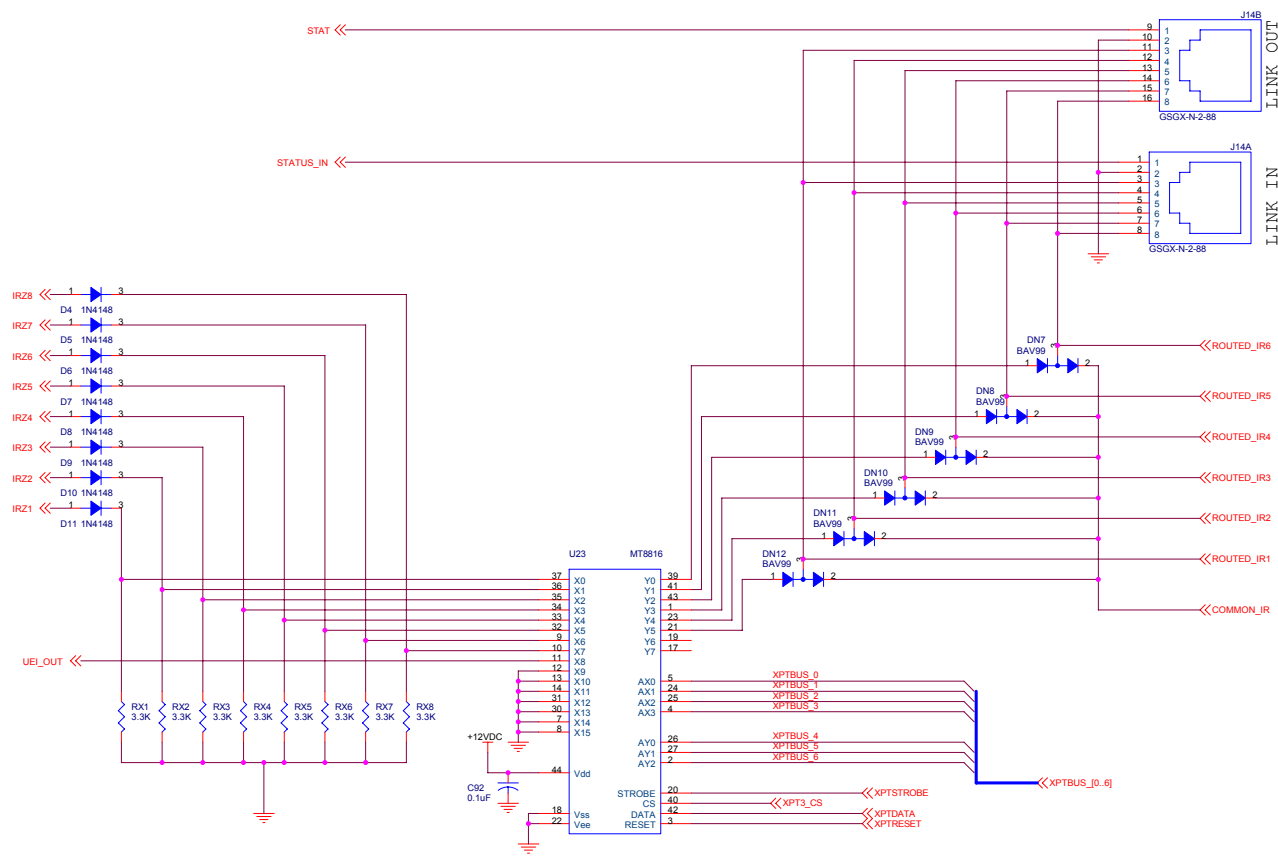
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A-H68 Lower Board - Status Modulator

Size	CAGE Code	DWG NO	Rev
C	<Cage Code>	<Doc>	F
Tuesday, December 04, 2007	Scale	Sheet	4 of 7



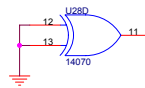
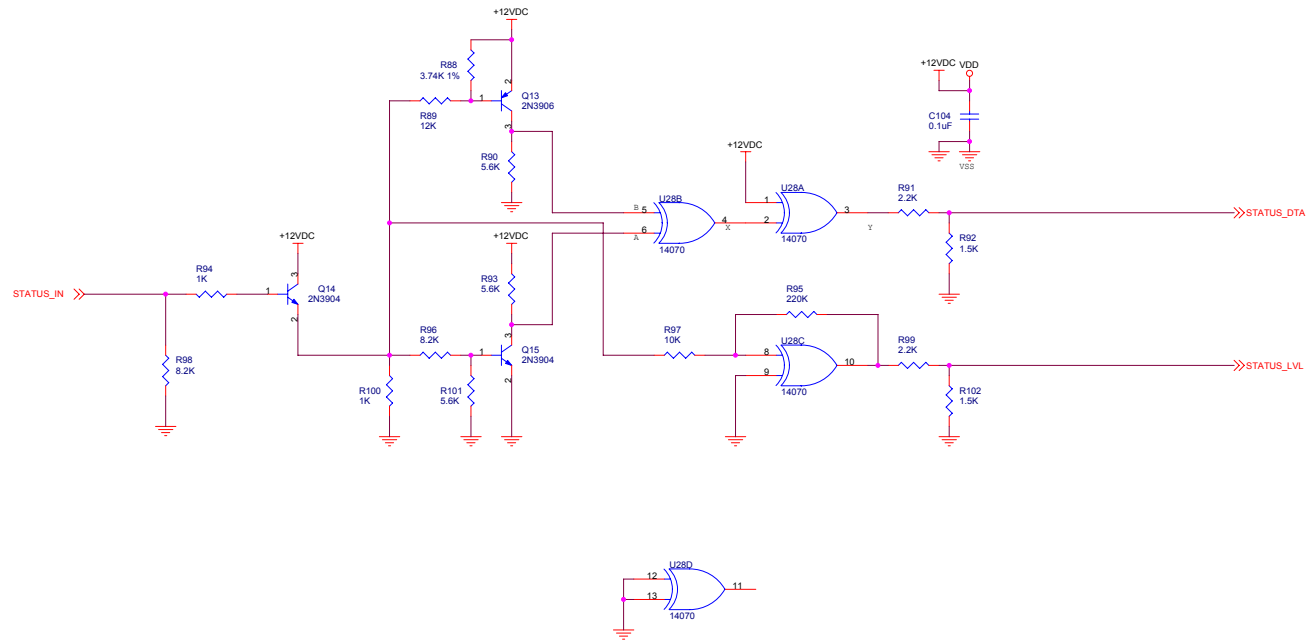
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		A-H68 Lower board - IR Distribution		
	Size C	CAGE Code <Cage Code>	DWG NO <Doc>	Rev I F
Tuesday, December 04, 2007	Scale		Sheet	5 of 7

STATUS LINE DATA DEMODULATOR

STATUS	A	B	X	Y
0V	DTA	1	/DTA	DTA
12V	1	/DTA	/DTA	DTA



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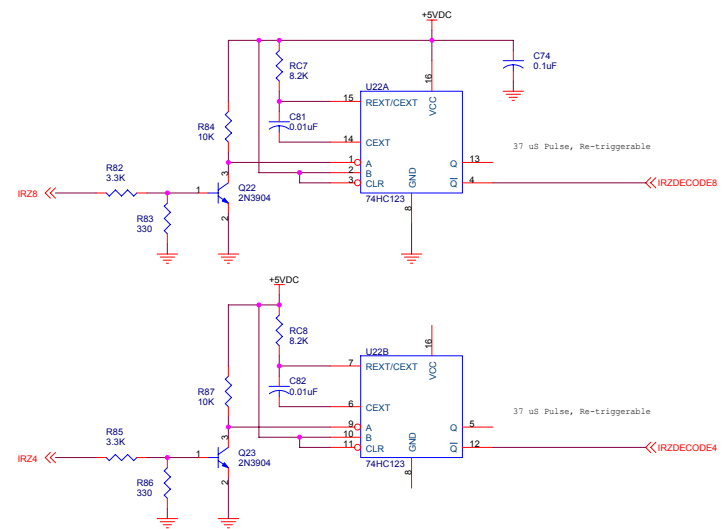
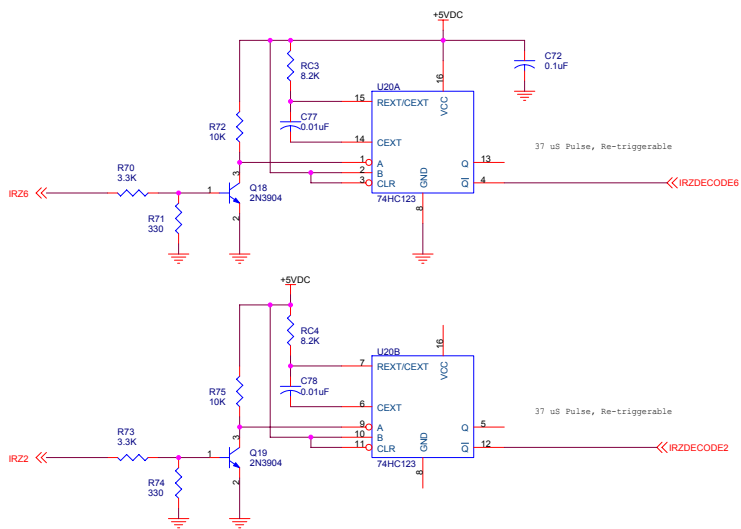
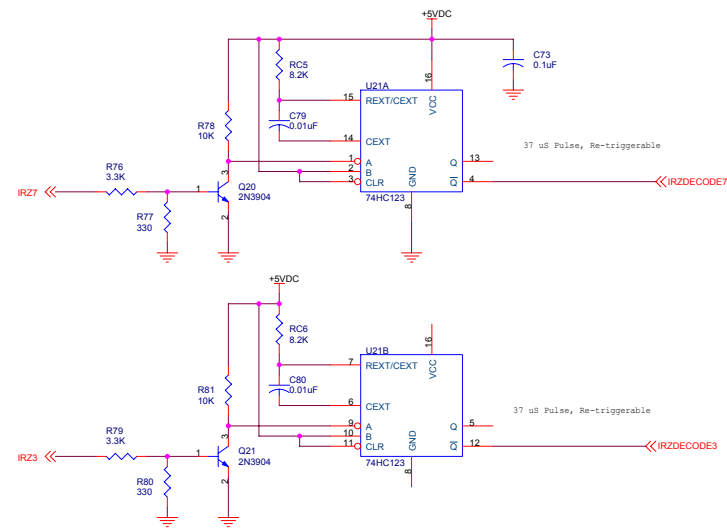
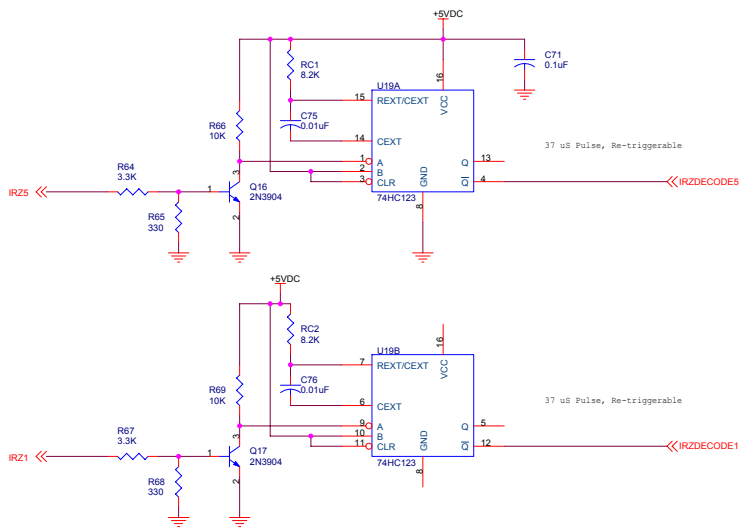
Engineer: Chris Krstanovic
Venture Technologies

Russound/FMP, Inc.
5 Forbes Road
Newmarket, NH 03857
www.russound.com
603-659-5170

A-H68 Lower board - STATUS DEMODULATOR

Size	CAGE Code	DWG NO	Rev
C	<Cage Code>	<Doc>	I F
Scale		Sheet	6 of 7

Tuesday, December 04, 2007

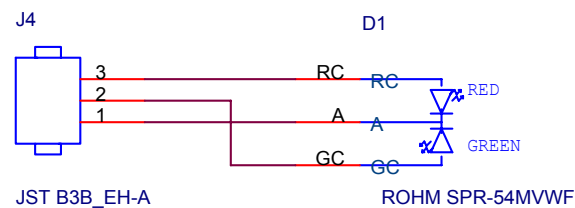
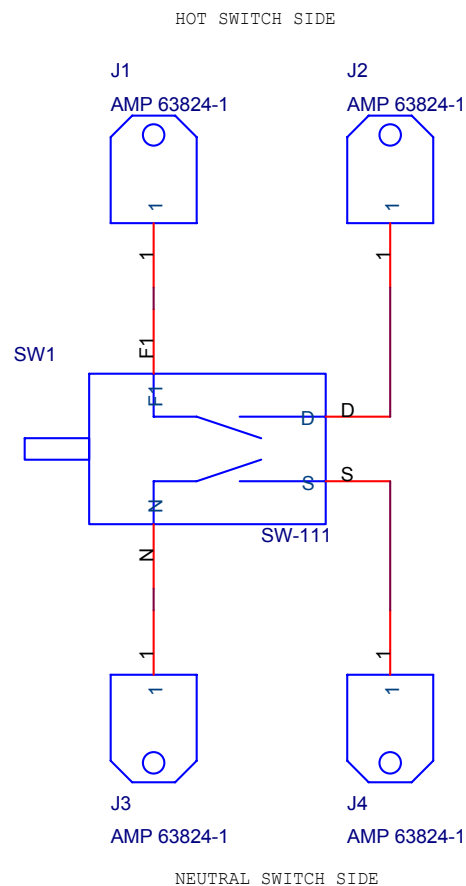


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Engineer: Chris Krstanovic Venture Technologies		Russound/FMP, Inc. 5 Forbes Road Newmarket, NH 03857 www.russound.com 603-659-5170	
		A-H68 Lower board - IR DECODER	
Size C	CAGE Code <Cage Code>	DWG NO <Doc>	Rev I F
Tuesday, December 04, 2007	Scale	Sheet 7 of 7	

KEEP LOW VOLTAGE CIRCUIT WELL SEPARATED FROM HIGH VOLTAGE SWITCH



PLACE QUICK CONNECT TERMINALS CLOSE TO SWITCH

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C. Krstanovic

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A-H68 Power Switch Board

Size
A

CAGE Code
<Cage Code>

DWG NO
<Doc>

Rev
C

Wednesday, October 04, 2006

Scale

Sheet

1 of 1

rev R

AC68 FINAL ASSY BOM

Item	Qty. EA	Description	Value	Source 1			Source 2	
				Mfg.	Part Number	REV	Mfg.	Part Number
1	1	Top Cover	Mild Steel CNC/ Pressed-Powder Coat	TBD	RUS32005	K		
2	1	Chassis	Mild Steel CNC/ Pressed-Powder Coat/ Screen	TBD	RUS32004	T		
3	1	Power Button	ABS, Inj Mold Natural/Screen Printing	TBD	RUS32012	F		
4	1	Chassis Molding	PC ABS, Inj Mold Natural	TBD	RUS32008	F		
5	1	Front Cover Molding	PC ABS, Inj Mold Natural/Screen Printing	TBD	RUS32011	C		
6	4	Foot Assy	See Drawing	TBD	RUS32015	C		
7	1	Learning Center PCB Assy	See ASSY	TBD	RUS32002	A		
8	1	Upper Rear PCB Assy	See ASSY	TBD	RUS32081	A		
9	1	Lower Rear PCB Assy	See ASSY	TBD	RUS32082	A		
10	1	Power PCB Assy.	See ASSY	TBD	RUS32014	A		
11	1	Programming Label	80mic Lexan/ PC - Satin	TBD	RUS32013	B		
12	2	Left and Right 1U rack ears	Al, Extrud. or Mach. -Black Anodise	TBD	RUS32016	A		
13	8	Rack ear mounting screw	M3 X 5 pozi pan Black Pas.	McMaster	92005A114			Or Equivalent
14	3	Prog. PCB MNTG SCREWS	M3 X 5 pozi pan Bright Zn.	McMaster	92005A114			Or Equivalent
15	6	Cover MNTG SCREWS, Side	M4 X 5 pozi pan Black Pas.	McMaster	92005A212			Or Equivalent
16	4	Front MNTG SCREWS	M4 X 5 pozi pan Black Pas.	McMaster	92005A212			Or Equivalent
17	2	Power Swich MNTG SCREWS	M3 X 5 Flat Head Phillips, Zn platerd Steel	McMaster	91420A114			Or Equivalent
18	6	RCA Jack Mounting Screws	SCREW Sheet Metal PANHEAD PHILLIPS 4X3/8	Building Fasteners	4X3/8 PHSMSPH			Or Equivalent
19	3	Cover MNTG SCREWS,Rear	M3 X 5 pozi pan Black Pas.	McMaster	92005A114			Or Equivalent
20	4	Rear PCB MNTG SCREWS	M3 X 35 pozi pan Bright Zn.	McMaster	92005A133			Or Equivalent
21	4	Foot MNTG SCREWS	M3 X 5 pozi pan Black Pas.	McMaster	92005A114			Or Equivalent
22	4	Power Supply MNTG SCREWS	M3 X 5 pozi pan Black Pas.	McMaster	92005A114			Or Equivalent
23	2	Power Supply Support Screws	M3 X 10 pozi pan Black Pas.	McMaster	92005A122			Or Equivalent
24	8	Lock Washers	WASHER LOCK METRIC M 3 ZINC INT TEETH	Building Fasteners	MLWZ 003			Or Equivalent
25	4	PCB Spacers	27.7mm long round spacer	Hansong	HS40-M-B009V1M011			Or Equivalent
26	1	Power Supply	24VDC-7.5A(110/240)	L.T.E	LTE200F-D41			
27	1	Upper Power Supply Insulator	Formex GK17, 0.017" Insulator. See ASSY DWG	TBD	RUS32018	A		
28	1	Lower Power supply Insulator	Formex GK17, 0.017" Insulator. See ASSY DWG	TBD	RUS32019	B		
29	2	Power Supply Support	See ASSY	TBD	RUS32017	D		
30	1	AC CONNECTOR MALE SNAP IN		TYCO	6ESRMC2		Rong Feng	SS-120
31	1	FPG1 panel mount 5x20 mm fuseholder		Schurter	3101.0015			Or Equivalent
32	1	FUSE 100-120VAC		Littelfuse	239 003P			Or Equivalent
33		Fuse 220-240VAC		Littelfuse	239 1.25P			
34	1	Ribbon Cable (Lower to LC PCB)		TBD	RUS32071	B		
35	1	Ribbon Cable (Lower to Upper PCB)		TBD	RUS32072	A		
36	1	Board Power Harness (Supply to Lower)		TBD	RUS32073	A		
37	1	Pwr SW Power Harnes (Supply to PWR PCB)		TBD	RUS32074	B		
38	1	Pwr SW Power Harnes (Lower to PWR PCB)		TBD	RUS32075	B		

39	1	Harness		TBD	RUS32076	A		
40	1	Harness		TBD	RUS32077	A		
41	1	Harness		TBD	RUS32078	A		
42	1	Harness		TBD	RUS32080	A		
43	4	Harness tiedown	3/4" Self Adhesive Cradle Mounts - BLACK	Eagle Plastics	#N3588B			Or Equivalent
44	4	Wire Ties	TIE WIRE 4" BLACK 18LB	3M	41930			Or Equivalent
45	1	Ground Label		Hansong	94-054002-0			Or Equivalent
46	1	Side Label	Side Label - Al Foil 250 micron	N/A	RUS32021	A		
47	1	Foam Pad (to be placed under switch)			Foam.DWG			

rev K

**RUS32002 LEARNING
CENTER (LC) BOM**

Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	Pack	Mfg.	Part Number
1	1	U1	MAX232	N/A	TI	MAX232DR	SO16		
2	1	U2	Microcontroller, pre-programmed, IR learning center	N/A	UEI	UEI IC 2005 3C80F9BPL-SO99	SMD		
3	1	U4	IR RECEIVER	N/A	Hamamatsu	S4810	TH		
4	0	U5	Serial EEPROM	N/A	Microchip	24LC512-I/SM	SO8		
5	1	U6	IC Retrig Multivibrator	N/A	TI	CD74HC123M96	SO16		Or Equivalent
6	2	Q1,Q2	3906 PNP	N/A	Phillips	PMBT3906 T/R	SOT-23	ON Semi	MMBT3906LT1G
7	1	Q3	3904 NPN	N/A	ON Semi	MMBT3904LT3G	SOT-23	Micro Com	MMBT3904-TP
8	1	D1	LED 3mm T1 clear red	N/A	Lumex	SSL-LX3044IC	TH		
9	1	D2	LED 3mm T1 clear yellow	N/A	Lumex	SSL-LX3044YC	TH		
10	1	D3	LED 3mm T1 clear orange	N/A	Lumex	SSL-LX3044SOC	TH		
11	1	D4	LED 3mm T1 clear green	N/A	Lumex	SSL-LX3044GC	TH		
12	8	C1,C2,C3,C4,C5,C7,C8,C11	0.1uF/50V	10.0%	Kemet	C0805C104K5RACTU	0805		
13	1	C6	CAP CER 10UF 25V Y5V	-20/80%	Taiyo Yuden	TMK316F106ZL-T	1206	Panasonic	ECJ-3YF1E106Z
14	2	C9,C10	33pF/50V	10.0%	Kemet	C0805C330J5GACTU	0805		
15	1	C14	0.01uF/50V X7R	10.0%	Kemet	C0805C103K5RACTU	0805		
16	4	R1,R5,R8,R14	4.7K	5.0%	Panasonic	ERJ-6GEYJ472V	0805		
17	5	R2,R4,R6,R7,R9	1K	5.0%	Panasonic	ERJ-6GEYJ102V	0805		
18	1	R3	47 ohm	5.0%	Panasonic	ERJ-6GEYJ470V	0805		
19	4	R10,R11,R12,R13	220 ohm	5.0%	Panasonic	ERJ-6GEYJ221V	0805		
20	1	R17	8.2K	5.0%	Panasonic	ERJ-6GEYJ822V	0805		

rev L	RUS32082 LOWER BOARD ASSY BOM											
					Source 1			Source 2				
Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	Pack	Mfg.	Part Number			
1	1	U1	H8 microcontroller	N/A	Renesas	DF36049HV	80-QFP					
2	1	U2	Serial EEPROM 128K 2.	N/A	Microchip	24LC256-I/SN	SO8		Or Equivalent			
3	1	U3	Reset Generator -4.5V	N/A	Microchip	MCP130T-450I/TT	SOT-23		Or Equivalent			
4	1	U4	REGULATOR 12V	N/A	ST Micro	L78M12ABDT	DPAK		Or Equivalent			
5	1	U5	REGULATOR 5V	N/A	ST Micro	L78M05ABDT	DPAK		Or Equivalent			
6	1	U6	REGULATOR 15V	N/A	NJR	NJM#78L15UA	SOT-89		Or Equivalent			
7	5	U7,U8,U9,U11,U14	QUAD OPA	N/A	TI	TL064ACDR	SO14		Or Equivalent			
8	1	U10	REGULATOR 5V	N/A	ST Micro	L78L05ACUTR	SOT-89		Or Equivalent			
9	3	U12,U13,U23	8X16 Analog crosspoint sw	N/A	Zarlink	MT8816AP1	PLCC44		Or Equivalent			
10	3	U15,U17,U18	IC MUX/DEMUX ANALOG 2CH	N/A	TI	CD4053BM96	SO16		Or Equivalent			
11	1	U16	IC MUX/DEMUX ANALOG 4CH	N/A	TI	CD4052BM96	SO16		Or Equivalent			
12	3	U29,U30,U31	IC OP AMP SGL SUPPLY HSR	N/A	TI	TL3474CD	14SOIC		Or Equivalent			
13	4	U19,U20,U21,U22	IC Retrigr Multivibrator	N/A	TI	CD74HC123M96	SO16		Or Equivalent			
14	1	U28	EX-OR Gate	N/A	ON-SEMI	MC14070BDR2G	14SOIC	TI	CD4070BM			
15	1	Q3	PNP Transistor	N/A	Fairchild	2N3906TFR	TO92		or Off-Shore Equivalent			
16	3	Q1,Q2,Q13	3906 PNP	N/A	Phillips	PMBT3906 T/R	SOT-23	ON Semi	MMBT3906LT1G			
17	14	Q4,Q7,Q8,Q14,Q15,Q16,Q17,Q18,Q19,Q20,Q21,Q22,Q23,Q24	3904 NPN	N/A	ON Semi	MMBT3904LT3G	SOT-23	Micro Com	MMBT3904-TP			
18	6	DN7,DN8,DN9,DN10,DN11,DN12	DIODE ULTRAFAST HI COND	N/A	Fairchild	BAV99	SOT-23		Or Equivalent			
19	9	D1,D4,D5,D6,D7,D8,D9,D10,D11	1N4148	N/A	Fairchild	MMBD4148SE	SOT-23	Micro Com	MMBD4148-TP			
20	2	C2,C1	22pF	5%	Panasonic	ECJ-1VC2A220J	0603					
21	35	C4,C5,C7,C10,C11,C13,C14,C21,C22,C23,C24,C25,C26,C39,C40,C41,C48,C51,C53,C55,C59,C60,C61,C66,C68,C69,C71,C72,C73,C74,C92,C93,C94,C95,C104	0.1uF / 50V Y5V(F)	-20/80%	MURATA	GRM188F51H104ZA01D	0603	Taiyo Yuden	UMK107F104ZA-T			
22	8	C75,C76,C77,C78,C79,C80,C81,C82	0.01UF 50V CERAMIC X	10%	AVX	06035C103KAT2A	0603					

23	27	C3,C12,C15,C16,C17,C18,C19,C20,C27,C28,C29,C30,C31,C32,C33,C34,C35,C36,C37,C38,C42,C43,C44,C45,C46,C47,C49	CAP CER 10UF 25V Y5V	-20/80%	Taiyo Yuden	TMK316F106ZL-T	1206	Panasonic	ECJ-3YF1E106Z			
24	2	C8,C9	47uF/16V Electr. 85C	20%	Panasonic	EEE-1CA470SP	SMD-D					
25	1	C96	CAP 470UF 10V ELECT	20%	ted Chemi-	EMVE100ADA471MHA0G	HA0					
26	1	C6	10uF/50V Electr. 85C	20%	Panasonic	EEE-1HA100SP	SMD-D					
27	7	R7,R8,R9,R10,R20,R53,R54	4.7K	5.0%	Yageo	RC0603JR-074K7L	0603	Rohm	MCR03EZPJ472			
28	1	RB19	47K	5.0%	Yageo	RC0603JR-0747KL	0603	Rohm	MCR03EZPJ472			
29	4	RV1,RV2,RV3,RV4	PTC Varistor, 1.6A radial thru-hole, 30V	N/A	Littelfuse Inc	030R0160U	TH					
30	31	RZ1,R1,RZ2,RZ3,R3,RZ4,RZ5,RZ6,RZ7,RZ8,RZ9,RZ10,RZ11,RZ12,R12,RZ13,RZ14,RZ15,RZ16,R41,R42,R66,R69,R72,R75,R78,R81,R84,R87,R97,RB20	10K	5.0%	YAGEO	RC0603JR-0710KL	0603	Panasonic	ERJ-3GEYJ103V			
31	2	R2,R4	220 ohm	5.0%	YAGEO	RC0603JR-07220RL	0603					
32	12	RA1,RA2,RA3,RA4,RA5,RA6,RA7,RA8,RA9,RA10,RA11,RA12	16.5K	1.0%	YAGEO	RC0603FR-0716K5L	0603					
33	30	R5,R6,R11,R13,R43,R45,R48,R94,R100,RB1,RB2,RB3,RB4,RB5,RB6,RB7,RB8,RB9,RE1,RE2,RE3,RE4,RE5,RE6,RE7,RE8,RE9,RE10,RE11,RE12	1K	5.0%	Panasonic	ERJ-3GEYJ102V	0603	Panasonic	ERJ-3GEYJ102V			
34	6	R14,R15,R16,R17,R18,R19	50K DUAL POT,12mm, w/o Bushing, Horizontal	20.0%	lta Electron	R1121GOXH1G503YJ0000	TH					
35	9	RB10,RB11,RB12,RB13,RB14,RB15,RB16,RB17,RB18	12 ohm	5.0%	YAGEO	RC0603JR-0712RL	0603					
36	9	R21,R23,R25,R27,R29,R31,R33,R35,R95	220K	5.0%	YAGEO	RC0603JR-07220KL	0603	Panasonic	ERJ-3GEYJ224V			
37	8	R22,R24,R26,R28,R30,R32,R34,R36	330K	5.0%	YAGEO	RC0603JR-07330KL	0603					
38	8	R37,R38,R39,R50,R51,R52,R56,R57	100K	5.0%	YAGEO	RC0603JR-07100KL	0603					
39	2	R92,R102	1.5K	5.0%	YAGEO	RC0603JR-071K5L	0603	Panasonic	ERJ-3GEYJ152V			
40	1	R91,R99	2.2K	5.0%	YAGEO	RC0603JR-072K2L	0603	Panasonic	ERJ-3GEYJ222V			

41	8	R65,R68,R71,R74,R77,R80,R83,R86	330 ohm	5.0%	YAGEO	RC0603JR-07330RL	0603					
42	16	R64,R67,R70,R73,R76,R79,R82,R85,RX1,RX2,RX3,RX4,RX5,RX6,RX7,RX8	3.3K	5.0%	YAGEO	RC0603JR-073K3L	0603					
43	1	R88	3.74K	1.0%	YAGEO	RC0603FR-073K74L	0603	Panasonic	ERJ-3EKF3741V			
44	1	R89	12K	5.0%	YAGEO	RC0603JR-0712KL	0603	Panasonic	ERJ-3GEYJ123V			
45	3	R90,R93,R101	5.6K	5.0%	YAGEO	RC0603JR-075K6L	0603	Panasonic	ERJ-3GEYJ562V			
46	10	R96,R98,RC1,RC2,RC3,RC4,RC5,RC6,RC7,RC8	8.2K	5.0%	YAGEO	RC0603JR-078K2L	0603	Panasonic	ERJ-3GEYJ822V			
47	1	J1	HEADER 25x2 / STRAIGHT -Au	N/A	3M	N2550-6002RB	TH					
48	1	J2	HEADER EH TOP 3POS 2.5MM	N/A	JST Sales America	B3B-EH-A(LF)(SN)	TH					
49	1	J3	HEADER 12X2 / GOLD	N/A	3M	N2524-6002RB	TH					
50	0	J4	HEADER VERT 14POS .100 15AU - JTAG (development)	N/A	AMP	5102153-2	TH					
51	1	J5	3.5 mm MONO	N/A	CUI	MJ-3536	TH					
52	1	J6	power header, 4 pin 0.156 ct	N/A	AMP	1-1318300-4	TH					
53	6	J7,J8,J9,J10,J11,J12	CONN RCA JACK QUAD R/A RED/WHT	N/A	CUI	RCJ-412323-GP	TH					
54	1	J13	Quad RJ45 modular jack	N/A	Kycon	GSGX-N-4-88	TH					
55	1	J14	Dual RJ45 modular jack	N/A	Kycon	GSGX-N-2-88	TH					
56	1	Y1	7.3728MHZ XTAL	N/A	ABRACON	ABLS-7.3728MHZ-B2-T	HC49US					
57	1	F1	POLY SWITCH 0.10A RESET FUSE SMD	N/A	Raychem/ Polyswitch	MICROSMD010-2	SMD					
58	1	L1	Ferrite CHIP 2500 OHM 50mA	N/A	MURATA	BLM18BD252SN1D	0603	TDK	MMZ1608A252B			
59	1	RAW PCB		N/A								

rev G

RUS32014 POWER BOARD ASSY BOM

Item	Qty. EA	Reference	Value/Desc.	Tol %	Source 1			Source 2	
					Mfg.	Part Number	Pack	Mfg.	Part Number
1	4	J1,J2,J3,J4	CONN TAB FIT R/A BRASS .250	N/A	AMP	63951-1			Or Equivalent
2	1	SW1	DPST AC plunger switch	N/A	Dongnan Elect.	KDC-A11-210-60			Or Equivalent
3	1	J5	Header, 3 pin 2.5mm shrouded polarized	N/A	JST	B3B-EH-A(LF)(SN)			Or Equivalent
4	1	D1	LED, Bicolor R/G T1-3/4 Common Cathode	N/A	ROHM	SPR-54MVWF	T1-3/4		Or Equivalent
5	1	(for D1)	LED SPACER FOR T-1 3/4 1/4"(6.4mm)	N/A	RICHCO	LEDS3- 4-26			Or Equivalent
6	1	RAW PCB		N/A					

Item	Qty. EA	Reference	Value/Desc.	Tol %	Source 1			Source 2	
					Mfg.	Part Number	Pack	Mfg.	Part Number
1	1	U1	OPAMP	N/A	ON Semi	LM324DR2G	SO14	TI	LM324DR
2	4	U2,U3,U4,U5	DUAL OPAMP	N/A	TI	TL062CDR	SO8		
3	2	Q8,Q9	3904 NPN	N/A	ON Semi	MMBT3904LT3G	SOT-23	Micro Com	MMBT3904-TP
4	4	DN1, DN2,DN3,DN4	DIODE ULTRAFAST HI COND	N/A	Fairchild	BAV99	SOT-23		Or Equivalent
5	2	D1, D2	1N4148	N/A	Fairchild	MMBD4148SE	SOT-23	Micro Com	MMBD4148-TP
6	7	C1,C3,C5,C8,C11,C14,C17	0.1uF / 50V Y5V(F)	-20/80%	MURATA	GRM188F51H104Z A01D	0603	Taiyo Yuden	UMK107F104ZA-T
7	1	C2	CAP CER 10UF 25V Y5V	-20/80%	aiyo Yude	TMK316F106ZL-T	1206	Panasonic	ECJ-3YF1E106Z
8	1	C4	0.47uF Ceramic 25V	-20/80%	aiyo Yude	TMK107F474ZA-T	0603	MURATA	GRM188F51E474 ZA01D
9	4	RV1,RV2,RV3,RV4	PTC Varistor, 1.6A radial thru-hole, 30V	N/A	Littelfuse Inc	030R0160U	TH		
10	7	R1,R5,R7,R11,R14,R18,R24	330 ohm	5.0%	YAGEO	RC0603JR-07330RL	0603		
11	2	R2,R4	3.3K	5.0%	YAGEO	RC0603JR-073K3L	0603		
12	11	R19,R25,R42,R43,R48,R49, R50,R51,R52,R53,R54	10K	5.0%	YAGEO	RC0603JR-0710KL	0603	Panasonic	ERJ-3GEYJ103V
13	1	R10	14K	1.0%	YAGEO	RC0603FR-0714KL	0603		
14	1	R13	82 ohm	5.0%	YAGEO	RC0603JR-0782RL	0603		
15	9	R15,R30,R32,R34,R36,R39, R41,R45,R47	330K	5.0%	YAGEO	RC0603JR-07330KL	0603		
16	10	R17,R28,R29,R31,R33,R35, R38,R40,R44,R46	220K	5.0%	YAGEO	RC0603JR-07220KL	0603	Panasonic	ERJ-3GEYJ224V
17	1	R20	5.6K	5.0%	YAGEO	RC0603JR-075K6L	0603	Panasonic	ERJ-3GEYJ562V
18	1	R21	8.2K	5.0%	YAGEO	RC0603JR-078K2L	0603	Panasonic	ERJ-3GEYJ822V
19	2	R37,R22	4.7K	5.0%	Yageo	RC0603JR-074K7L	0603	Rohm	MCR03EZPJ472
20	1	R27	2.7K	5.0%	Yageo	RC0603JR-072K7L	0603	Rohm	MCR03EZPJ472
21	1	R8	50K POT	25.0%	Bourns	3309W-1-503	TH	Bourns	3319W-1-503
22	1	J10	HEADER 25x2 RA - Au	N/A	3M	N2550-5002RB	TH		
23	1	J9	Quad RJ45 modular	N/A	Kycon	GSGX-N-4-88	TH		
24	1	J2	SJ1-3533N	N/A	CUI	SJ1-3533N	TH		
25	8	J1,J3,J4,J5,J6,J7,J8,J11	3.5 mm MONO	N/A	Yueqing City Dongai Elect. Factory	PJ-357	TH		
26	1	RAW PCB		N/A					

21	1	SW1	SW SPST	N/A	Apem	MHSS1104	TH		
22	1	SW2	DIPSWITCH8	N/A	Grayhill	90HBW08PT	SMD		
23	1	SW3	SWITCH TACT GULLWING	N/A	ITT	KSC421G 70SH LFS	SMD		
24	1	Y1	Crystal, 8.000MHz	N/A	ECS	ECS-80-18-5PX-TR	SMD		
25	1	J1	Connector, DSUB 9P recept	N/A	Tyco	5747150-2	TH		
26	1	J2	HEADER 12X2 / GOLD	N/A	3M	N2524-6002RB	TH		
27	1	RAW PCB		N/A					

rev G RUS32071 RIBBON ASSY BOM

					Source 1			
Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	Mfg.	Part Number
1	2	J1, J2	CONN IDC SOCKET 50POS	N/A	TYCO	1-1658621-0		Or Equivalent
2			CABLE RIBBON MULTI 50 COND .050"	N/A	Any	Any		Or Equivalent
3	1		100mm long Heat Shrink Tubing - 3/4"	N/A	Alpha Wire	FIT-105 3/4"		

rev F RUS32072 RIBBON ASSY BOM

					Source 1		Source 2	
Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	Mfg.	Part Number
1	2	J1, J2	CONN IDC SOCKET 24POS	N/A	TYCO	1658621-5		Or Equivalent
2	1		CABLE RIBBON MULTI 24 COND .050"	N/A	Any	Any		Or Equivalent

rev GRUS32073 Harness ASSY BOM

					Source 1			Source 2	
Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	REV	Mfg.	Part Number
1	2	J1, J2	CONN PLUG HOUSING EP .156 4POS	N/A	TYCO	1-1123722-4			Or Equivalent
2	8	J1, J2	CONN EP CONTACT 18-22AWG TIN	N/A	TYCO	1318912-1			Or Equivalent
3	1		AWG 18 Wires - 150mm - UL1015	N/A	Any	Any			Or Equivalent

rev G

RUS32074 Harness ASSY BOM

Item	Qty. EA	Reference	Value/Desc.	Tol %	Source 1			Source 2	
					Mfg.	Part Number	REV	Mfg.	Part Number
1	2	J1, J2	CONN FAST RECEPT 18-22 AWG .250	N/A	TYCO	2-520264-2			Or Equivalent
2	1	J3	CONN PLUG HOUSING EP .156 3POS	N/A	TYCO	1-1123722-3			Or Equivalent
3	2	J3	CONN EP CONTACT 18- 22AWG TIN	N/A	TYCO	1318912-1			Or Equivalent
4	1		AWG 18 Wires - 150 mm - UL1015	N/A	Any	Any			Or Equivalent

rev H

RUS32075 Harness ASSY BOM

					Source 1		Source 2	
Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	Mfg.	Part Number
1	2	J1, J2	CONN HOUSING EH 3POS 2.5MM CRIMP	N/A	JST	EHR-3		Or Equivalent
2	6		CONN TERM CRIMP EH 22-30AWG	N/A	JST	SEH-001T-P0.6		Or Equivalent
3	1		AWG 24 Wires - 330mm	N/A	Any	Any		Or Equivalent
4	1	J1	300mm long, HEATSHRINK FP301 1/4"	N/A	3M	FP301 1/4"		Or Equivalent

rev G

RUS32076 Harness ASSY BOM

					Source 1		Source 2	
Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	Mfg.	Part Number
1	1	J1	CONN FAST RECEPT 18-22 AWG .250	N/A	TYCO	2-520184-2		Or Equivalent
2	1	J2	CONN FAST RECEPT 18-22 AWG .187	N/A	TYCO	2-520275-2		Or Equivalent
3	1		AWG 18 Wires - BLUE, 150 mm - UL1015	N/A	Any	Any		Or Equivalent

Rev G

RUS32077 Harness ASSY BOM

					Source 1			Source 2	
Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	REV	Mfg.	Part Number
1	1	J1	CONN FAST RECEPT 18-22 AWG .250	N/A	TYCO	2-520184-2			Or Equivalent
2	1		AWG 18 Wire - BROWN, 60 mm - UL1015	N/A	Any	Any			Or Equivalent

rev G

RUS32078 Harness ASSY BOM

Item	Qty. EA	Reference	Value/Desc.	Tol %	Source 1			Source 2	
					Mfg.	Part Number	REV	Mfg.	Part Number
1	1	J1	CONN FAST RECEPT 18-22 AWG .187	N/A	TYCO	2-520275-2			Or Equivalent
2	1		AWG 18 Wire - BROWN, 60 mm - UL1015	N/A	Any	Any			Or Equivalent

rev G

RUS32080 Harness ASSY BOM

					Source 1		Source 2	
Item	Qty. EA	Reference	Value/Desc.	Tol %	Mfg.	Part Number	Mfg.	Part Number
1	1	J1	CONN FAST RECEPT 18-22 AWG .187	N/A	TYCO	2-520275-2		Or Equivalent
2	1	J2	CONN RING 14- 18AWG #6 TIN CRIMP	N/A	TYCO	61793-1		Or Equivalent
3	1		AWG 18 Wires - Green, 50 mm - UL1015	N/A	Any	Any		Or Equivalent



COPY

Ref. Certif. No.

US-TUVR-3759

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST
CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE)
CB SCHEME

SYSTEME CEI D'ACCEPTATION MUTUELLE DE
CERTIFICATS D'ESSAIS DES EQUIPEMENTS
ELECTRIQUES (IECEE) METHODE OC

CB TEST CERTIFICATE

Product
Produit

A-BUS Multizone Multisource Audio Controller

Name and address of the applicant
Nom et adresse du demandeur

Russound/FMP, Inc.
5 Forbes Road
Newmarket, NH 03857 US

Name and address of the manufacturer
Nom et adresse du fabricant

Same as applicant

Name and address of the factory
Nom et adresse de l'usine

INGOT CORPORATION
NO.39, 21ST ROAD,
TAICHUNG INDUSTRIAL PARK
TAICHUNG CITY, TAIWAN R.O.C. (408)

Note: When more than one factory, please report on page 2
Note: Lorsque il y a plus d'une usine, veuillez utiliser la 2^{ème} page

Ratings and principal characteristics
Valeurs nominales et caractéristiques principales

AC 100-240V, 50-60Hz, 207W max.

Trademark (if any)
Marque de fabrique (si elle existe)

Russound

Model / Type Ref.
Ref. De type

A-C68

Additional information (if necessary, may also be reported
on page 2)
Les informations complémentaires (si nécessaire, peuvent
être indiqués sur la 2^{ème} page)

Complies with requirements as well as group and national differences
where applicable for AU, CA, DE, DK, MY, NO, GB, US, and SE.

A sample of the product was tested and found
to be in conformity with
Un échantillon de ce produit a été essayé et a été
considéré conforme à la

PUBLICATION
IEC 60065 + Amd 1

EDITION
7th Edition (2001)

As shown in the Test Report Ref. No. which forms part of
this Certificate
Comme indiqué dans le Rapport d'essais numéro de
référence qui constitue partie de ce Certificat

30781094.001

This CB Test Certificate is issued by the National Certification Body
Ce Certificat d'essai OC est établi par l'Organisme National de Certification



TUV Rheinland
of North America

July 09, 2007

Page 1 of 1

Date:

Signature:

Marlies Raap

Certificate



Certificate no.

CU 72071703 02

License Holder:

Russound/FMP, Inc.
5 Forbes Road
Newmarket NH 03857
USA

Manufacturing Plant:

Hansong (Nanjing) Technology
Co., Ltd
Jiangning Development Zone
8th Kangping Rd.

211100 Nanjing
China

Test report no.: USA-WS 30781094 004

Client Reference: John Cronk

Tested to: UL 60065:2003 R11.06
CSA C22.2.60065:2003+A1:06

Certified Product: A-BUS Multizone Multisource Audio Controller License Fee - Units

Change:

Following Manufacturing Plant no longer valid:

INGOT CORPORATION
21ST ROAD, NO.39
408 TAICHUNG INDUSTRIAL PARK
TAICHUNG CITY, Taiwan - R.O.C.

(K751698)

Addition:

Manufacturing Plant: see above

(K752356)

Appendix: 1, 1-21

Inh. = 740859 / Deb. = 740859 / Fert. = 752356

Licensed Test mark:



Signature

A handwritten signature in black ink, appearing to read "M. Raap".

Dipl.-Ing. M. Raap
QA Certification Officer

Date of Issue
(day/mo/yr)

02/04/2008

Test Report Number:		30760587.001 Russound - A-Bus.doc		Test Report Summary	
Prüferbericht Nr.:					
Applicant:		Russound/FMP, Inc.		Tel: (603) 659-5170	
Auftraggeber:		5 Forbes Road		Fax: (603) 659-5388	
		Amplified Keypad system		John Cronk	
Type of Equipment:		Amplified Keypad system			
Gegenstand der Prüfung:					
Model Numbers:		Trademark:			
Bezeichnung: A-BUS		Ursprungszeichen: 			
Standards:		Date Of Testing:			
Prüfgrundlage: See details below		April 12 th – 18 th 2007			
Standard Number	Description	Severity Level or Limit	Minimum Acceptable Performance Criteria	Summary Result	
EN 55020:2002 +A1: 2003	Electromagnetic Immunity of broadcast receivers and associated equipment	See Below	See Below	Complies	
EN 55020 Section 5.6	Measurement of electrical fast transients	1.0kV on AC Input Power port	B	Complies	
EN 55020 Section 5.7	Measurement of immunity to induced voltages	0.15-30MHz, 130dBµV (emf) 30-100MHz, 120dBµV (emf) 100-150MHz, 120-110dBµV (emf) 1kHz, 80% AM	A	Complies	
EN 55020 Section 5.8	Measurement of immunity from radiated fields	1kHz 80% AM between 0.15 – 150MHz, 125dBµV/m 900MHz, 3V/m, 1/8 Duty Cycle, 217Hz repetition frequency	A A	Complies	
EN 55020 Section 5.9	Electrostatic Discharge Immunity	±8 kV Air Discharge, ±4 kV Contact Discharge to HCP & VCP	B	Complies	
EN 55013: 2001 +A1: 2003	Limits and methods of measurement of radio disturbances characteristics of broadcast receivers and associated equipment	See Below	See Below	Complies	
EN 55013:2001 +A1: 2003	Disturbance Power	Table 4	NA	Complies	
FCC §15.109(a) and 15.107(a)	Radiated Emissions and Conducted Emissions	Class B	NA	Complies	
EN 61000-3-2: :2000 + A2: 2005	Power Harmonics	Class A	NA	Complies	
EN 61000-3-3:1995 +A1: 2001	Voltage Fluctuation	Per Section 5	NA	Complies	
Tested only for the standards listed above, by the request of the applicant. Evaluation to other required standards for EMC compliance is the responsibility of the applicant.					
Place of Test:		TUV Rheinland of North America, 12 Commerce Road, Newtown, CT 06470 USA			
Prüfört:		E-mail: info-new@tuv.com Web: http://www.tuv.com Phone: (203) 426-0888 Fax: (203) 429-4009		FOR THE SCOPE OF ACCREDITATION UNDER NVLAP LAB CODE 200111-0	
Test Result:		Unit presented for testing complied with criteria shown above. Additional information is contained in the following pages.			
Prüfergebnis:					
Tested By:		Dieter Baldamus		Checked By:	
Der Sachverständige:				Bruce Fagley	
					
July 23, 2007		July 23, 2007			
Date, Signature		Date, Signature			
Datum, Unterschrift		Datum, Unterschrift			

The test results contained in this report refer exclusively to the product(s) presented for testing. No liability may be assumed for models or products not referred to herein. This test report may not be published or duplicated in part without permission of the testing body. This test report by itself does not constitute authorization for the use of any TÜV Rheinland test mark. This report must not be used by the applicant to claim product endorsement by TÜV Rheinland, NVLAP or any agency of the U.S. Government.

TÜV Rheinland of North America, Inc., North American Headquarters, 12 Commerce Road, Newtown, CT 06470 - Tel (203)426-0888 - Fax (203)426-4009



DECLARATION OF CONFORMITY

Completed date: 12/29/08

Manufacturer's Name: Russound

Manufacturer's Address: 5 Forbes Road, Newmarket N.H. 03857

Telephone Number: 1-603-659-5170

Fax Number: 1-603-659-5388

Equipment Description: CONSUMER ELECTRONICS AUDIO DISTRIBUTION SYSTEM
CONTROLLER WITH KEYPADS.

Equipment Model Designation: A-C68, A-K3, A-K5L, A-KSC and A-LC3.

**Application of Council Directive: 73/23/EEC on the harmonization of the laws related to
Member States relating to electrical equipment designed for use within certain voltage
limits, as amended by: Council Directive 93/68/EEC and**

Council Directive 89/336/EEC on the approximation of the laws related to Member States relating
to electromagnetic compatibility, as amended by: Council Directive 93/68/EEC.

Referenced Safety Standards: Referenced EMC Standards:

CB Certificate Issued: 06/19/08

CSA C22.2.60065 : 2003 + A1 : 06

UL 60065 : 2003 R11. 06

IEC 60065 : 2001 + Amd 1

EN 55020:2002 +A1: 2003

EN 55020 Section 5.6

EN 55020 Section 5.7

EN 55020 Section 5.8

EN 55020 Section 5.9

EN 55013: 2001 +A1: 2003

FCC 15.109(a) and 15.107(a)

EN 61000-3-2: :2000 + A2: 2005

EN 61000-3-3:1995 +A1: 2001

I, the undersigned, hereby declare that the equipment specified above conforms to the above
Directive(s) and Standard(s).

Signature:

A handwritten signature in black ink, appearing to read 'Peter Engel'.

Printed Name: Peter Engel

Title: Engineering Support