HARDWARE INSTALLATION INSTRUCTIONS

MZC-66

Multi-Zone Audio/Video Amplifier Controller

SAFETY INSTRUCTIONS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: To reduce the risk of electric shock, do not remove cover, (or back). No user serviceable parts inside. Refer servicing to qualified service personnel.

The lightning flash with arrowhead symbol, when in an equilateral triangle, is intended to alert the user to the presence of in-insulated "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.

APPLICABLE FOR USA, CANADA OR WHERE APPROVED FOR USAGE

CAUTION: TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE PLUG TO WIDE SLOT, INSERT FULLY

ATTENTION: POUR EVITIER LES CHOCS ELECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU AU FOND

Read all of these instructions before operating and save instructions for later use.

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 and in the instructions should be adhered to.
4. **Follow Instructions –** All operating and use 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.

PORTABLE CART WARNING

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 –** Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.
12. **Power-**Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and at the point where they exit from the appliance.
13. **Cleaning –** The appliance should be cleaned only as recommended by the manufacturer.
14. **Power Lines –** An outdoor antenna should be located away from the power lines.
15. **Nonuse Periods –** The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
16. **Object and Liquid Entry –** Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
17. **Damage Requiring Service –** The appliance should be serviced by qualified service personnel when:
    A. The power-supply cord or the plug has been damage; or
    B. Objects have fallen, or liquid has spilled into the appliance; or
    C. The appliance has been exposed to rain; or
    D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
    E. The appliance has been dropped or the enclosure damaged.
18. **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.

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INTRODUCTION

Thank you for purchasing the SpeakerCraft MZC-66 Multi-Zone Audio/Video Amplifier Controller. The MZC-66 contains the excellent performance and reliability that SpeakerCraft products have been recognized for. The MZC-66 features the flexibility needed for the most demanding custom installation applications. It is ideal for use in residential and commercial multi-zone applications. For best performance, please carefully read the instructions in this manual.

MZC-66 Is The Most Versatile Multi-Zone Audio/Video Control Solution Available Today.

- Power In Amplification ... 12 channels of 30 watt state-of-the-art digital amplification for maximum efficiency in a small chassis.

- Power In Control...Complex control made simple with EZ-Pad's and IMKP's abilities to execute single IR commands or complex macros with the press of a button. EZ-Pad and IMKP Keypads are the ONLY keypads available today that give the installer the ability to change the number of Source buttons based on the user's needs. MODE 3.1 offers additional flexibility with a 3.1" high-resolution color LCD for display of graphic 'Virtual Buttons' and metadata from iPods, SpeakerCraft Tuners and MODE Jukebox.

- Power In Programming...The flexibility of EZ-Tools Programming Software allows system design for any number of sources from one to six (twelve, six A/V, six audio only, when using iPod/MODE Base/MODE Adapters and MODE 3.1 Keypads) and the option to convert unused source buttons to function buttons as needed. EZ-Tools programming is the most powerful and flexible multi-zone audio system programming software available today.

WHAT'S INCLUDED

1 - MZC-66 Multi-Zone Audio/Video Amplifier Controller
1 - Power Cord
6 - 5-circuit Screw Down Plug-in Connectors
6 - 4-circuit Screw Down Plug-in Connectors
4 - RCA Shorting Plugs
1 - Room Labels Sheet
1 - IRE-3T Test Emitter
1 - MZC-66 Quick Start Guide
1 - Firmware Notice

IMPORTANT NOTE

THIS MANUAL ONLY COVERS INSTALLATION AND HOOKUP. THOUGH CAPABLE OF SOME BASIC FUNCTIONS OUT OF THE BOX SUCH AS ON/OFF, SOURCE SELECTION AND VOLUME/MUTE, CONFIGURATION OF MZC-66 ADVANCED FEATURES REQUIRES SPEAKERCRAFT EZ-TOOLS PROGRAMMING SOFTWARE. EZ-TOOLS AND THE EZ-TOOLS MZC PROGRAMMING INSTRUCTIONS CAN BE DOWNLOADED FROM: www.speakercraft.com.

PRODUCT FEATURES

- 6 Independent Zones (Expandable to 24)
- 6 External Audio/Video Source Inputs
- 12 Channel Audio Amplifier @ 30 watts per channel
- Source Power Management
- Whole-House Party and Control Modes
- Telephone and Audio/Video Paging
- Doorbell Mute
- 2 Programmable 12V Inputs for Doorbell/Page Trigger or Source Status
- 1 Dry Contact Closure
- RS485 Control I/O
- 6 Configurable Preamp Outputs (One per Zone)
- 1 Common IR Output
- 6 Zone IR Outputs (One per Zone) for Dedicated Zone Source Control
- 6 Audio/Video Loop-Throughs for easy Connections in Expanded Systems
- 6 IR Loop-Throughs for Source Control in Expanded Systems
- Rear Panel Programming Port
- Upgradable Firmware
- Programmed With EZ-Tools Programming Software
- 2 Year Warranty

SYSTEM OVERVIEW

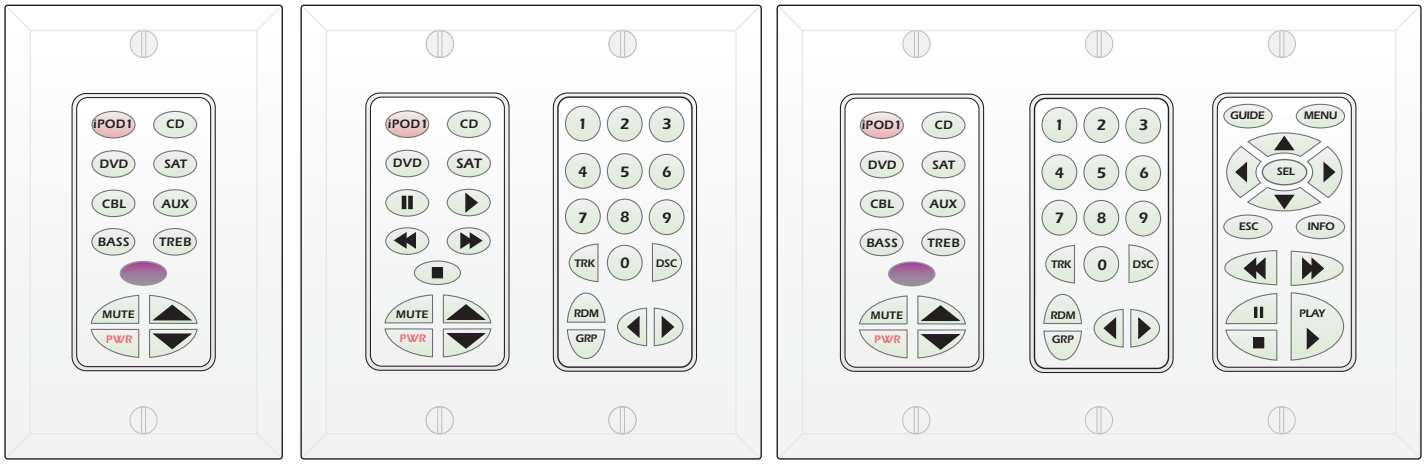
The SpeakerCraft MZC-66 System consists of four subsystems. First, the Keypads, (EZ-Pad, IMKP, MODE 3.1, not included) can be setup in a variety of configurations to meet virtually any client requirement. They are connected via convenient CAT-5 cable with home run lengths of up to 1000' (305m); (MODE, 500'; 152m) to the centrally located MZC-66 Multi-Zone Audio/Video Amplifier Controller and source components. The MZC-66 contains the "brains" of the system, taking key location data (button presses) from the keypads to trigger IR, RS232 and RS485 commands to control system functions and source components. Programming is accomplished using EZ-Tools, a SpeakerCraft developed Windows® software system. A fourth item, the LTM-1.0 Learning Test Module, is an installer's tool (not included) for learning and teaching special IR commands that are not included in the EZ-Tools Command Library.

KEYPAD CONFIGURATIONS

EZ-PAD

One keypad option for MZC-66 system control is the SpeakerCraft EZ-Pad System. EZ-Pads can be configured in single, double or triple-gang configurations as shown in **Figure 1**. (Decorator style cover plates are not included. Screw-less "Snap-On" type cover plates can also be used. Each keypad module must be ordered separately.)

Each keypad comes with a set of factory installed "default buttons" plus a good variety of additional buttons for changes to the default configuration. The default buttons can be easily changed to meet the needs of any installation. Additional buttons are available separately for purchase. See the SpeakerCraft Catalog and Price Sheet for the latest availabilities or call SpeakerCraft Customer Service.



MKP-1.1 (optional) Single Gang

MKP-1.0 **NKP-1.0** (optional) Two Gang

MKP-1.1 **NKP-1.0** (optional) Three Gang **FKP-1.0**

Figure 1
EZ-Pad Gang Configurations

IMKP

Another option for MZC-66 System control is the SpeakerCraft IMKP Series Keypads. The IMKPs are a Euro-Design version of the EZ-Pads that have similar functionality in a mechanical package that fits European style in-wall junction boxes. They are available in 2 and 3 gang configurations and each includes a SpeakerCraft IR Receiver with ANS. See: **IMKP-2.1/IMKP-1.1 Installation Instructions** for additional information. IMKP-2.1/IMKP-1.1 Installation Instructions can be downloaded from www.speakercraft.com.

MODE 3.1

The third, and best option for MZC-66 system control, is the SpeakerCraft MODE 3.1. MODE 3.1 is a graphic display keypad that combines the convenience and configurability of EZ-Pad/IMKP style hard keys with graphic 'Virtual Buttons' that can be created in EZ-Tools for any function imaginable. In addition, MODE 3.1 displays metadata from the MZC as well as iPod (when controlled with a SpeakerCraft MODE Base), SpeakerCraft Tuners and MODE Jukebox. MODE 3.1 requires a special mounting bracket and bezel, both of which are included with MODE 3.1. See: **MODE 3.1 Installation Instructions** for additional information. MODE 3.1 Installation Instructions can be downloaded from www.speakercraft.com.

EZ-PAD FEATURE DESCRIPTIONS

EZ-Pads come in four basic modules as shown. The MKP-1.0 and MKP-1.1 are Master Keypads and one must be used in each MZC-66 Zone using a keypad. The MKP-1.1 features a built-in IR receiver and has one less function button than the MKP-1.0, but are otherwise identical. The NKP-1.0 Numeric and FKP-1.0 Function key modules may be thought of as "slaves" to the Master Keypad (they will not work alone), providing more buttons for additional numeric and function commands. MKPs, IMKPs, and MODE 3.1s will all work right out of the box for basic functions such as Source Select /ON, Volume/Mute and OFF. Configuration of advanced features and source control requires programming with EZ-Tools.

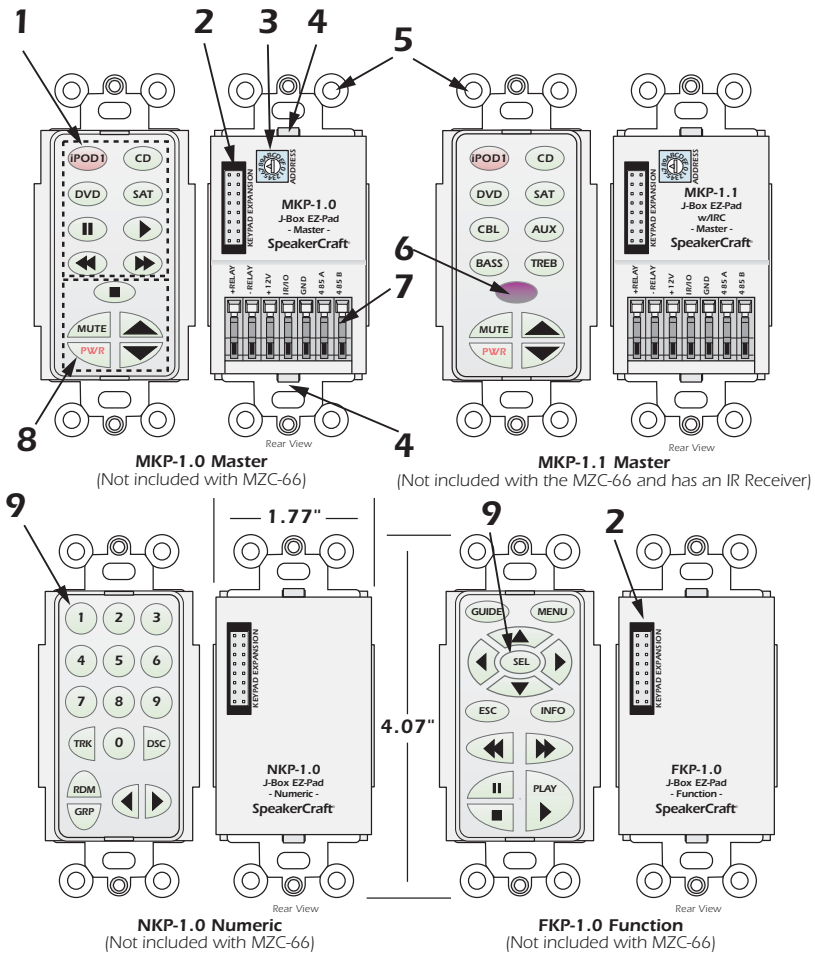


Figure 2
EZ-Pad Features

1. **MKP-1.0/MKP-1.1 SOURCE/FUNCTION BUTTONS –** Any of this set of eight buttons can be programmed as a Source Select or transport/function button for the MZC-66. One of the eight must always be designated as a Source Button. When the system is off, all buttons have a background green color. When a source button is pressed, it turns to a low-level red color to show the active source and the system is on in that zone. (Backlight Timeout can be set in EZ-Tools for EZ-Pad and IMKP. MODE 3.1 Backlight is configured in the MODE Keypad Settings Menu.)

2. **KEYPAD EXPANSION TERMINAL –** This 16-pin header terminal is used to inter-connect the **NKP-1.0** and **FKP-1.0** EZ-Pad modules for numeric and function key expansion as needed. A ribbon cable is packed with each **NKP-1.0** and **FKP-1.0** module for making these connections.

3. **ADDRESS SWITCH –** An unique hex address must be set for each Master Keypad when connected on a common bus within a single zone. Unique addresses are not required zone-to-zone (one keypad per zone). It provides up to 16 addresses (0 to F).

4. **SNAP TABS –** *These tabs hold the decorator style insert panel to the metal mounting plate and are easily released for changing buttons.*

5. **MOUNTING PLATE –** *Standard plate allows the keypad module to be attached to standard in-wall J-Boxes using the 2 screws provided. Also allows attachment of standard and screw-less, snap-on decorator type cover plates.*

6. **IR RECEIVER LENS –** *The MKP-1.1 includes SpeakerCraft's exclusive ANS (Ambient Noise Suppressor) IR Receiver, built-in. The IR Receiver allows use of a handheld remote for control of the system and IR controlled source components.*

7. **EZ-CONNECT TERMINALS –** *These seven spring-loaded terminals accept wire sizes 14 to 28 AWG for connection of the following:*

   - **+RELAY/–RELAY –** *For connection of the external EPR-1.0 EZ-Pad Relay Speaker Muting Module. (Refer to Designated Relay Mute Key section and* **Figures 6 & 19**).
   - **+12V DC –** *Powers the Keypad, including the internal IR Receiver on the MKP-1.1. Includes reverse voltage protection.*
   - **IR/IO (Data) –** *Sends IR control signals for control of system components.*
   - **GND –** *Return for Power, IR signal and Data.*
   - **485 A/485 B –** *Balanced, bi-directional system communications data.*

8. **FUNCTION BUTTONS –** *These lower 5 buttons (4 buttons on the MKP-1.1) are primarily used for volume, mute and power, but can also be programmed for any function except source select. These buttons glow a low-level background green and do not change color when pressed. Button background lighting can be programmed to go off after a set time of inaction, or stay on continuously as programmed in EZ-Tools.*

9. **NUMERIC AND FUNCTION BUTTONS –** *These buttons are used for direct numeric access of discs and tracks, selection of tuner presets, transport functions and menu navigation. All numeric and function buttons, including those on the Master Keypads, glow a low-level background green and do not change color when pressed. This background lighting can be programmed to go off after a set time of inaction, or stay on continuously as programmed in EZ-Tools.*

FEATURE DESCRIPTIONS

MZC-66 FRONT PANEL

The MZC-66 is an 6-Zone, 6-Source Audio/Video Amplifier Controller. It serves as the "brains" of the entire keypad system and provides audio and video switching and control for up to six external sources. Twelve 30W/channel digital audio power amplifiers provide clean, powerful audio for up to six zones.

The Front Panel features a Master Power ON/OFF Switch and indicator and Zone ON/OFF Status is also displayed on the front panel to show system activity.

The Rear Panel is neatly laid out to provide clear access for all system control, audio, video, paging and trigger connections.

System Programming is done via connections on the Rear Panel.

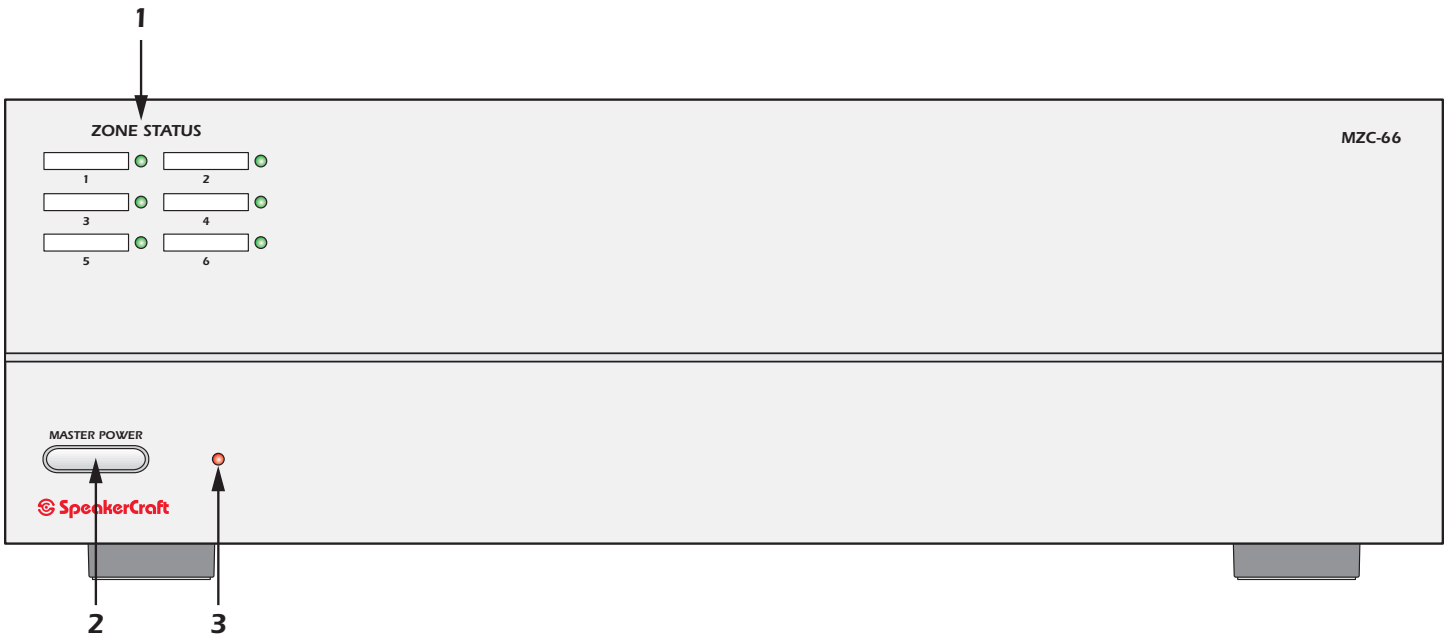


Figure 3
MZC-66 Front Panel Features

1. **ZONE STATUS LED INDICATORS AND LABELS –** Six, green LEDs indicate the zones that are currently active. Indented spaces accept adhesive backed labels for zone/room identification. A sheet of descriptive labels, typical of room or area names used in homes, are included.

2. **MASTER POWER SWITCH –** When pressed to the in position, the MZC-66 is placed in the power ON standby condition, permitting individual zones to be turned ON and OFF by keypad or touch panel commands. In the OFF (out) position, power from the AC mains is completely turned off.

3. **RED INDICATOR LED –** Indicates when the Master Power switch is in the depressed position and that power has been applied from the AC mains.

MZC-66 REAR PANEL

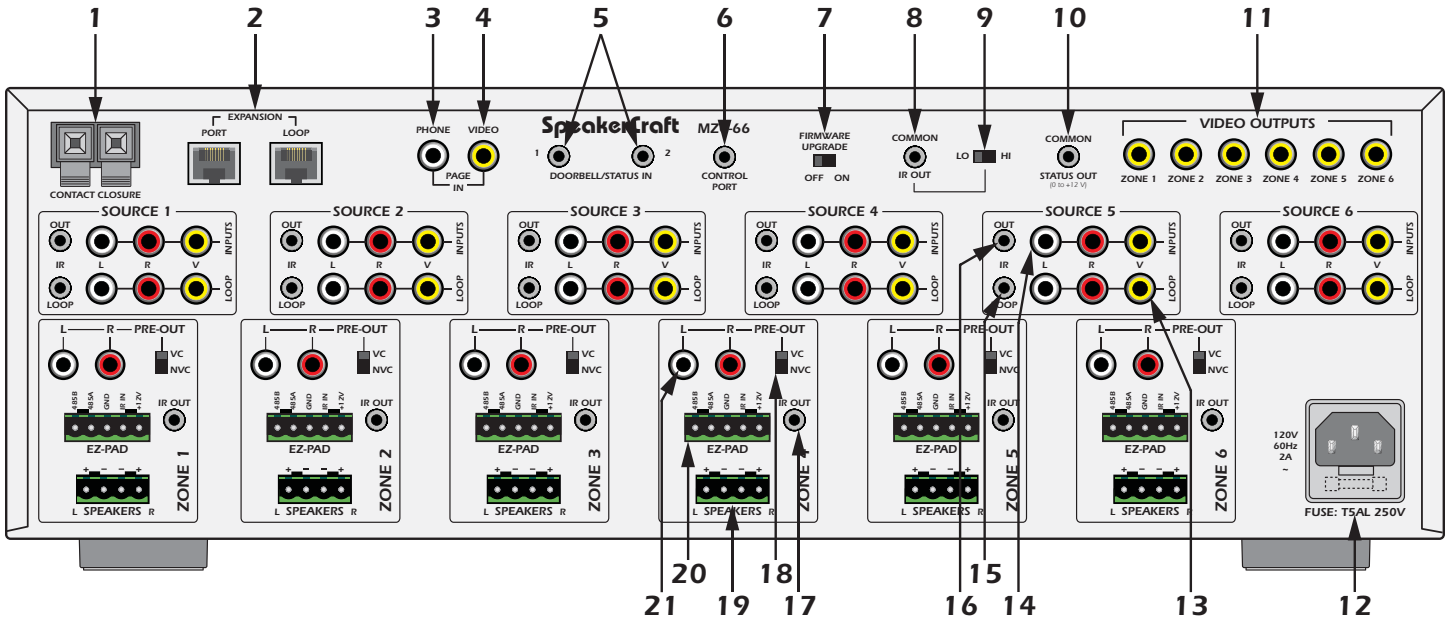


Figure 4
MZC-66 Rear Panel Features

1. **CONTACT CLOSURE —** One, single pole dry relay contact used to activate any device that can be controlled or triggered by a switch closure. The closure can be programmed within EZ-Tools to be activated by keypad presses, EZCode IR or within macro commands for Momentary, Toggle and Open/Close Paired operation. Spring loaded terminals accept wire sizes from 24 to 14 AWG. Internal relay contacts are rated at 2A/30V AC or DC.

2. **EXPANSION PORT/LOOP —** Two, RJ45 jacks primarily used for looping system data to multiple MZC-66's in expanded systems. These jacks can also be used for connection of specialized RS485 controlled products such as the SpeakerCraft MODE Base for adding iPods and additional Sources. (See: **MODE 3.1 Installation Instructions** for additional information.) These connections can also be used with the SpeakerCraft RSA-1.0 Remote Serial Adapter for control of up to 16 RS232 devices. (See: **RSA-1.0 Installation Instructions** for additional information.)

3. **PHONE PAGE IN —** One, RCA jack provides input for line level audio source such as telephone systems, door mics or other audio paging sources. This jack is programmable in EZ-Tools, to turn on as an 'Event', when triggered by the DOORBELL/STATUS IN Jacks, item 5.

4. **VIDEO PAGE IN —** One, RCA jack provides input for composite video from doorbell paging systems, cameras or other composite video sources. This jack is programmable in EZ-Tools, to turn on as an 'Event', when triggered by the DOORBELL/STATUS IN Jacks, item 5.

5. **DOORBELL/STATUS IN 1 & 2 —** Two, 3.5mm mini jack trigger inputs work in conjunction with the PHONE and VIDEO PAGE IN jacks, items 3 & 4. When triggered, the Page Inputs can be turned on in selected zones as programmed in EZ-Tools. If Paging is not required, these jacks can also be programmed as STATUS INPUTS for power management of Source or Zone components. **POLARITY:** TIP= +V; SLEEVE=GND. **INPUT VOLTAGE:** 3-30V AC or DC to trigger the ON condition. Voltage must drop below 1V AC or DC for OFF.

6. **CONTROL PORT —** One, 3.5mm 4-circuit mini jack used for all Controller and Keypad programming. It also accommodates factory firmware upgrades in conjunction with the **FIRMWARE UPGRADE ON/OFF SWITCH.** See: **EZ-Tools MZC Programming Instructions** for additional information.

7. **FIRMWARE UPGRADE ON/OFF SWITCH -** One, two position switch enables the MZC-66 Control Port for Firmware Upgrades. See: **EZ-Tools MZC Programming Instructions** for additional information.

8. **COMMON IR OUTPUT —** One, 3.5mm mini jack outputs all IR commands from IR sensors and Keypads regardless of zone origin. **POLARITY:** TIP=SIGNAL; SLEEVE=GND.

9. **HI/LO SWITCH —** One, two position switch, sets high or low IR power output to the Common IR Output jack. Set to the **LO** setting when driving standard low power emitters (SpeakerCraft IRE-1.0, 2.0, 3.0 and 4.0). Set to **HI** when driving a high power emitter (SpeakerCraft IRE-5.0 Blaster) for teaching IR commands into learning remotes. **HI OUTPUT:** 110mA; **LO OUTPUT:** 13mA. **CAUTION: THE HI POSITION WILL SMOKE LOW POWER EMITTERS!**

10. **COMMON STATUS OUT —** One, 3.5mm mini jack will go high (+12V DC) when any zone is turned ON and will go LOW (under 1V DC) when the last zone is turned OFF. **POLARITY:** TIP=+12V DC; SLEEVE=GND. **MAX OUTPUT:** 100 mA at 9.5V DC.

11. **VIDEO OUTPUTS —** Six, RCA jacks provide a dedicated composite video output, one for each Zone. 75 ohm outputs provide matched line impedance for high quality video over RG6 coax for lengths up to 500 feet.

12. **IEC TYPE AC MAINS RECEPTACLE AND FUSE —** One, Standard IEC 3-conductor AC line cord receptacle, connects to included AC power cord. Also houses the rear panel replaceable AC mains fuse (T5AL 250V).

13. **L, R & V LOOP (Source Left/Right Audio/Video Loop) —** Eighteen, RCA jacks, three per Source, provide buffered left and right line-level audio and composite video outputs that are typically used to loop source audio signals to additional zone inputs on Slave MZC-66's in expanded systems. i.e. The L, R, V LOOP on the MZC Master would connect to the appropriate L, R, V INPUT on MZC Slave 1. Slave 1 would then loop to Slave 2, etc. These outputs can also be used to drive local components, such as a local surround receiver, when not used for expansion.

14. **L, R & V INPUT (Source Left/Right Audio/Video Input) —** Eighteen RCA jacks, three for each Source, provide left and right line-level audio and composite video signal inputs for up to six external common source components.

15. **IR LOOP —** Six, 3.5mm mini jacks, one per Source, provide connections for an IR signal path for external common source components, when using multiple MZC-66's in expanded systems. i.e. If using two MZC-66s, the SOURCE IR OUTS on the MZC Slave unit would connect to the appropriate SOURCE IR LOOPS on the MZC Master unit to pass Source IR commands between controllers from expanded zones. The IR OUTS on the Master connect to IR EMITTERS attached to the source components for source IR control from all zones. **POLARITY:** TIP=SIGNAL; SLEEVE=GND.

16. **IR OUT (Source) —** Six, 3.5mm mini jacks, one per Source, output IR commands to external common source components. When a source is selected, from a keypad or remote control, IR commands are routed directly to that source. This allows selective control of multiple same-brand, same-model source components (multiple Satellite Receivers, DVD Players etc). **POLARITY:** TIP=SIGNAL; SLEEVE=GND.

17. **IR OUT (Zone) —** Six, 3.5mm mini jacks, one per zone, provides dedicated Zone IR output for exclusive control of a specific zone component. (i.e., a dedicated satellite receiver or DVD player, that cannot be controlled from any other zones). **POLARITY:** TIP=SIGNAL; SLEEVE=GND.

18. **VC/NVC —** Six, two-position switches, one per zone, switch the PRE-OUT jacks to **VC** - internal Volume Control (variable, zone volume controlled by keypads or IR remote) or **NVC** - No Volume Control (fixed, zone volume controlled by in-wall volume control or volume control on an external device such as an A/V Receiver). In either case, the tone control action remains available for room "EQ" settings.

19. **L & R SPEAKERS —** Six, removable 4-circuit, screw-down plug-in connectors, one terminal per zone, provide quick connection of the internal amplifiers to Zone stereo speaker pairs. **WIRE GAUGE:** 14 to 24 AWG.

20. **EZ-PAD —** Six, removable 5-circuit, screw-down plug-in connectors, one per zone, connect zone keypads to the MZC via CAT5 or better. Standard five conductor wire (24-14AWG, stranded, non-shielded) can also be used in retro-fit applications. 24AWG allows runs of up to 1000' (305m) for MKP, IMKP; and 500' (152m), MODE 3.1.

21. **L & R PRE-OUT —** Two, RCA jacks, one pair per Zone, provide left and right line-level audio outputs for driving external high-power/audiophile two-channel amplifiers in large or outdoor zones or a critical listening zone, or driving a multi-channel amplifier for additional rooms, (sub-zone expansion) where needed.

EPR-1.0 EZ-PAD RELAY MUTING MODULE

The EPR-1.0 EZ-Pad Speaker Muting Relay Module allows local speaker muting in any room with an EZ-Pad. Example: An MZC-66 Zone PRE-OUT feeding a multi-channel amplifier for sub-zone expansion. Each of the additional 'rooms' would utilize one stereo pair speaker-level output from the multi-channel amp, have a keypad for system and source control and each keypad would have an EPR-1.0 to mute the local speakers. All rooms in the zone would have the same ON/OFF status and play the same source. Individual room mute could then be controlled either from a keypad or an appropriately programmed IR Remote. EPR-1.0 is also fully compatible with IMKP and MODE 3.1. See Section: **Connections-Zones/Speaker Connection to EPR-1.0 EZ-Pad Relay Muting Module**, for additional information.

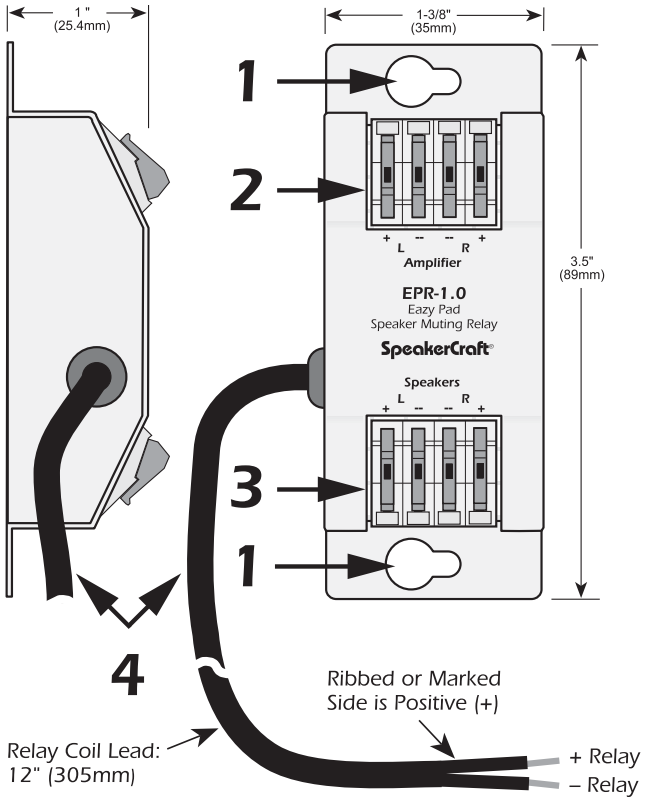


Figure 5
EPR-1.0 EZ-Pad Relay Features

1. **MOUNTING HOLES —** Two, keyholes, use these holes to mount the EPR-1.0 to any flat surface (usually to the studding in the wall behind the EZ-Pad or the in-wall speakers).

2. **"AMPLIFIER" EZ-CONNECT TERMINALS —** Four, spring-loaded terminals connect to the amplifier L & R speaker level output terminals. **WIRE GAUGE:** 14 to 28 AWG.

3. **"SPEAKERS" EZ-CONNECT TERMINALS —** Four, spring-loaded terminals connect to the L & R terminals on the room speakers. **WIRE GAUGE:** 14 to 28 AWG.

4. **RELAY COIL LEADS —** This 12" (305mm) 2-conductor lead connects to the +Relay and –Relay terminals on the back of the EZ-Pad. It can be extended to any length required (2000' with 24 AWG wire). Maintain proper polarity. When the designated MUTE key on the connected keypad is pressed, the EPR-1.0 relay opens, thus muting the audio. The selected source button on an EZ-Pad/IMKP will blink at a slow rate to indicate the muted condition. MODE 3.1 will display a red 'MUTE' at the top of the LCD.

TYPICAL MZC-66 SYSTEM

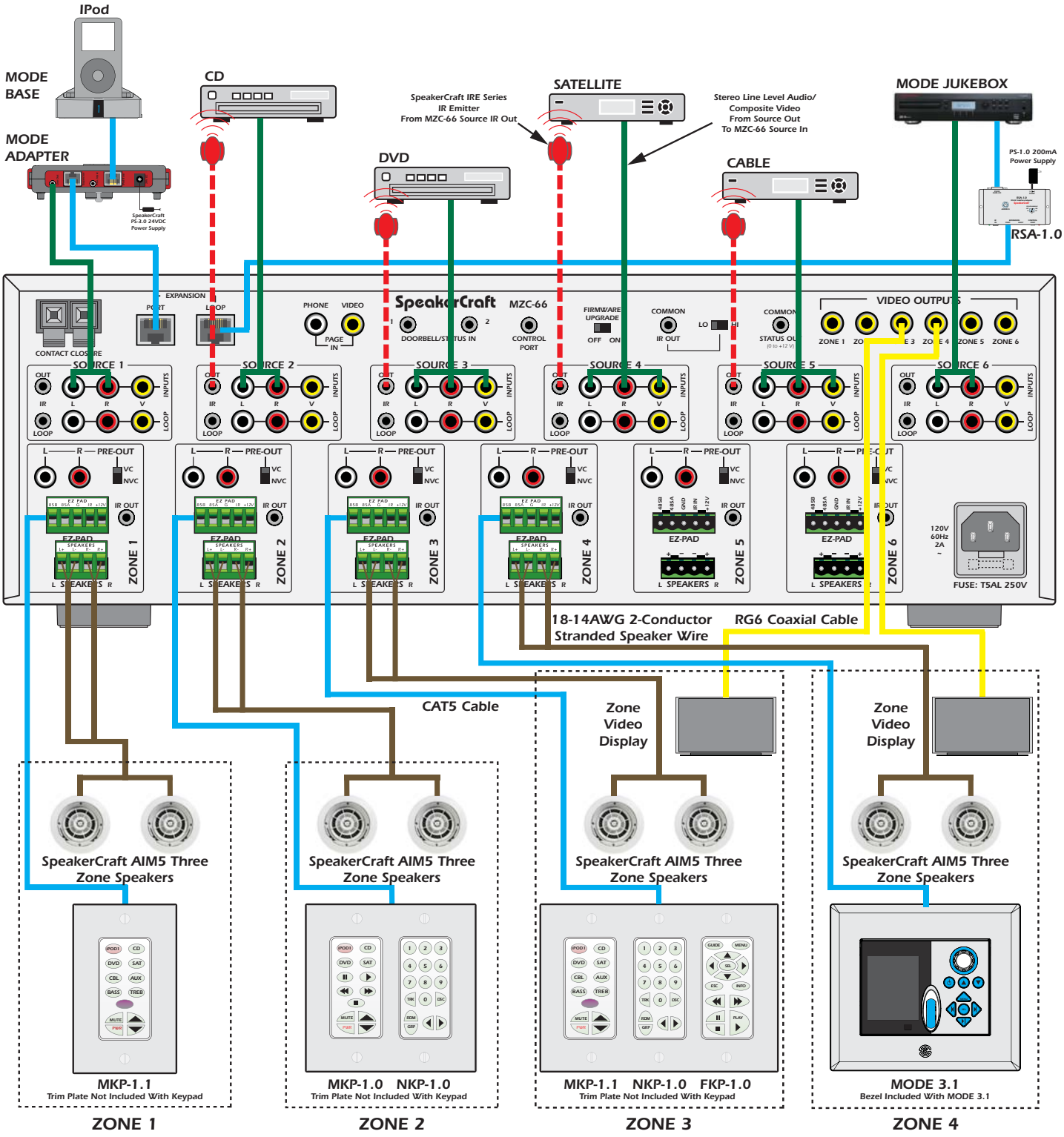


Figure 6
Typical MZC-66 System

SYSTEM PLANNING AND INSTALLATION

SYSTEM PLANNING

With all of the flexibility and options of a MZC-66 System, careful planning can save time and money for both the installer and homeowner. A few EZ steps can help in managing this process.

1. **KNOW THE PRODUCT AND ALL OF ITS CAPABILITIES —** This will help in making suggestions to the homeowner for incorporating features they may want. It will also help in being able to combat feature capabilities, or inadequacies, of a competitive product that another Installation Company may be proposing.

2. **KNOW THE HOMEOWNER —** Spend some time in the home if possible, and get a feel for how the prospective client is going to want to use the system. If the home is in the planning stage, be sure to get involved with the architect to assure proper allocation of space for system components, ventilation and access to the system for service (a closet with rear access to the system connections is ideal whenever possible).

3. **DOCUMENT EVERYTHING —** When discussing the system with the prospective client, write down all of their 'wants' in terms of how they want the system to work. Do they want doorbell paging? Do they have lots of parties and want to 'group' zones in common areas? Will they need an external high-powered amplifier for the patio/pool area?

   Write everything down and review it with the homeowner to define specific system features and functions. Suggest options for future upgrading or expansion of the system, such as additional wire infrastructure, for adding rooms to the system long after the walls have been sealed. Use the results of the review to create a formal proposal.

4. **LEAVE PRODUCT INFORMATION —** Leave the client with Brochures for the MZC-66, SpeakerCraft Speakers, Amplifiers and Accessories that will be specified in the proposal. (Packaging it all in a nice folder or binder is a nice touch.) Confirm a date to review the formal proposal.

5. **CONTRACT THE JOB —** Get back to the prospective client with a professional, formal proposal. (There are some good system planning and proposal software packages that can really help manage this whole process.) Review their 'wants' and show how they have been implemented in the overall system design. Inform the homeowner as to how the installation will be done. Phase 1, pull wire. Phase 2, install speakers and components. Phase 3, system programming and tweaking. (Tying payments to the different installation phases is also something to consider. Spreading the payments can help defuse potential sticker shock for the homeowner and also help manage cash flow for the Installation Company.) If all is acceptable to the homeowner, have them sign the proposal as a formal contract and set a start date for work to begin. (Having the homeowner sign the proposal as a contract can help avoid problems during installation in that the system and work to be done is defined. Anything not defined in the contract is extra.)

6. **DOCUMENT THE SYSTEM FOR INSTALLATION —** If using one of the planning and proposal software packages available from third parties, this part of the process will already be done. If not, carefully document the system for whole-house wiring. Show all runs of CAT-5 for control, coax for video, two-pair 18-14AWG stranded for speakers and additional wires for doorbell/paging, and anything else in the system that needs to have wire pulled through the walls. Don't leave anything out. The person pulling the wire isn't necessarily the same person that sold the system, so if the system hasn't been properly documented, critical feature wire components could be left out.

   Detail what components will be installed in each room, and where they will be installed, including the control system, speakers, TV/Video Display and any other sub-system interfaces by room, by component, by brand and by model. Be sure the person pulling the wire has this information to cross reference the wires pulled and to where.

7. **DOCUMENT SYSTEM FUNCTIONALITY —** Document all system functions by system, by zone, by source and any special features that have been included. Be sure to include functions such as how the system turns on when the first source is selected, and how it turns off when the last zone shuts down. Include all special functions such as switch closures for lifts and screens and EPR-1.0 mute commands for zones with multi-channel amps for sub-zone expansion. Include Tuner preset preferences if applicable. Include Paging functions. All system functions should be detailed. The person doing the system programming isn't necessarily the same person who sold the system or pulled the wire. Be sure everyone involved in the installation and setup knows what the system is and how it is supposed to work.

8. ***ACQUIRE ALL SYSTEM COMPONENTS — Set up the system, and program and test all functions before taking the electronics to the job site.*** *This can save valuable time in assuring that all system components work and the system is functioning as designed. Connecting and testing the system prior to installation will also help assure that all parts and pieces that will go into the system are in hand, so time is spent on the job site and not running around town shopping for parts or not being able to finish the installation while waiting for an air shipment of a ten dollar part.*

9. ***HEAD-END CONSIDERATIONS —*** *The system head-end should be in a convenient, central location that provides easy access for the user, to be able to load discs, video tapes etc. The location should also be accessible for service and ideally would have either have rear access to the system connections or a pull-out rack that allows access to system connections. All system wire runs should terminate at the head-end. There should be sufficient mounting space for all system components and the wires and cables that connect them. Leave plenty of room for airflow for proper ventilation or system components could be damaged. Too tight of a space that does not leave room for system wiring or a poorly dressed system can cause thermal problems. Wires jumbled in around system components can act as an insulator or block free airflow which can damage the components from overheating. Incorporate a proper ventilation system using cooling fans (SpeakerCraft ESC-1) for systems with external amplifiers or other components that generate excess heat. When possible, leave extra space for future expansion of the system for additional zone and source components.*

10. ***ZONE CONSIDERATIONS —*** *Identify all room components and their locations. Typically, a keypad would be mounted near the entry to a room. If the room orientation of where the TV/Video Display and speakers are located leaves the keypad behind the user, an additional IR receiver on the same wall as the TV and speakers will help make controlling the system more user friendly. Be sure to include an appropriate wire run for the IR receiver. Additional wire runs for controlling lifts, screens and drapes should also be considered. Try to avoid mounting keypads and IR receivers in locations that will be exposed to direct sunlight. Leave extra wire at keypad and in-wall speaker locations so these components can be easily removed without pulling on wires and possibly have them fall down inside the wall, should service be necessary.*

SYSTEM INSTALLATION

WIRING

Once the system has been defined and the contract signed, work can begin. The first part of the system to be installed is the wiring infrastructure. With all of the flexibility and options of a MZC-66 System, maintaining clear, accurate documentation of the location (the house) and the system will help in managing a smooth installation. Always be sure to pull and test the wires needed for the system as specified, and always consider pulling extra wire for fall-back in the event something gets damaged during drywall installation. Beyond that, pulling additional wire to rooms not specified in the system can help down the road, should the homeowner decide to add rooms to the system at a later date, or increase flexibility within already active rooms.

There are certain types of wire that are default requirements and there are others that are used for the system optional features.

KEYPADS

SpeakerCraft EZ-Pads have seven-position spring clip terminals for wire connections. Five of these terminals are used for connection to the MZC-66 EZ-Pad Terminals. CAT-5 can be used with or without RJ45 connectors. Standard wire can also be used for retro-fit installations provided there are at least 5 conductors available. Use of SpeakerCraft RJA-1.1 RJ45 to Wire Pin Adaptors is recommended for EZ-Pad connections. See: **IMKP Installation Instructions** and **MODE 3.1 Installation Instructions** for more information regarding connections for those models.

CAT-5 WITH RJ45 CONNECTORS

Requirement - Pull home-runs of CAT-5 from each Keypad location to the System Head-End.
MAXIMUM LENGTH: 1000' (305m) EZ-Pad/IMKP; 500' (152m) MODE 3.1.

Installation - Terminate the CAT-5 with RJ45 connectors on both ends. Be sure the terminations are identical on both ends, creating a pass-through (pin to pin) configuration. Connect the CAT-5 cable to **EZ-Pads** using SpeakerCraft **RJA-1.1 RJ45-to-Wire Pin Adapters**. Insert the RJA-1.1 pins into the keypad's EZ-Connect Terminals and snap the levers in place. RJA1.1's can be used at both the Keypad and MZC ends, if desired. Be sure RJA-1.1 pin orientation is correct on both ends prior to powering up the system. Not applicable for **IMKP** or **MODE 3.1**.

CAT-5 WITHOUT RJ45 CONNECTORS

Requirement - Pull home-runs of CAT-5 from each EZ-Pad location to the System Head-End.
MAXIMUM LENGTH: 1000' (305m) EZ-Pad/IMKP; 500' (152m) MODE 3.1.

Installation - Strip away approximately 2" (50mm) of the CAT-5 jacket and separate the individual conductors. Strip approximately ¼ inch (6mm) of the individual conductors to be used for connection to the **EZ-Pads/IMKPs**. Twist the stripped ends so there are no loose strands that can cause shorts. Secure the ends to the **EZ-Pad/IMKP terminals**. Maintain proper polarity. For **IMKPs**, strip approximately 6mm from each conductor and secure to the appropriate screw-down terminal. For **MODE 3.1**, secure each lead end (without stripping) to the proper **terminal** with a **punch-down tool**. To terminate **MZC** ends, strip away approximately 2" (50mm) of the CAT-5 jacket and separate the individual conductors. Strip approximately ¼ inch (6mm) of the individual conductors to be used for connection to the **removable screw-down connector**. Twist the stripped ends so there are no loose strands that can cause shorts. Secure the ends to the appropriate **removable screw-down connector terminals**. Maintain proper polarity. Plug connector into the appropriate **Zone EZ-Pad terminal**.

STANDARD WIRE (Recommended for Retro-fit Only)

Requirement - Home-runs of 24-14AWG stranded, non-shielded wire with at least 5 conductors to the System Head-End.
MAXIMUM LENGTH (24AWG): 1000' (305m) EZ-Pad/IMKP; 500' (152m) MODE 3.1.

Standard Wire (cont)
Installation - Strip away approximately 2" (50mm) of the wire jacket and separate the individual conductors. Strip approximately ¼ inch (6mm) on both ends of the individual conductors to be used for connection to the **EZ-Pads/IMKPs** and **MZC-66**. For MODE 3.1, secure each lead end (without stripping) to the proper terminal with a punchdown tool. **MODE 3.1 CAUTION:** Use only 24AWG solid wire. Larger sizes may damage the terminals and stranded wire will not retain securely. Twist the stripped ends so there are no loose strands that can cause shorts. Secure the ends to the proper **keypad terminals**. Maintain proper polarity. Unused leads can be connected in parallel, one, with each of the +12V, GND and IR/IO leads, for better IR performance when using lighter gauge wire on long runs. Maintain proper polarity and double check connections prior to powering up the system. Improper connections can cause damage to the keypads, MZC or both.

SPEAKERS

Requirement - Pull home runs of 18-14AWG two-conductor quality stranded speaker wire from all speaker locations to the System Head-End.
MAXIMUM LENGTH: 18AWG up to 50' (15m); 16AWG up to 200' (61m); 14AWG up to 1000' (305m).

Installation - Strip approximately ¼ inch (6mm) off each end of each conductor and twist the stripped ends so there are no loose strands that can cause shorts. On the Head-End side, carefully slide the individual conductors into the appropriate **L+,L-/R-,R+ speaker terminals** on the **removable screw down connectors** that plug into the **MZC-66 Zone Speaker OUT Terminals**. Terminate the speaker ends as appropriate for the given speakers. Maintain proper polarity.

CONTACT CLOSURES

Requirement - Pull 24-14AWG two-conductor stranded wire from any location utilizing a contact closure from the MZC-66 to the System Head -End.
MAXIMUM LENGTH: Will vary with application.

Installation - On the Head-End side, strip approximately ¼" off each end of each conductor and twist the stripped ends so there are no loose strands that can cause shorts. Carefully slide the individual conductors into the appropriate **Contact Closure Terminal pair** on the MZC-66 Rear Panel. Terminate the device end as appropriate. **POLARITY:** MZC end not critical.

EXPANSION PORT/LOOP

Requirement - CAT-5 cable terminated with RJ45 connectors, pass-through configuration (pin to pin).
MAXIMUM LENGTH: 1000' (305m)

Installation - When using **multiple MZC-66's**, connect CAT-5 cables terminated with RJ45 connectors to MZC-66 Port/Loop terminals in expanded systems. See section: **Expanded Systems** for additional information.

When using **MODE Adapters**, pull CAT-5 from the MZC to where the MODE Adapter(s) will be installed. For installations where the Adapter will be at the system head-end, a CAT-5 patch cable can be used at time of installation and hook-up. For installations where the Adapter will be in a remote location, pull CAT-5 and terminate with a proper wall plate with a pass-through (pin to pin) configuration. **MAXIMUM LENGTH (for MODE Adapter): 100' (30m). NOTE:** This connection requires configuration in EZ-Tools. See: **MODE 3.1 Installation Instructions** for additional information.

When using **RSA-1.0(s)** pull CAT-5 from the MZC to where the RSA-1.0(s) will be installed. For installations where the RSA will be at the system head-end, a CAT-5 patch cable can be used at time of installation and hook-up. For installations where the Adapter will be in a remote location, pull CAT-5 and terminate with a proper wall plate with a pass-through (pin to pin) configuration. **MAXIMUM LENGTH (for RSA-1.0): 1000' (305m). NOTE:** This connection requires configuration in EZ-Tools. See: **RSA-1.0 Installation Instructions** for additional information.

CONTROL PORT

Used for system programming and firmware updates. See: **EZ-Tools MZC Programming Instructions** for additional information.

PHONE PAGE IN

Requirement - Use a quality, pre-made audio cable terminated with RCA connectors for runs under 15' (5m). Pull quality, shielded audio cable from the paging device to the System Head-End for runs up to 200' (61m).
MAXIMUM LENGTH: 200' (61m)

NOTE: Some Telephone Control Panels can produce sufficient levels of RF radiation to interfere with MZC-66 performance. It is recommended that Telephone Panels be located at least 15-20 feet (5-6m) from an MZC-66 to avoid interference.

I**nstallation -** Connect one end of the pre-made wire to the paging device line level audio out and the other to the **PHONE PAGE IN jack** on the MZC-66 Rear Panel. Terminate the shielded audio cable with an RCA connector at the System Head-End. Terminate the paging device end as appropriate. Maintain proper polarity. **RCA CONNECTOR POLARITY:** PIN=SIG; SLEEVE=GND.

VIDEO PAGE IN

Requirement - Use a quality, pre-made video cable terminated with RCA connectors for runs under 15' (5m). Pull RG6 quad-shield coaxial cable from the camera/video device to the System Head-End for runs over 15' (5m).
MAXIMUM LENGTH: Will vary by device. See the specification of the device being used or call the equipment manufacturer. 40-50' (12-15m) typical, up to 500' (152m) on RG6 coaxial cable with some devices.

Installation - Connect one end of the pre-made video cable to the camera/video device composite video out and the other to the **VIDEO PAGE IN jack** on the MZC-66 Rear Panel. Terminate the RG6 with an RCA connector at the System Head-End. Terminate the camera/video device end as appropriate. Maintain proper polarity. **RCA CONNECTOR POLARITY:** PIN=SIG; SLEEVE=GND.

DOORBELL/STATUS IN

Requirement - Pull 24-22AWG two-conductor stranded wire from the doorbell or sensed device location to the System Head-End.
MAXIMUM LENGTH (24AWG): Will vary. 500' (152m) typical, up to 2000' (610m) with some devices.

Installation - Terminate the 24-22AWG two-conductor wire with a 3.5mm mini plug at the System Head-End for connection to one of the two **Doorbell/Status IN jacks** on the MZC-66 Rear Panel. Terminate the Doorbell/sensed device end as appropriate. **MINI PLUG POLARITY:** TIP=+12V; SLEEVE=GND.

COMMON IR OUT

Requirement - Use a SpeakerCraft standard emitter (IRE-1.0, 2.0, 3.0, 4.0) when the Common IR OUT Switch is set in the **LO** position. Use a SpeakerCraft high power emitter (IRE-5.0 Blaster) when the Common IR OUT Switch is set in the **HI** position. Pull 24-18AWG two-conductor stranded wire from the location requiring System Common IR Control to the System Head-End to extend the emitter wire as required.
MAXIMUM LENGTH (24AWG): 1000' (305m)

Installation - Connect an emitter to the **Common IR OUT** on MZC-66 Rear Panel and set the **HI/LO switch** as appropriate. Attach the emitter over the **IR eye** on the device to be controlled. When extending the emitter wire, terminate the 24-18AWG two-conductor wire with a 3.5mm mini plug at the System Head-End. Terminate the other end for System Common IR Control as appropriate. **MINI PLUG POLARITY:** TIP=SIG; SLEEVE=GND.

COMMON STATUS OUT

Requirement - Pull 24-18AWG two-conductor stranded wire from the device to be controlled to the System Head-End.
MAXIMUM LENGTH (24AWG): 1000' (305m)

Installation - Terminate the 24-18AWG two-conductor wire with a 3.5mm mini plug at the System Head-End for connection to the **Common Status OUT jack** on the MZC-66 Rear Panel. Terminate the controlled device end as appropriate. **MINI PLUG POLARITY:** TIP=+12V; SLEEVE=GND.

SOURCE IR OUT

Requirement - Use SpeakerCraft standard IR emitters (IRE-1.0, 2.0, 3.0, 4.0).

Installation - Attach emitter to **Source Component**. Connect emitter mini-plug to the appropriate **Source IR OUT**.

SOURCE IR LOOP

Requirement - Use pre-made 3.5mm mini to mini plug cables.

Installation - Connect **Source IR OUT** on one MZC-66 to the same source number **Source IR LOOP** on the next MZC-66 when using multiple MZC-66s in expanded systems. i.e. **MZC Slave 2 Source 1 IR OUT** to **MZC Slave 1 Source 1 LOOP**; **MZC Slave 1 Source 1 IR OUT** to **MZC Master Source 1 LOOP; MZC Master Source 1 IR OUT** to an **emitter** for **Source 1 IR control**. See section: **Expanded Systems** for additional information.

SOURCE AUDIO/VIDEO INPUT

Requirement - Use quality, RCA to RCA Audio/Video cables with gold ends.

Installation - Connect one end to **Source L & R line-level audio OUT** and **COMPOSITE video OUT**, and connect the other end to the appropriate **Source L & R line-level audio** and **composite video INPUT** on the MZC-66 Rear Panel.

SOURCE AUDIO/VIDEO LOOP

Requirement - Use quality, RCA to RCA Audio/Video cables with gold ends.

Installation - Connect **Source L & R line-level audio** and **composite video LOOP** on one MZC-66 to the SAME SOURCE NUMBER **Source L & R line-level audio** and **composite video INPUT** on the next MZC-66 when using multiple MZC-66s in expanded systems. i.e. MZC-66 **MASTER Source 1 L & R line-level audio** and **composite video LOOP** to MZC-66 **SLAVE 1, Source 1, L & R line-level audio** and **composite video INPUT;** MZC **SLAVE 1**, **Source 1, L & R line-level audio** and **composite video LOOP** to MZC-66 **SLAVE 2, Source 1, L & R line-level audio** and **composite video INPUT.** See Section: **Expanded Systems**.

ZONE PRE-OUT

Requirement - Use quality, RCA to RCA stereo audio cables with gold ends.

Installation - Connect one end to **Zone L & R line-level audio PRE-OUT** and connect the other end to the appropriate **L & R line-level audio INPUTS** on an **external amplifier**. (Set **VC/NVC Switch** for Volume Control/No Volume Control as appropriate.) See Section: **External Amplifiers** for additional information.

ZONE IR OUT

Requirement - Use SpeakerCraft standard IR emitters (IRE-1.0, 2.0, 3.0, 4.0).

Installation - Attach **emitter** to **Zone Source Component**. Connect **emitter mini plug** to the appropriate **Zone IR OUT.**

EZ-PAD CONFIGURATION

1. As received from the factory, the **MKP-1.1 EZ-Pads** have a preinstalled set of buttons that may not match the system being installed. To change the source and function button arrangement, release the tabs, **Figure 7**, and remove the decorator insert panel, exposing the key buttons. (**Figure 8**) **IMKP** and **MODE 3.1** buttons can also be changed. See: **IMKP Installation Instructions** and **MODE 3.1 Installation Instructions** for additional information.

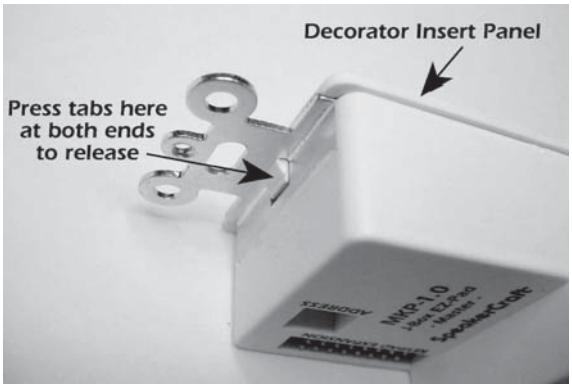


Figure 7
Release Tab

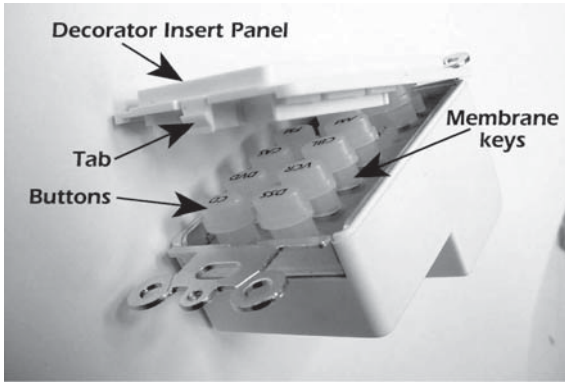


Figure 8
Remove Decorator Insert Panel

2. Starting with the Zone 1 MKP-1.1 (Master Keypad), and using the extra buttons supplied, if needed, move and place the source and function buttons in an arrangement matching the system being installed. (Refer to **Figure 9**) When finished, replace the decorator insert panel over the buttons, being careful to see that the buttons align correctly with the panel openings. Press the panel down until the tabs "snap" into place.

3. Repeat these steps for each of the other zone Master Keypads. Note that each zone can have its own unique configuration, however, it is best to keep them as similar as possible to simplify system programming and operation.

4. Repeat **Steps 1-3** to configure the buttons on the Numeric and Function keypads (not included) as needed.

Figure 9
Moving and Placing Buttons

NOTE: The Numeric and Function keypads will not work on their own. They must be connected to a Master Keypad using the **Ribbon Cable** included with each **NKP-1.0** and **FKP-1.0**. The cable is symmetrical so it can be connected with the red striped side up or down, to best fit the configuration. **Figure 10** shows it connected so that the **MKP** Master Keypad will be to the **right** of the NPK Numeric and FKP Function keypads when mounted, whereas **Figure 11** places the **MKP** to the **left**.

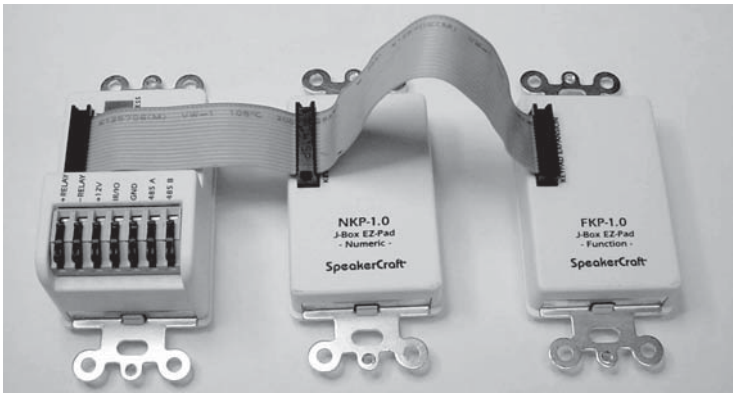


Figure 10
Ribbon Cable – MKP Right

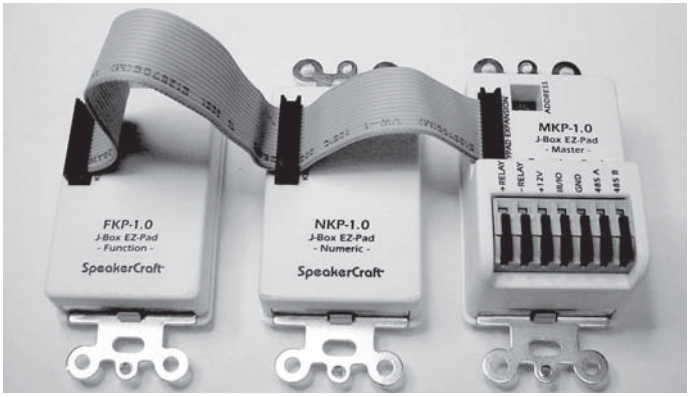


Figure 11
Ribbon Cable – MKP Left

5. When connecting keypads to the MZC-66 as shown in **Figure 12**, be sure to connect the various colored CAT-5 leads to the correct Terminals on each end. Use the same colors scheme for all zones to help reduce errors.

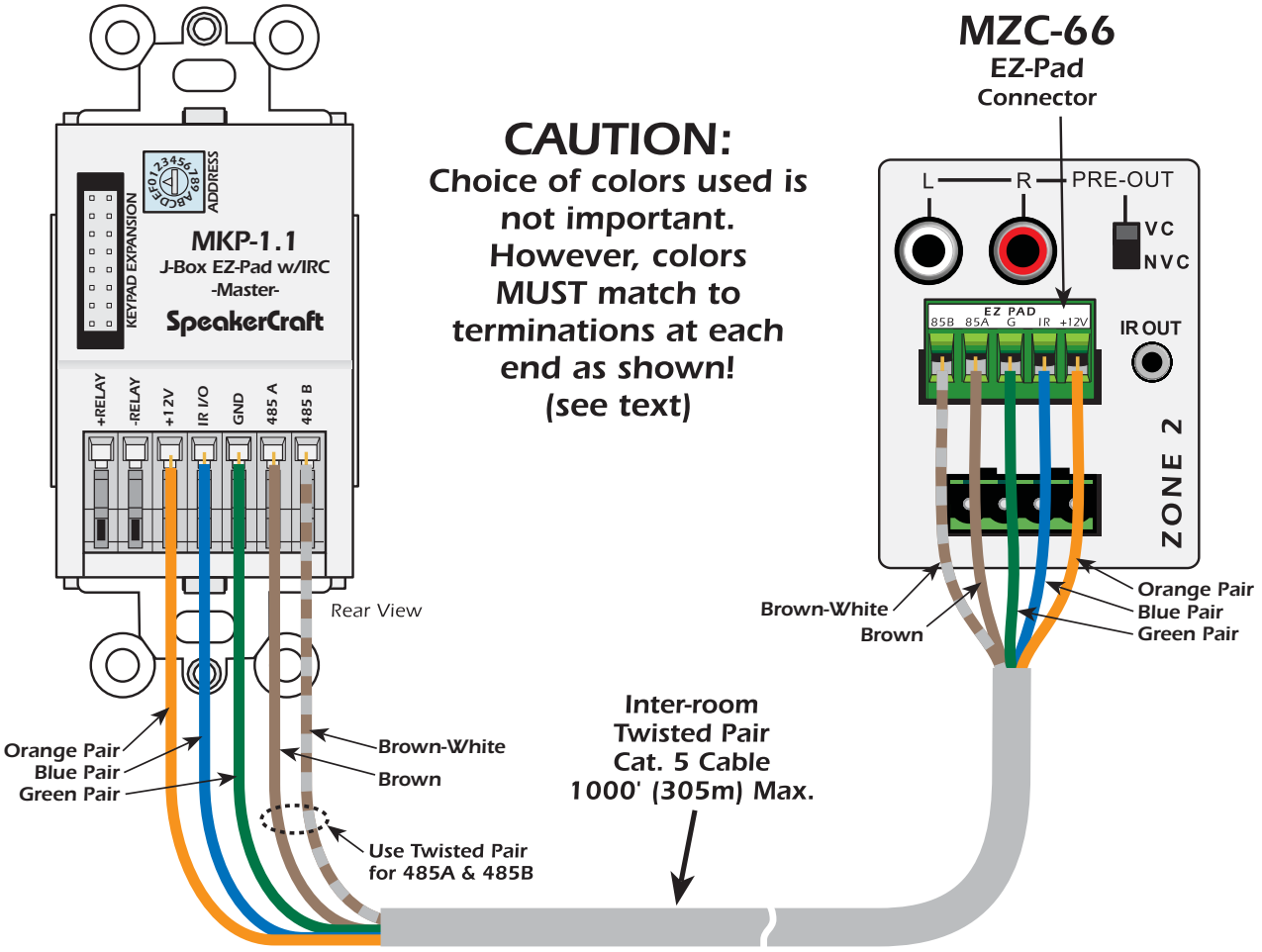


Figure 12
Using CAT-5 Cable to Connect MKP Keypads to MZC-66

CAT-5 WITHOUT RJ45 CONNECTORS — Connect Keypads to MZC-66 as shown above. Be sure to maintain consistent color code when making connections. Maximum recommended lead length with CAT-5 cable is 1000' (305m).

CAT-5 WITH RJ45 CONNECTORS — When using RJ45 connectors, connect the CAT-5 cable to the keypads using SpeakerCraft model **RJA-1.1 RJ45-to-Wire Pin Adapters**. (Refer to **Figures 13 and 14**) Insert the RJA-1.1 pins into the keypad's EZ-Connect Terminals and snap the levers in place. Be sure RJA-1.1 pin orientation is correct prior to powering up the system. CAT-5 cable should be configured in a pass-through (pin to pin) termination.

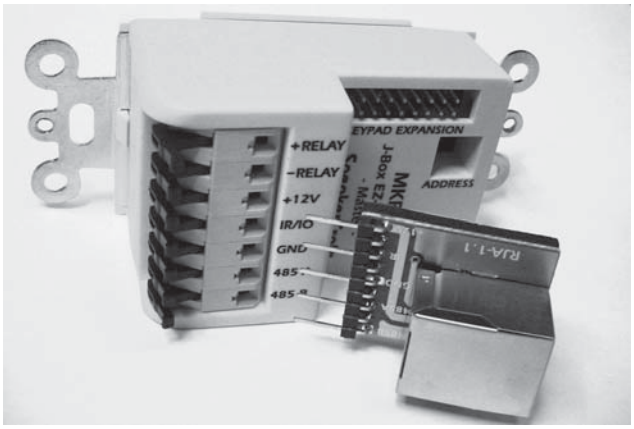


Figure 13
RJA-1.1 Adapter

Figure 14
RJA-1.1 attached to Keypad and CAT-5

INSTALLATION

HEAD-END

The MZC-66, external source components, and additional amplifiers will typically be installed at the System Head-End. They can be mounted on shelves in a wall unit, entertainment center or closet, or rack mounted in a standard 19" rack mount system. Source components such as DVD/CD players and VCR's should be installed so the user has easy access for loading discs and tapes.

Though heavy, the MZC-66 (and additional amplifiers if used) should be mounted at the top of the equipment rack so heat generated by the controller will not affect the other system components. This will also allow cooler air to rise up through the equipment rack with the hottest devices exhausting out the top. Use cooling fans such as the SpeakerCraft ESC-1.0 rack cooling system, to push/pull air through the equipment rack if temperatures exceed the specifications of any of the system or source components. Properly exhaust hot air into an attic space or outside the structure. (Be aware of and comply with any building codes that may apply to ventilation.)

Always leave adequate space between system and source components for airflow. Failure to do so can cause damage to the components from overheating. Never block the vent holes on the top or bottom of the MZC-66. Blocking the vent holes will cause the controller to overheat. Never remove the MZC-66 Controller's feet when shelf mounting. This will block the vent holes on the bottom of the unit and will cause the controller to overheat. When using multiple MZC-66s in a system DO NOT stack the MZC-66 Controllers directly on top of each other. Leave at least 3-4" between controllers, and if rack mounting, use at least one, double rack-space vent panel between controllers to assure proper airflow.

CONNECTIONS - HEAD END

This section provides information for connections to a single MZC-66 Controller. See Section: **Expanded Systems** for information on connections to multiple MZC-66's in expanded systems. All system and source components should be installed before making any connections. To prevent electrical shock and possible damage, be sure all components are disconnected from AC power while making connections.

KEYPADS

1. Connect each keypad run to the appropriate **EZ-Pad Terminal** on the MZC-66. Be sure CAT-5 cable and RJ45 connectors are properly configured as shown in **Figure 12**. See Sections: **Wiring** and **EZ-Pad Configuration** for additional information.

EXTERNAL SOURCE COMPONENTS
AUDIO/VIDEO

1. Connect the **L & R line-level audio** and **COMPOSITE video OUT** of each external source component to the appropriate **L & R line-level audio** and **composite video SOURCE IN** on the MZC-66 Rear Panel. Use quality A/V RCA-RCA cables with gold connectors.

EMITTERS (SOURCE)

1. Carefully attach a SpeakerCraft **IR Emitter** (Models: 1.0, 2.0, 3.0, 4.0) over the **IR eye** on the front panel of each external source component to be controlled via infrared.
2. Carefully pull the emitter wire to the back of the MZC-66. Do not block accesses for discs and tapes. Do not pinch emitter wires between components.
3. Connect the 3.5mm mini plug to the appropriate **Source IR OUT**.

SPEAKERS

1. Connect each Zone speaker run to the appropriate **Zone Speaker Terminal** using the included **removable screw down connectors**.
2. Strip approximately ¼ inch of each lead and twist the stripped ends so there are no loose strands that can cause shorts.
3. Carefully slide the individual conductors into the appropriate **L+,L-/R-,R+ speaker terminals** on the **removable screw down connector**.
4. Visually check for loose ends. Lightly pull the wire to confirm connection.
5. Plug **connector** into the appropriate **Zone Speaker Terminal**.

VIDEO OUTPUT

1. Connect each zone coax run to the appropriate **Zone Video Output**.

PAGING

PHONE (PAGE IN)

1. Connect the **audio line-level OUT** of an appropriately featured telephone system, doorbell mic or other audio source to the **Phone Page In** jack on the MZC-66 Rear Panel. If the telephone system main unit is in close proximity to the MZC-66, use a quality RCA to RCA audio cable for connections up to 50' (15m). For longer runs pull quality shielded audio cable and terminate with RCA plugs.

   NOTE: The **Phone Paging Input** requires a **trigger voltage** to one of the **Doorbell/Status IN Jacks** to be activated.

VIDEO (PAGE IN)

1. Connect the **composite video OUT** of an appropriately featured front door panel, camera or other video source to the **Video Page In** jack on the MZC-66 Rear Panel. If the camera or video source is in close proximity to the MZC-66, use a quality RCA-RCA cable for connections up to 15' (5m). For longer runs pull RG6 and terminate appropriately.

   NOTE: The **Video Paging Input** requires a **trigger voltage** to one of the **Doorbell/Status IN Jacks** to be activated.

DOORBELL/STATUS IN (1&2)

1. Connect a **3-30V AC** or **DC trigger voltage** from a telephone system, sensing device or other controlled voltage output device to either **Doorbell/Status Input 1** or **2** using a 3.5mm mini plug to activate the **Phone and Video Page Inputs.** This input can also be used for sensing the ON/OFF condition of external devices or trigger other system events.

   NOTE: The **Doorbell/Status Inputs** will not function without proper configuration in **EZ-Tools**.

CONTACT CLOSURES

1. Connect two stripped wires from the trigger input terminals of a device such as a screen, lift, drapes, trigger controlled switched AC outlet etc, that requires a switch closure to activate.
   Caution: These contacts must not be used to switch voltages higher than 30V AC or DC, 2Amps max.
2. Strip approximately ¼ inch (6mm) of each lead and twist the stripped ends so there are no loose strands that can cause shorts.
3. Carefully slide each of the individual conductors into one of the **Contact Closure spring clip terminals**.
4. Visually check for loose ends. Lightly pull the wire to confirm connection.

   NOTE 1: Some devices may provide voltage on one terminal and only require a switch closure for activation, while others may require adding an appropriately rated power supply. If external voltage is required, connect an appropriately rated power supply in **series** with **one** of the **Contact Closure terminal pair.** Check the device being activated to determine if it requires **AC** or **DC voltage** and if **polarity** is critical for operation. **Polarity** is **not critical** at the MZC-66 **Contact Closure** end.
   NOTE 2: The **Contact Closure** will not function without proper configuration in **EZ-Tools**.
   NOTE 3: Be sure controlled device does not exceed the **30V 2A** rating of the **Contact Closure**.

EXPANSION PORT/LOOP

1. Connect to **Port** and **Loop Terminals** on additional MZC-66 Controllers in expanded systems, using CAT-5 cables terminated with RJ45 connectors. See Section: **Expanded Systems** for additional information. These jacks can also be used for connection of specialized **RS485** controlled products such as SpeakerCraft **MODE Adapter/Base** for adding **iPods** and SpeakerCraft **RSA-1.0(s)** for control of **multiple RS232 devices**. See: **MODE Installation Instructions** and **RSA-1.0 Installation Instructions** for additional information.

CONTROL PORT

1. Connect the **Serial Port** on a **PC** running **EZ-Tools** to the MZC-66 **Control Port** using a SpeakerCraft **3.5mm Plug Transfer Cable** when programming the system or incorporating Firmware Upgrades.

   NOTE 1: If a Serial Port is not available on the PC, connect the 3.5mm Plug Transfer Cable to the **USB/Serial Adaptor Cable**, (sold separately). Connect one end to a **USB** port on the **PC** and the other end of the assembled cable to the **Control Port** on the MZC-66.

Control Port (cont)

NOTE 2: Use of the USB/Serial Adaptor Cable requires loading the **USB/Serial Driver** to the PC running EZ-Tools. The USB/Serial Driver is embedded as an option in the EZ-Tools Setup, downloadable from www.speakercraft.com. See: **EZ-Tools MZC Programming Instructions** for additional information.

COMMON IR OUT

1. Connect to a SpeakerCraft Terminator Block, IR emitter or IR Blaster for control of common system devices other than the common external source components.

TERMINATOR BLOCK

If it is necessary to drive more than 2 emitters, or drive an IRE-5.0 Blaster to higher power than that available from the Common IT Out Jack on the MZC-66, connect an AT-1.0 terminator as follows:

1. Connect the **IR IN** and **GND** terminals on a SpeakerCraft **AT-1.0 Terminator** to the MZC-66 **Common IR OUT** jack using a 3.5mm mini plug. **POLARITY:** TIP=SIG; SLEEVE=GND.
2. Set the **Common IR Out HI/LO Switch** on the MZC-66 to **LO**.
3. Connect a SpeakerCraft **PS 2.0 Power Supply** to the **AT-1.0**. (Connect to AC only after all system connections have been made and system is ready for use.)
4. Connect SpeakerCraft **IR Emitters** (IRE 0.5, 1.0, 2.0, 3.0, 4.0) and properly attach to the devices to be controlled.
5. To drive an IRE-5.0 Blaster, see IR Blaster, below.

IR EMITTER

1. Carefully attach a SpeakerCraft **IR Emitter** (Models: IRE- 0.5, 1.0, 2.0, 3.0, 4.0) over the **IR eye** on the front panel of common source component to be controlled via infrared.
2. Carefully pull the emitter wire to the back of the MZC-66. Do not block accesses for discs and tapes.
3. Connect the 3.5mm mini plug to the **Common IR Out** jack.
4. Set the **HI/LO Switch** to **LO**.

IR BLASTER

1. Appropriately position a SpeakerCraft **IR Blaster** (Model: IRE-5.0) to saturate an area of common source components to be controlled via infrared.
   NOTE: This application is not recommended if there is any duplication of source components (multiple same-brand, same-model DVD players or Satellite Receivers, etc) or zone-specific devices that could be affected by Blaster output.
2. Carefully pull the Blaster wire to the back of the MZC-66. Do not block accesses for discs and tapes.
3. Connect the **3.5mm mini blaster plug** into one of the **Emitters/Blasters Jacks** on the **AT-1.0** and set the **DIP Switch** to **BL** for **that jack**. See IRE-5.0 Blaster Instructions for additional information.
3. To use the IRE-5.0 Blaster without the AT-1.0, to teach IR commands to a learning remote, connect the 3.5mm mini plug of the Blaster directly to the **Common IR Out** jack.
4. Set the **HI/LO Switch** on the MZC to **HI**. See EZ-Tools MZC Programming Instructions for teaching IR commands to learning remotes.

COMMON STATUS OUT

1. Connect to the **12V** or **Control In** terminal on a device such as a switched power strip, that is to be activated when any zone in the system is ON.
2. Terminate and connect to the controlled device as appropriate.
3. Connect to the **Common Status OUT** using a 3.5mm mini plug. **POLARITY:** TIP=+12VDC; SLEEVE=GND.

ZONE PRE-OUT

1. Connect to the **L&R line-level audio IN** on an external high-power or multi-channel amplifier as needed for large rooms or sub-zone expansion. Different applications require proper setting of the associated **VC/NVC Switch**. Some applications will utilize the on-board zone pre-amp volume control (**VC** - variable, zone volume controlled by keypads or IR remote) while others will use in-wall volume controls (**NVC** - fixed, zone volume controlled by in-wall volume control or the volume control on an external device such as an A/V Receiver). See Section: **External Amplifiers** for additional information.

HIGH-POWER, TWO CHANNEL AMPLIFIER - VC, VARIABLE OUTPUT

1. Connect the MZC-66 **L&R Zone Pre-out** to the **L&R line-level audio IN** on the two-channel amplifier to be used (SpeakerCraft BB2125). Use a quality stereo RCA-RCA audio cable with gold connectors.
2. Set **VC/NVC Switch** to **VC** (Variable output. Zone volume will be controlled with a keypad or IR remote.)

SUB-ZONE EXPANSION, MULTI-CHANNEL AMPLIFIER - NVC, FIXED OUTPUT

1. Connect the MZC-66 **L&R Zone Pre-out** to the **L&R line-level Main Bus IN** on the multi-channel amplifier to be used (SpeakerCraft BB1235). Use a quality stereo RCA-RCA audio cable with gold connectors.
2. Set **VC/NVC Switch** to **NVC** (Fixed output. Sub-zone volume will be controlled with in-wall volume controls.)

ZONE IR OUT

1. Carefully attach a SpeakerCraft **IR Emitter** (Models: IRE- 0.5,1.0, 2.0, 3.0, 4.0) over the **IR eye** on the front panel of a dedicated zone source component to be controlled via infrared.
2. Carefully pull the emitter wire to the back of the MZC-66. Do not block accesses for discs and tapes. Do not pinch the emitter wire between components.
3. Connect the 3.5mm mini plug to the appropriate **Zone IR Out** jack.

120V 60Hz 1.8A

1. Use the included **IEC three-conductor power cord** to connect the MZC-66 to an **Unswitched 120V AC Outlet**. **CAUTION:** Do not connect AC power until all system connections have been made and confirmed and the system is ready for operation.

INSTALLATION - ZONES

Keypads should typically be located near a door or entry point to a room. Avoid mounting keypads, IR receivers, volume controls or any other control devices in areas of high moisture such as sinks, showers, bathtubs etc. Care should be taken to avoid mounting Keypads and IR receivers in locations subject to direct sunlight. Sunlight can interfere with system operation and, in time, cause deterioration to the keypad and trim plate materials.

WARNING: Never mount a keypad, IR receiver or volume control in the same J-box as high voltage devices. This can affect system performance and is a violation of electrical codes in some areas. (Be aware of local electrical and building codes. These codes can affect the type of J-boxes permitted, mandate wire specifications and regulate other aspects of the installation that may not pass inspection if necessary.)

CONNECTIONS - ZONES

KEYPADS

1. Connect each Keypad cable run to the appropriate Zone Keypad. When not using RJ45 connectors, be sure to maintain consistent color code when making connections . When using RJ45 connectors, be sure the **RJA-1.1 Adapter pins** are oriented properly. See Sections: **Wiring** and **EZ-Pad Configuration** for additional information. Also see: **IMKP Installation Instructions** and **MODE 3.1 Installation Instructions** for additional information on connections to those models.
2. Install each Keypad into a proper low-voltage J-box and finish with an appropriate trim plate (Not included with EZ-Pad).

SPEAKERS

DIRECT SPEAKER CONNECTION TO MZC-66 OR AMPLIFIER

1. Connect **Zone Speakers L+,L-/R-,R+ OUTPUTS** from the MZC-66, or an external amplifier, to the appropriate Zone Speaker pair.
2. Strip approximately ¼ inch (6mm) of each lead and twist the stripped ends so there are no loose strands that can cause shorts.
3. Connect as appropriate to the **L+,L-/R-,R+ Terminals** on each speaker.
4. Visually check for loose ends. Lightly pull the wire to confirm connection.
5. Install speakers into dry-wall cut-outs or SpeakerCraft InstaLLock™ New Construction Brackets (if used) as appropriate.

SPEAKER CONNECTION TO EPR-1.0 EZ-PAD RELAY MUTING MODULE

1. Connect **Zone Speakers L+,L-/R-,R+ OUTPUTS** from the MZC-66 or an external amplifier to the **EPR-1.0 Amplifier Terminal L+,L-/R-,R+ INPUTS**. (Refer to **Figure 19**)
2. Strip approximately ¼ inch (6mm) of each lead and twist the stripped ends so there are no loose strands that can cause shorts.
3. Connect the **EPR-1.0 Speakers L+,L-/R-,R+ OUTPUTS** to the **L+,L-/R-,R+ Terminals** on each speaker pair as appropriate.
4. Connect the **White Stripe Lead** from the **EPR-1.0** to the **+Relay Terminal** on the **Keypad**.
5. Connect the **Black Lead** from the **EPR-1.0** to the **-Relay Terminal** on the **Keypad**.
6. Visually check for loose ends. Lightly pull the wire to confirm connection.
7. Install speakers into dry-wall cut-outs or SpeakerCraft InstaLLock™ New Construction Brackets (if used) as appropriate. **NOTE: EPR-1.0 Relay Mute** will not function without proper configuration in **EZ-Tools**.

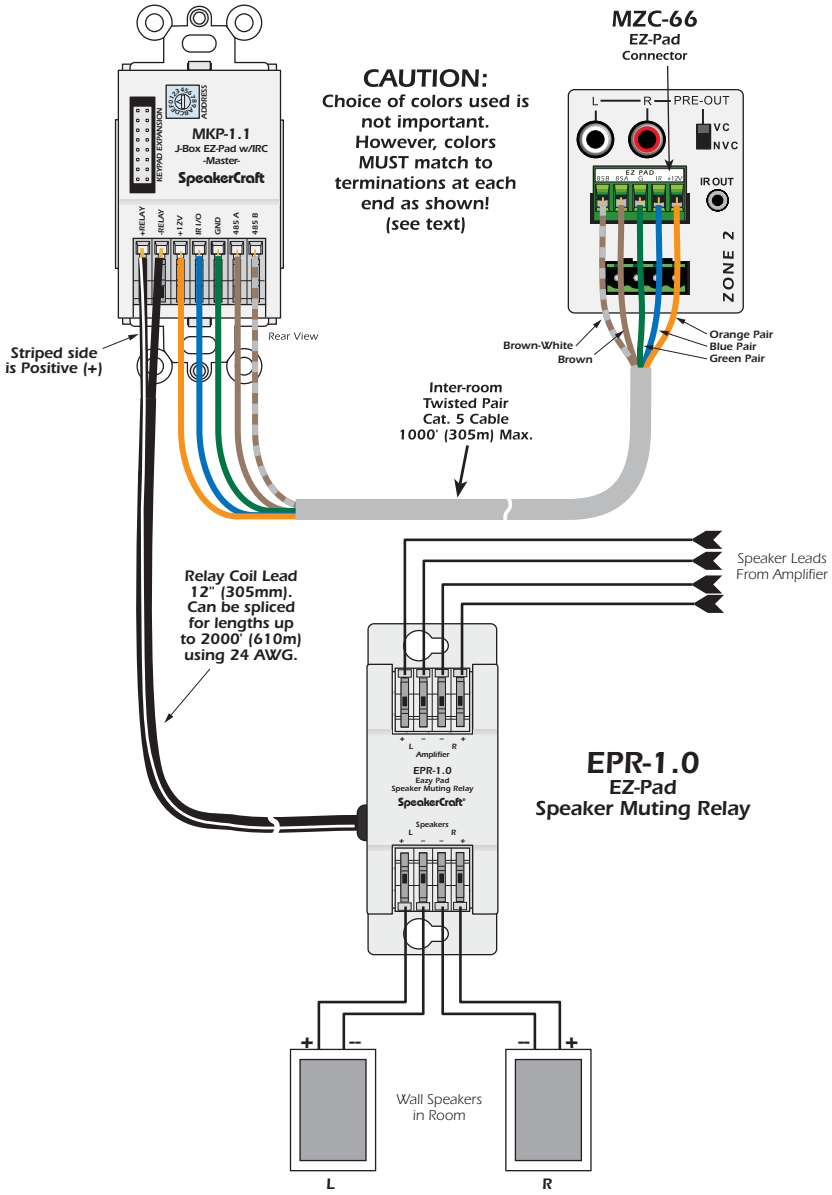


Figure 15
System Connections for the EPR-1.0 Muting Relay

OTHER ZONE CONNECTIONS

Given the wide range of possibilities of MZC-66 system configurations, only keypad and speaker connections have been detailed. Make all other zone connections as needed. See Sections: **Wiring** and **Connections - Head End** for additional information.

EXTERNAL AMPLIFIERS

ADDING A HIGH-POWER TWO-CHANNEL AMPLIFIER TO A ZONE

Even though the MZC-66 delivers a solid 30 Watts per Channel of audio power, good enough for most applications, there may be certain situations when adding a high-power, two-channel amplifier to a zone will be required. Driving a high power amplifier such as the SpeakerCraft BB2125 from a MZC-66 Zone Pre-Out will fill a particularly large room with large sound or provide additional music power poolside for an outdoor zone.

Adding an external zone amp does not require any changes to the 'house' wiring, configuration or programming of the zone keypad. The only differences are, the zone speakers get connected to the external amplifier instead of the MZC-66 and one stereo RCA-RCA patch cable needs to be connected between the MZC-66 Zone Pre-Out and the Amplifier Main IN.

When using a SpeakerCraft BB2125, or other SpeakerCraft amplifier, power management of the external amplifier is automatic using the on-board audio sensing circuitry. When the amplifier receives an audio signal from the MZC-66 Zone Pre-Out, the external amplifier will turn on automatically. A BB2125, or other SpeakerCraft amplifier, will shut off after three minutes of no audio signal. Other makes will vary in their specifications and performance. Please refer to appropriate documentation for additional information.

Some amplifiers use a 12 volt trigger input to turn on in this type of application (also an option on SpeakerCraft amplifiers). There are two methods of 12V control from a MZC-66. One method utilizes the Contact Closure pair as an 'Event' to turn the amplifier on and off with a specific zone. The other allows use of the MZC-66 Common Status Out. This second option will have the amplifier turn on when any zone is on and off when the last zone shuts off. In most cases, turning the external amplifier on and off with a specific zone is recommended.

INSTALLATION

Additional space should be allocated for installation of an external high-power amplifier. Leave at least 3-4 inches above and below the amp for proper air flow for cooling. Mounting amplifiers at the top of an equipment cabinet is recommended to reduce source components exposure to excess heat. Use cooling fans (SpeakerCraft ESC-1) when necessary.

CONNECTIONS AND CONFIGURATION

AUDIO

1. Connect one, quality, RCA-RCA stereo audio patch cable from the appropriate MZC-66 **Zone L&R PRE-OUT** to the **L&R Main Input** on the external amplifier.
2. Set the **VC/NVC Switch** to **VC** (variable). The Zone volume will be controlled via the MZC-66 Zone Preamp using the Zone Keypad or IR Remote.

SPEAKERS

1. Connect the **L+,L-/R-R+ Speaker-level Outputs** of the external amplifier to the appropriate zone speakers.

AUDIO SENSING

1. No additional connections required.
2. If using a SpeakerCraft BB2125, switch the **Audio Sense/Trigger/Constant Switch** to **AUDIO SENSE**.
3. If using another brand of amplifier with audio sensing, please refer to appropriate documentation for additional information.

12V TRIGGER (ZONE SPECIFIC)

1. Connect a **12V DC Power Supply** (such as the PS-1.0) in series with the MZC-88 **Contact Closure** as shown in **Figure 15**. To achieve a faster OFF time action, it may be necessary to place a 1K Ohm, ¼ watt resister in shunt with the black and white stripped leads of the power supply output, or use a non-regulated power supply.
2. If using a SpeakerCraft BB2125, terminate the control wire with a 3.5mm mini plug and plug it into the **Trigger Input** jack. **POLARITY:** TIP=+12V; SLEEVE=GND. Switch the **Audio Sense/Trigger/Constant Switch** to **TRIGGER INPUT**.
3. If using another brand of amplifier, terminate the control wire as appropriate. Be sure to maintain proper polarity.
4. Configure the **Contact Closure** as an **Event** for that zone in **EZ-Tools**. Set the **Contact Closure** to **Close** when turning the zone **ON** and **Open** when turning the zone **OFF**.

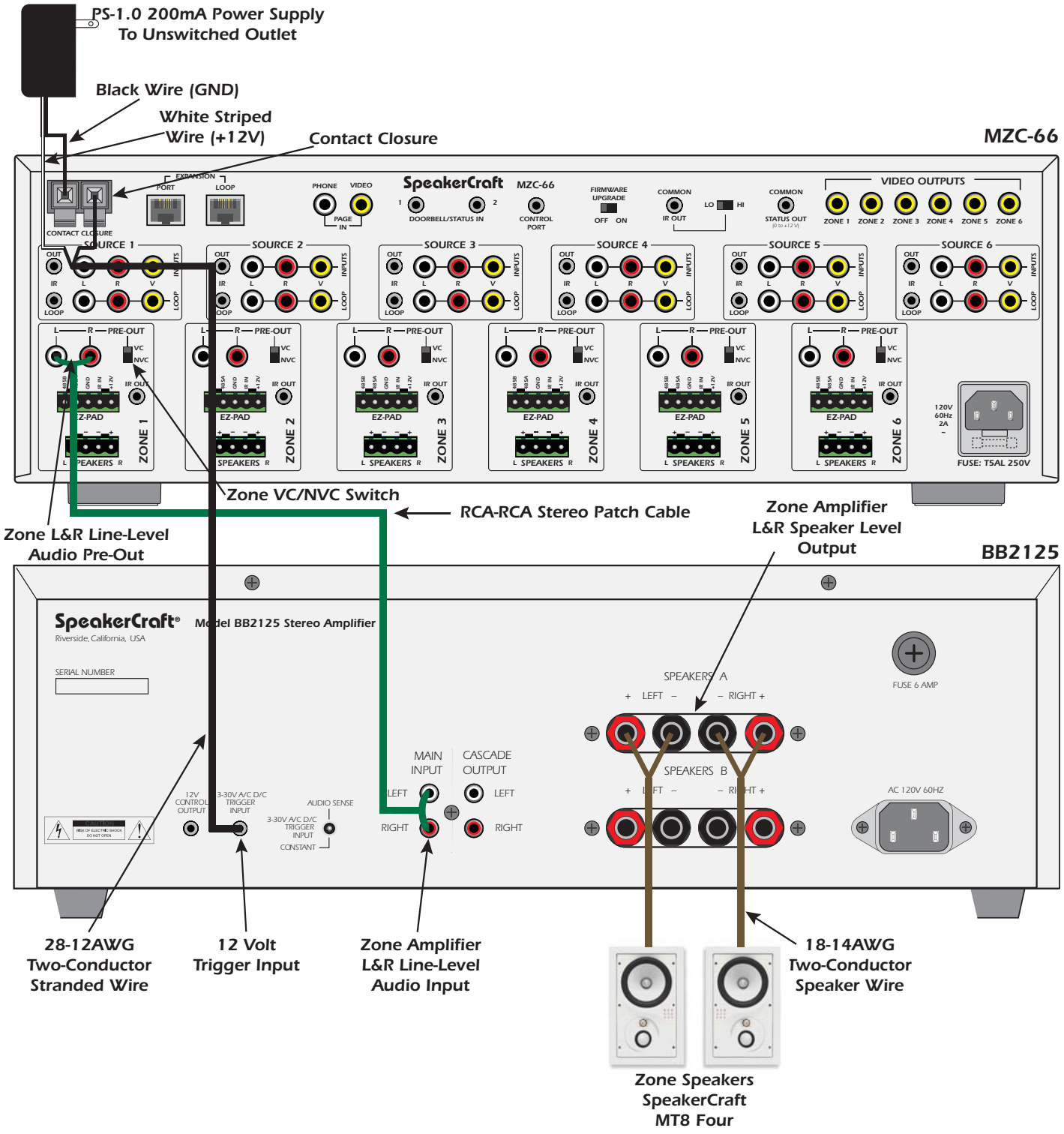


Figure 15
Adding an External High-Power Amplifier

12V TRIGGER (SYSTEM ACTIVITY)

1. Connect a 3.5mm mini-mini plug wire (SpeakerCraft PTP-1) to the MZC-66 **Common Status OUT**.
2. If using a SpeakerCraft BB2125, plug the other end into the **Trigger Input** jack. Switch the **Audio Sense/Trigger/Constant Switch** to **Trigger Input**.
3. If using another brand of amplifier, terminate the external amplifier end as appropriate. Be sure to maintain proper polarity.

ADDING A 12-CHANNEL AMPLIFIER TO A ZONE

In certain applications it may be desirable to expand a zone into multiple listening areas or 'sub-zones' that all play the same source material for background music. This type of application might include an entry, hallways, guest bathrooms, etc. or a mutiple-room suite such as a guest bedroom, bathroom and small patio. For this type of application, adding a twelve-channel amplifier such as the SpeakerCraft BB1235 is a simple way to distribute music to up to six additional rooms.

Adding a twelve-channel amp requires home runs of speaker wire from each sub-zone back to the head-end and one stereo RCA-RCA patch cable needs to be connected between the MZC-66 Zone Pre-Out and the Amplifier Main IN.

When using a SpeakerCraft BB1235, power management of the external amplifier is automatic using the on-board audio sensing circuitry. When the amplifier receives an audio signal from the MZC-66 Zone Pre-Out, the external amplifier will turn on automatically. The BB1235 will shut off after three minutes of no audio signal. Other makes will vary in their specifications and performance. Please refer to appropriate documentation for additional information.

Some amplifiers use a 12 volt trigger input to turn on in this type of application (also an option on SpeakerCraft amplifiers). There are two methods of 12V control from a MZC-66. One method utilizes the Contact Closure pair as an 'Event' to turn the amplifier on and off with a specific zone. The other allows use of the MZC-66 Common Status Out. This second option will have the amplifier turn on when any zone is on and off when the last zone shuts off. When the amplifier is driven from a single zone, turning the external amplifier on and off with that specific zone is recommended.

INSTALLATION

Additional space should be allocated for installation of a 12-channel amplifier. Leave at least 3-4 inches above and below the amp for proper air flow for cooling. If rack mounting, use cooling vents above and below the amp for increased air flow. Mounting amplifiers at the top of an equipment cabinet is recommended to reduce source components exposure to excess heat. Use cooling fans (SpeakerCraft ESC-1) when necessary.

CONNECTIONS AND CONFIGURATION

AUDIO

1. Connect one, quality, RCA-RCA stereo audio patch cable from the appropriate MZC-66 **Zone L&R PRE-OUT** to the **Bus (or AUX Inputs** on the 12-channel amplifier. **Refer to Figure 16**
2. Set the **VC/NVC Switch** to **NVC** (fixed). The Zone volume will be controlled via the sub-zone volume controls.

SPEAKERS

1. Connect the **L+,L-/R-R+ Speaker-Level Outputs** on the 12-channel amplifier to the appropriate sub-zone volume controls and speakers. Maintain proper polarity.

AUDIO SENSING

1. No additional connections required.
2. If using a SpeakerCraft BB1235, switch the **Audio Sense/Trigger/Constant Switch** to **Audio Sense**.
3. If using another brand of amplifier with audio sensing, please refer to appropriate documentation for additional information.

12V TRIGGER (ZONE SPECIFIC)

1. Connect a **12V DC Power Supply** (such as the PS-1.0) in series with the MZC-66 **Contact Closure** pair as shown in **Figure 16**. NOTE: To achieve a faster OFF time action, it may be necessary to place a 1K Ohm ¼ watt resister in shunt with the black and white stripped leads of the power supply output.
2. If using a SpeakerCraft BB1235, terminate the control wire with a 3.5mm mini plug and plug it into the **Trigger Input** jack. **POLARITY:** TIP=+12V; SLEEVE=GND. Switch the **Audio Sense/Trigger/Constant Switch** to **Trigger Input**.
3. If using another brand of amplifier, terminate the control wire as appropriate. Be sure to maintain proper polarity.
4. Configure the **Contact Closure** as an **Event** for that zone in **EZ-Tools**. Set the **Contact Closure** to **Close** when turning the zone **ON** and **Open** when turning the zone **OFF**.

12V TRIGGER (SYSTEM ACTIVITY)

1. Connect a 3.5mm mini-mini plug wire (SpeakerCraft PTP-1) to the MZC-66 **Common Status OUT**.
2. If using a SpeakerCraft BB1235, plug the other end into the **Trigger Input** jack. Switch the **Audio Sense/Trigger/Constant Switch** to **Trigger Input**.
3. If using another brand of amplifier, terminate the 12-channel amplifier end as appropriate. Be sure to maintain proper polarity.

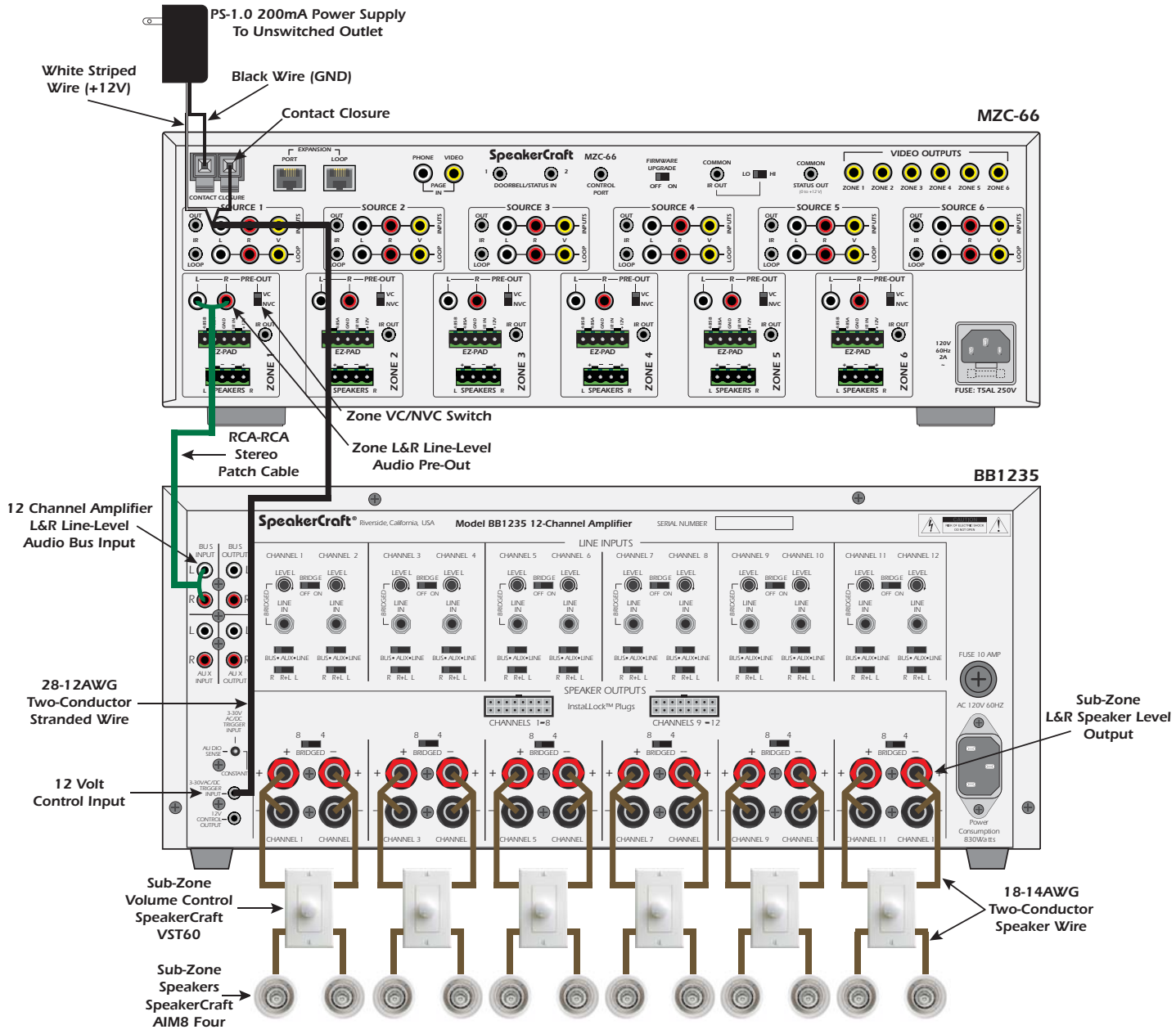


Figure 16
Adding a 12-Channel Amplifier

HIGH-POWER ALL ZONES

Another option for adding external amplification, is to connect each of the MZC-66 Zone Pre-Outs directly to the individual line-level inputs on a SpeakerCraft high-power multi-channel amplifier. This option maintains individual zone control via Keypads, as in a normal MZC-66 system, but now cranks up the audio power to each zone.

1. *Using a quality stereo RCA to RCA cable, connect the* ***Zone L & R Pre-Outs*** *to the appropriate* ***L & R line level inputs*** *(i.e. Channel pairs 1 and 2, Channel pairs 3 and 4, etc.) on the multi-channel amp.*
2. *Set the* ***VC/NVC Switches*** *on the MZC-66 Rear Panel to* ***VC*** *(variable) so the zone keypads can be used to adjust volume.*
3. *Connect zone speakers to the multi-channel amplifier Speaker Terminals in the same pairings as the Pre-amp connections.*
4. *Switch the* ***BUS/AUX/LINE Input Select Switch*** *on the multi-channel amp to* ***LINE*** *for all channels connected to MZC-66 Pre-outs.*
5. *Connect a* ***Trigger Input*** *to the multi-channel amp for Power ON/OFF as described in* ***12V Trigger (System Activity)****, previous.*

EXPANDED SYSTEMS

Up to four MZC-66s can be "daisy-chained" together to create systems with up to 24 Zones. The first MZC-66 in the chain is referred to as the **Master** and the subsequent MZC-66's are referred to as **Slaves**. System Zone numbers correspond to the MZC-66 Master and Slaves as follows:

MZC-66 Master	Zones 1-6
MZC-66 Slave 1	Zones 7-12
MZC-66 Slave 2	Zones 13-18
MZC-66 Slave 3	Zones 19-24

A CAT-5/RJ45 CABLE MUST BE USED TO LOOP SYSTEM FUNCTION DATA AND METADATA BETWEEN THE MZC-66 MASTER AND SLAVES.

MZC-66'S CANNOT BE DAISY-CHAINED TOGETHER WITH MZC-64'S OR MZC-88'S IN THE SAME SYSTEM!

All **External Common Source Components** get connected to the **Source Inputs** on the **Master**. The external source audio and video signals are then looped from the Master to the Slave MZC-66's for audio and video distribution to expanded zones. External Source IR control is looped in a reverse direction from the highest numbered Slave back to the Master and output from the Master to the external sources via IR emitters.

Phone/Video Paging signals require an audio/video distribution amp to feed the telephone audio and/or camera video signals to each of the MZC-66 Master and Slaves. The Doorbell/Status Trigger Inputs must be looped to trigger all MZC Master and Slave Page Inputs.

The Common IR Out and Common Status Out jacks must be looped for control of common IR or voltage controlled devices.

In an Expanded System, when connecting **MODE Base(s) and MODE Jukebox(es)**, it will be necessary to add at least one SpeakerCraft **RSA-1.0** to create a RS485 bus from one of the MZC Expansion Ports. (Refer to **Figure 17**) This will provide two-way communication with iPod(s) and Jukebox(es) for Serial Control to the devices and metadata return to the MZC for display on MODE Keypads.

INSTALLATION

Additional space should be allocated for installation of each additional MZC-66. Leave at least 3-4 inches above and below each Controller for proper air flow for cooling. Mounting MZC-66s at the top of an equipment cabinet is recommended to reduce source components exposure to excess heat. Use cooling fans (SpeakerCraft ESC-1) when necessary.

CONNECTIONS AND CONFIGURATION

KEYPADS

1. Connect Keypads and IR receivers to the appropriate MZC-66 EZ-Pad Zone terminals. Maintain proper polarity and check all connections prior to powering up the system. (Refer to **Figure 18**)

AUDIO/VIDEO External Common Source Components

1. Connect one, quality, RCA-RCA stereo A/V patch cable from the **L & R line-level audio and COMPOSITE video OUT** of each external source component to the appropriate **L & R line-level audio and composite video SOURCE INPUT** on the MZC-66 **MASTER**.
2. Connect one, quality, RCA-RCA stereo A/V patch cable from the **LOOP OUT** on the MZC-66 **MASTER** to the **same number SOURCE INPUT** on the **next MZC-66 Slave** in the chain. (Master to Slave 1, Slave 1 to Slave 2, etc.)
3. Repeat **Steps 1-2** for all external common source components. (Refer to **Figure 17**)

IR-External Common Source Components

1. Connect one 3.5mm mini-mini patch cable (SpeakerCraft PTP-1) from the **IR OUT** of the **last Slave**, (Slave 3 if using 4 MZC-66s) to the **same source number IR LOOP** jack on the **next MZC-66** in the chain (Slave 3 to Slave 2, Slave 2 to Slave 1, Slave 1 to Master) for each external common source component to be controlled via IR.
2. Connect an **IR emitter** to the **SOURCE IR OUT** on the **MASTER** and attach to the appropriate source component over the **IR eye** of that component.

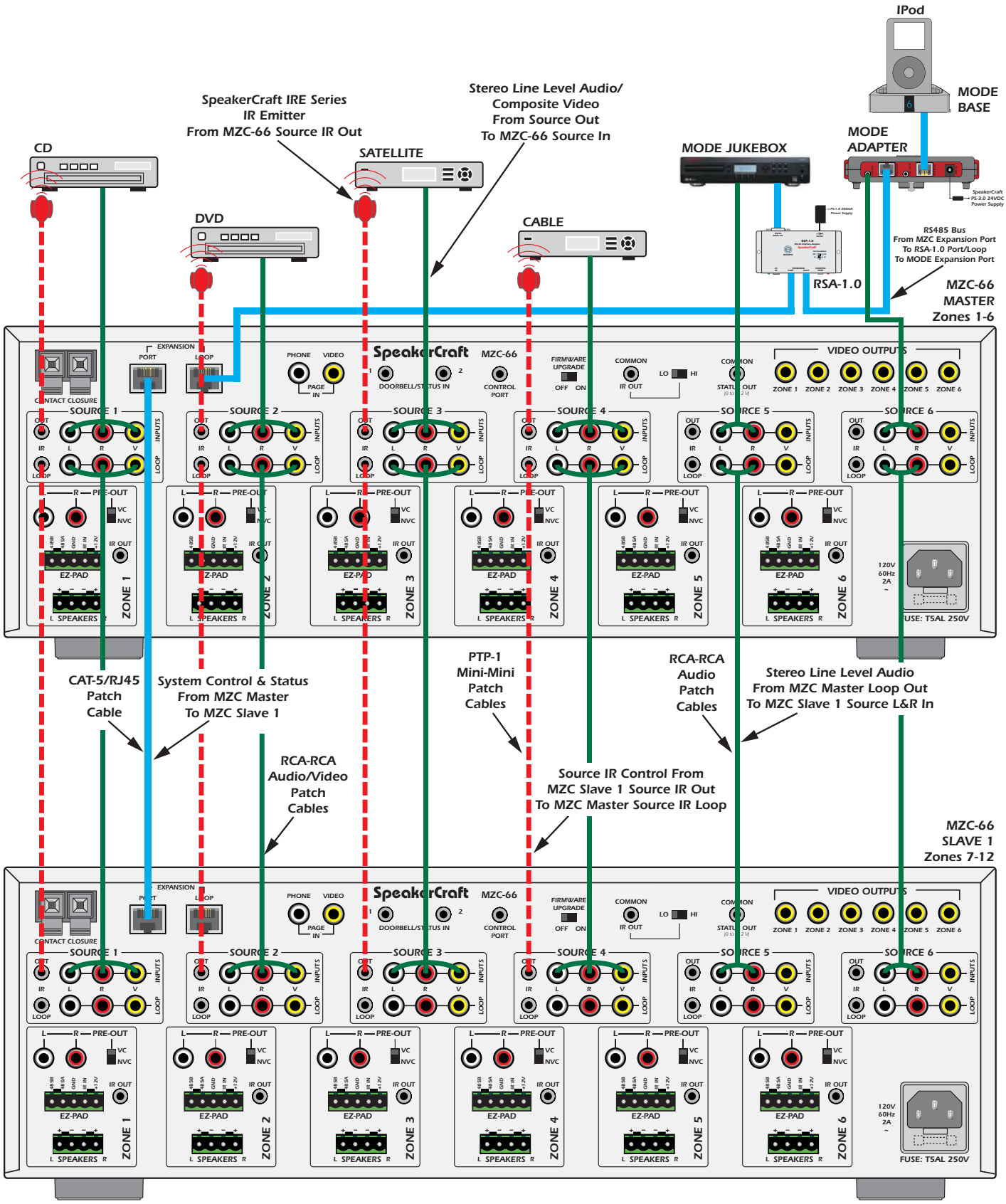


Figure 17
MZC-66 Expanded System Source, Audio, Control Connections

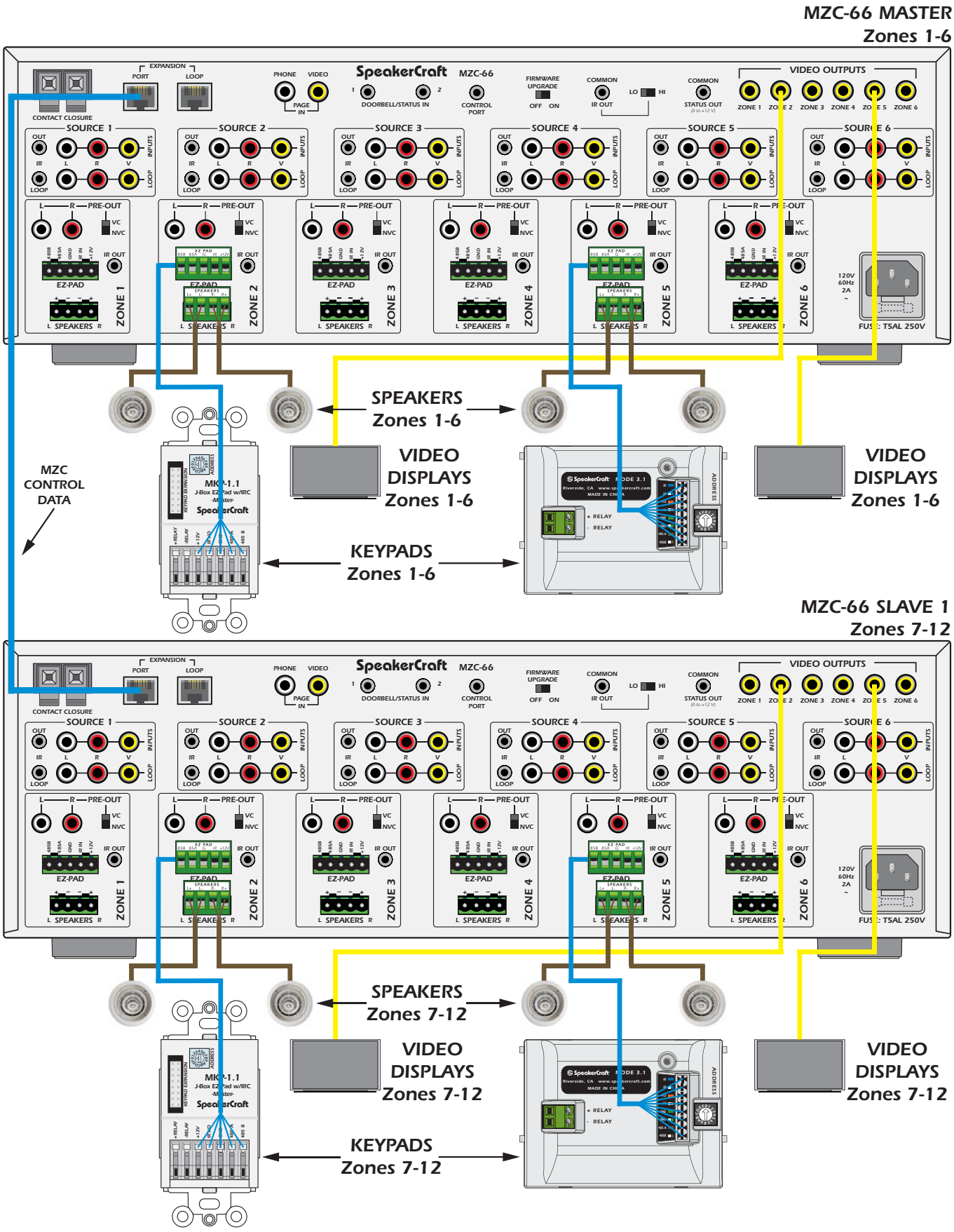


Figure 18
MZC-66 Expanded System Speaker, Keypad Connections

VIDEO OUTPUT

1. Connect the MZC-66 **Zone Video Outputs** to the appropriate **Zone TV/Video Display**.

SPEAKERS

1. Connect the **L+,L-/R-R+ Speaker-Level Outputs** of each MZC-66 to the appropriate **Zone Speakers**. (Refer to **Figure 18**)

EXPANSION

1. Connect one, **CAT-5 patch cable** terminated with RJ45 connectors (pass-through/pin to pin configuration) from one of the **EXPANSION PORT** Terminals on the MZC-66 **MASTER** to one of the **EXPANSION PORT** Terminals on the **next MZC-66 Slave** in the chain. (Master to Slave 1, Slave 1 to Slave 2, etc.) **NOTE:** The Expansion Ports on a given MZC are parallel, so either can be used for expansion connections.
3. Repeat **Steps 1-2** for all MZC-66s in the chain.

PAGE IN

NOTE: If only connecting audio for Phone Paging, 'Y' connectors can be used to connect the paging source line-level audio feed to the PAGE IN/PHONE jacks on all MZC-66s. When connecting a composite video feed, an appropriate 75 ohm matching distribution amp is required. If connecting audio and video, both signals can be fed to the Page In jacks from the distribution amp.

1. Connect the **line-level audio and/or composite video OUT** of the paging source to the **line-level audio and/or composite video IN** on the distribution amp, using RCA-RCA patch cables.
2. Connect the **audio and/or video OUTPUTS** of the distribution amp to the **PAGE IN PHONO/VIDEO Inputs** on the **MZC-66 Master and Slaves** as shown in **Figure 19**.

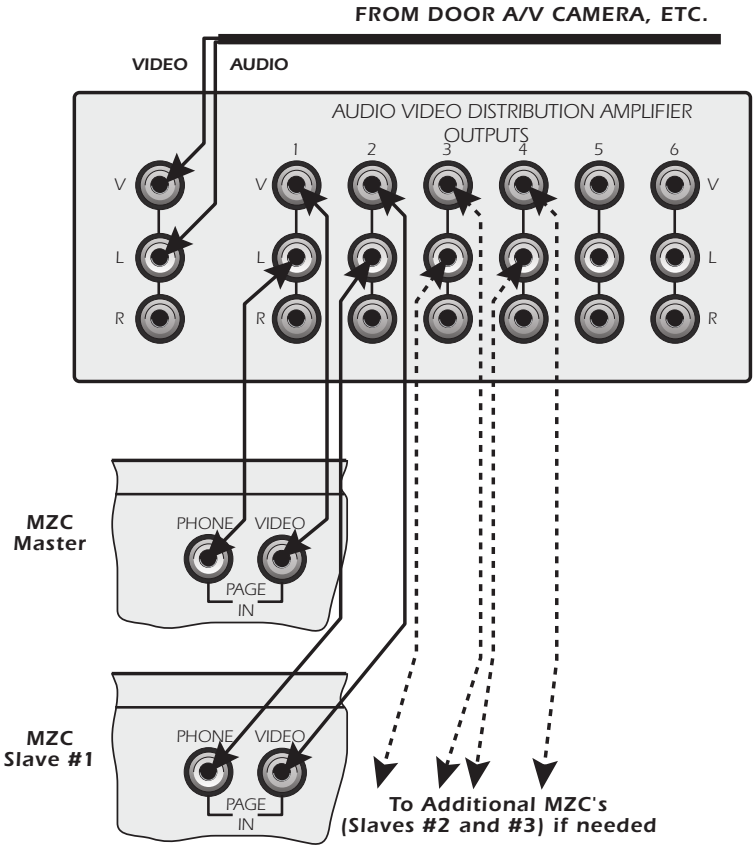


Figure 19
Page Phone/Video IN Expansion

DOORBELL/STATUS

Loop the **Doorbell/Status Trigger Inputs** using standard 3.5mm (⅛") Y adaptors to simultaneously trigger the Page Inputs (Doorbell/Status IN) on multiple MZC-66's.

NOTE 1: This application requires standard Y adaptors. **DO NOT use the SpeakerCraft SAC-1.0 Y Adapter.** The SAC-1.0 has 'steering' diodes that will interfere with the signal path in this application.

NOTE 2: These inputs will not function without proper configuration in **EZ-Tools**.

1. Terminate the **Trigger Source wire** with a 3.5mm mini plug. **POLARITY:** TIP=+V, SLEEVE=GND.
2. Connect **Trigger Source** to a **Y adaptor** as shown in **Figure 20**.
3. Daisy-chain the Y adaptors to all MZC-66's in the chain as shown in **Figure 20**.

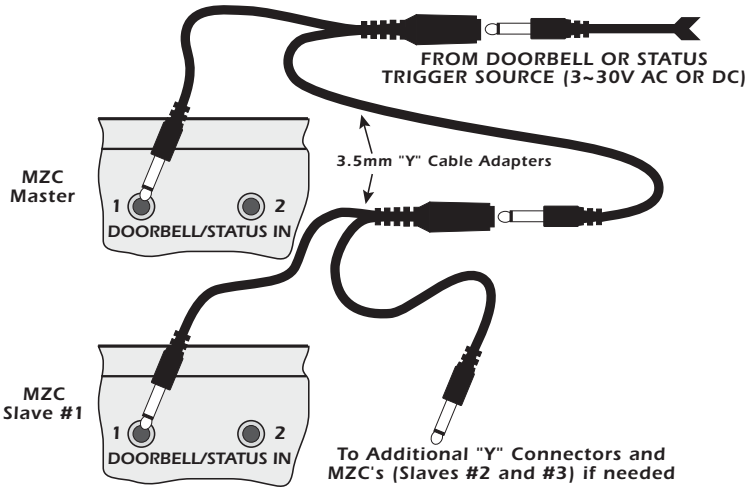


Figure 20
Doorbell/Status IN Expansion

COMMON IR OUT

The **Common IR Out jacks** from multiple MZC-66's can be paralleled and looped using standard 3.5mm (⅛") Y adaptors for IR control of a common device (not connected to one of the Source Inputs) from any MZC-66 in the chain.

NOTE: This application requires standard Y adaptors. **DO NOT use the SpeakerCraft SAC-1.0 Y Adapter**. The SAC-1.0 has 'steering' diodes that will interfere with the signal path in this application.

1. Daisy-chain the **Y adaptors** to the **Common IR OUTS** on all MZC-66s in the chain as shown in **Figure 21**.
2. Connect an **IR emitter** to the **Y adaptor assembly** as shown in **Figure 21**. Set the **LO/HI Common IR Out Switch** to **LO**.
3. Attach the **IR emitter** to the device to be controlled over the **IR eye** on that device.

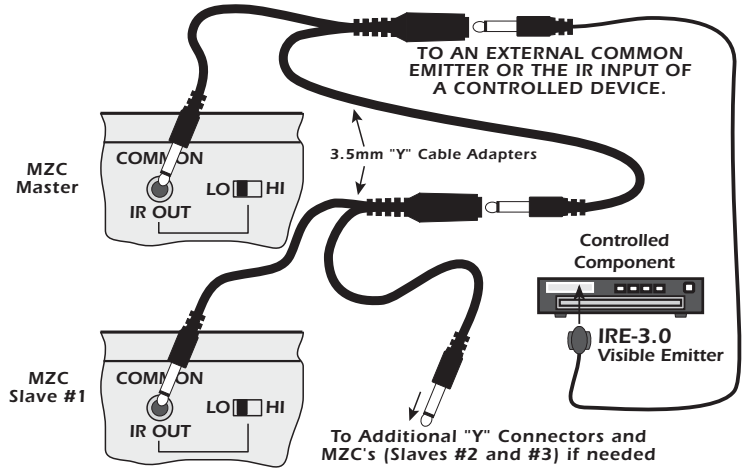


Figure 21
Common IR Out Expansion

COMMON STATUS OUT

The **Common Status Out jacks** from multiple MZC-66s can be paralleled and looped using standard 3.5mm (⅛") Y adaptors for 12 Volt DC control of a common device when any zone in the system is turned on.

NOTE: This application requires standard Y adaptors. **DO NOT use the SpeakerCraft SAC-1.0 Y Adapter**. The SAC-1.0 has 'steering' diodes that will interfere with the signal path in this application.

1. Daisy-chain the **Y adaptors** to the **Common STATUS OUTS** on all MZC-66's in the chain as shown in **Figure 22**.
2. Connect a **trigger wire** to the **Y adaptor assembly** as shown in **Figure 22**.
3. Terminate the **trigger wire** as appropriate. Maintain proper polarity. Check connections prior to powering up the system - **Improper connection of a voltage trigger can damage system components.**
4. Connect the **trigger wire** to the **device to be triggered**.

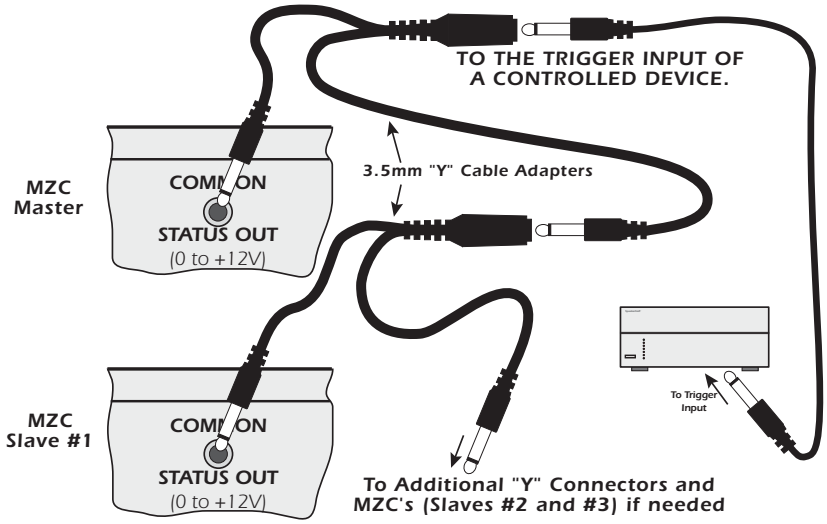


Figure 22
Common Status Out Expansion

RS485 BUS

In an Expanded System, when connecting **MODE Base(s) and MODE Jukebox(es)** or controlling RS232 devices, it will be necessary to add at least one SpeakerCraft **RSA-1.0** to create a RS485 bus from one of the MZC Expansion Ports. (Refer to **Figure 17**) This will provide two-way communication with iPod(s) and Jukebox(es) for Serial Control to the devices and metadata return to the MZC for display on MODE Keypads.

1. Connect one end of a CAT-5 Cable, terminated with RJ45 Connectors in a pass-through (pin to pin) configuration to the unused **Expansion Port** on the MZC-66 Rear Panel.
2. Connect the other end of the CAT-5 cable in **Step 1** to the **RSA-1.0 Expansion Port** terminal.
3. Connect one end of another CAT-5 patch cable to the **RSA-1.0 Expansion Loop** terminal.
4. Connect the other end of the CAT-5 cable in **Step 3** to the **Expansion Port** on the **MODE Adapter** as shown in **Figure 17**.

   NOTE: Up to 16 RSA-1.0s can be daisy chained for control of up to 16 RS232 devices. However, only the **last RSA-1.0 Loop** can be connected to the **Expansion Port** on a **MODE Adapter**.

TROUBLESHOOTING

PROBLEM	SOLUTION
Audio	
No Audio From External Source	a) Confirm source is turned on and playing. b) Check connection between external source and MZC-66.
No Audio In Zone	a) Confirm zone is turned on. b) Confirm volume is turned up and un-mute. c) Confirm speaker connections. d) Confirm zone audio routing command programming. e) In expanded systems, confirm source loop connections between MZC-66's.
No Paging Audio	a) Confirm paging source is turned on. b) Confirm paging source connection to "Phone Page In". c) Confirm trigger voltage and polarity to Doorbell/Status In. d) Confirm zone audio paging routing command programming. d) Confirm Doorbell/Status In programming in EZ-Tools.
Video	
No Video From External Source	a) Confirm source is turned on and playing. b) Check connection between external source and MZC-66.
No Video In Zone	a) Confirm zone is turned on. b) Confirm zone TV/monitor is turned on and switched to the correct input. c) Confirm TV/monitor connections. d) Confirm zone video routing command programming. e) In expanded systems, confirm source loop connections between MZC-66's.
No Paging Video	a) Confirm paging source is turned on. b) Confirm paging source connection to "Video Page In". c) Confirm trigger voltage and polarity to Doorbell/Status In. d) Confirm zone video paging routing command programming. d) Confirm Doorbell/Status In programming in EZ-Tools.
Control	
From Keypads	a) Confirm MZC-66 has AC power and is turned on. a) Confirm keypad connection to MZC-66. c) Confirm polarity of keypad connections. d) Confirm zone keypad programming in EZ-Tools. e) Confirm connection and placement of IR emitters. f) In expanded systems, confirm, IR loop connections.
From Remote Controls	a) Confirm EZ-Code programming (EZ-Codes are zone-specific.)
RS232	a) Confirm power connection to controlled device. b) Confirm RSA-1.0 connection and configuration. c) Confirm RS232 command properties.
Power	
System Power	a) Confirm connection to an unswitched AC outlet
MZC has power, but system does not respond.	a) Confirm Firmware Upgrade Switch on Rear Panel is set to OFF for normal operation.

MZC-66 Specifications

Audio Sections

Power Output/Channel (RMS, two channels driven into 8 Ohms)	30 Watts, 20Hz to 20kHz
THD (at rated power)	<0.7%
Power/Channel (RMS, 2 channels driven into 4 Ohms)	45 Watts @ 1kHz
Input Sensitivity (For rated power @ max VC)	300 mV
Input Impedance (Source Inputs)	>22 K Ohms
Input Overload (Source Inputs)	2.5 V
Output Voltage @ Pre-Outs (w/300 mV @ Source Inputs)	1.7V, VC Setting, VC Max. 180 mV, NVC Setting
Output Impedance (Pre-Outs)	<300 Ohms
Frequency Response (@ 1 Watt @ 8 Ohms)	20 Hz to 20 kHz ± 1.5 dB
Channel Separation	> 50 dB @ 10 kHz
Cross Talk Between Sources	> 65 dB @ 10 kHz
S/N Ratio (Re: Rated Output, IEC A, Source Inputs Shorted)	> 100 dB
Bass Control Range	± 10 dB @ 100 Hz
Treble Control Range	± 10 dB @ 10 kHz

Video Sections

Bandwidth (Outputs 75Ohms Terminated)	10Hz to 6MHz ± 1dB
Input/Output Levels (Outputs 75 Ohms Terminated)	1.0V p-p ± 5%

Control Sections

Contact Closures (Dry)	2A, 30 VAC/DC max
Phone Page In - Voltage/Impedance	Audio Line Level, > 22k Ohm
Video Page In	1.0V p-p 75 Ohms
Doorbell In 1&2, 3V to 30V AC or DC	10mA @12 VDC/AC
Common IR Out - HI (High Power)	9 V Active High, 82 Ohms
- LO (Emitter Power)	9 V Active High, 670 Ohms
Zone IR Outs - Voltage/Impedance	9.2 V Active High, 620 Ohms
Source IR Outs (and Loop) - Voltage/Impedance	11.5 V Active High, 390 Ohms
Common Status Out (0 to 12 V DC)	9.5 V @ 100 mA

General

Power Consumption

No signal (idle)	55 Watts
At ⅛ Rated Power (3.75 Watts/Channel)	125 Watts
Line Ratings (N.A. Version)	120 VAC, 60Hz, 1.8A
Rear Panel Fuse	T5AL 250V

Dimensions

17" (432mm) W x *5-¼" (133mm) x 14-¾" (375mm)D
*5-¾" (146mm) H, including feet

Weight

23lbs (10.5 kg)

LIMITED 2-YEAR WARRANTY

SpeakerCraft Inc. warrants to the original retail purchaser **only** that this SpeakerCraft product will be free from defects in materials and workmanship for a period of two years, provided the product was purchased from a SpeakerCraft Authorized Dealer.

Defective products must be shipped, together with proof of purchase, prepaid insured to the SpeakerCraft Authorized Dealer from whom they were purchased, or to the SpeakerCraft factory at the address listed on this installation instruction manual. Freight collect shipments will be refused. It is preferable to ship this product in the original shipping container to lessen the chance of transit damage. In any case, the risk or loss or damage in transit is to be borne by the purchaser. If, upon examination at the Factory or SpeakerCraft Authorized Dealer, it is determined that the unit was defective in materials or workmanship at any time during this warranty period, SpeakerCraft or the SpeakerCraft Authorized Dealer will, at its option, repair or replace this product at no additional charge, except as set forth below. If this model is no longer available and cannot be repaired effectively, SpeakerCraft, at its sole option, may replace the unit with a current model of equal or greater value. In some cases where a new model is substituted, a modification to the mounting surface may be required. If mounting surface modification is required, SpeakerCraft assumes no responsibility or liability for such modification. All replaced parts and product become the property of SpeakerCraft Inc. Products replaced or repaired under this Warranty will be returned to the original retail purchaser, within a reasonable time, freight prepaid.

This Warranty does not include service or parts to repair damage caused by accident, disaster, misuse, abuse, negligence, inadequate packing or shipping procedures, commercial use, voltage inputs in excess of the rated maximum of the unit, or service, repair or modification of the product which has not been authorized or approved by SpeakerCraft. This Warranty also excludes normal cosmetic deterioration caused by environmental conditions. This Warranty will be void if the Serial Number on the product has been removed, tampered with or defaced.

This Warranty is in lieu of all other expressed warranties. If the product is defective in materials or workmanship as warranted above, the purchaser's sole remedy shall be repair or replacement as provided above. In no event will SpeakerCraft be liable for any incidental or consequential damages arising out of the use or inability to use the product, even if SpeakerCraft Inc. or a SpeakerCraft Inc. Authorized Dealer has been advised of the possibility of such damages, or for any claim by any other party. Some states do not allow the exclusion or limitation of consequential damages, so the above limitation and exclusion may not apply.

All implied warranties on the product are limited to the duration of this expressed Warranty. Some states do not allow limitation on the length of an implied warranty. If the original retail purchaser resides in such a state, this limitation does not apply.

SpeakerCraft offers a variety of accessories to make your installation of this and other SpeakerCraft products easy, economical, and professional. Contact your authorized SpeakerCraft Dealer for more information.

For technical inquires, please call 1-800-448-0976 or e-mail us at techsupport@speakercraft.com. We are available to assist you every weekday, except holidays, between the hours of 7:00 a.m. and 5:00 p.m. PST.