




Z21S/Z32S

Soundzone Controllers


**Owner's Manual**

# IMPORTANT SAFETY INSTRUCTIONS



**CAUTION**

RISK OF ELECTRIC SHOCK  
DO NOT OPEN



**ATTENTION:** RISQUE DE CHOC ELECTRIQUE - NE PAS OUVRIR

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

The symbols shown above are internationally accepted symbols that warn of potential hazards with electrical products. The lightning flash with arrowpoint in an equilateral triangle means that there are dangerous voltages present within the unit. The exclamation point in an equilateral triangle indicates that it is necessary for the user to refer to the owner's manual.

These symbols warn that there are no user serviceable parts inside the unit. Do not open the unit. Do not attempt to service the unit yourself. Refer all servicing to qualified personnel. Opening the chassis for any reason will void the manufacturer's warranty. Do not get the unit wet. If liquid is spilled on the unit, shut it off immediately and take it to a dealer for service. Disconnect the unit during storms to prevent damage.

This product conforms to EN60065 EMC requirement to EN55103-1,-2 Declaration Of Conformity available upon request.

**WARNING FOR YOUR PROTECTION**  
**PLEASE READ THE FOLLOWING:**

**KEEP THESE INSTRUCTIONS**

**HEED ALL WARNINGS**

**FOLLOW ALL INSTRUCTIONS**

**CLEAN ONLY WITH A DAMP CLOTH.**

**DO NOT BLOCK ANY OF THE VENTILATION OPENINGS. INSTALL IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.**

**DO NOT INSTALL NEAR ANY HEAT SOURCES SUCH AS RADIATORS, HEAT REGISTERS, STOVES; OR OTHER APPARATUS THAT PRODUCE HEAT.**

**ONLY USE ATTACHMENTS/ACCESSORIES SPECIFIED BY THE MANUFACTURER.**

**UNPLUG THIS APPARATUS DURING LIGHTNING STORMS OR WHEN UNUSED FOR LONG PERIODS OF TIME.**

**WATER AND MOISTURE:** Appliance should not be used near water (e.g. near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

**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.

**GROUNDING OR POLARIZATION:** Precautions should be taken so that the grounding or polarization means of an appliance is not defeated.

**POWER CORD PROTECTION:** Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

**SERVICING:** To reduce the risk of fire or electric shock, 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.

**FOR UNITS EQUIPPED WITH EXTERNALLY ACCESSIBLE FUSE RECEPTACLE:** Replace fuse with same type and rating only.

**MULTIPLE-INPUT VOLTAGE:** This equipment may require the use of a different line cord, attachment plug, or both, depending on the available power source at installation. Connect this equipment only to the power source indicated on the equipment rear panel. To reduce the risk of fire or electric shock, refer servicing to qualified service personnel or equivalent.

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## Quick Start

1. Connect the included JBL power supply to the rear panel of the Soundzone Controller and check that it powers up.
2. Connect a Left/Right RCA audio source to Source Input 1. Do not put any audio through the unit at this time.
3. Turn the Source 1 Gain Knob on the rear panel of the unit all the way COUNTER-CLOCKWISE.
4. Turn the front panel Source Level Knob all the way COUNTER-CLOCKWISE.
5. On the front panel, select Source 1 with the Zone 1 Select Knob.
6. Connect the Zone 1 Output to your power amplifier. Make sure it is not powered up while making this connection, this will prevent any nasty pops.
7. Turn on your power amplifier.
8. Turn on your audio source.
9. Slowly turn up the rear panel Source 1 gain until the Signal LED is showing constant green.
10. Now turn up the front panel Source Level until you hear audio through your source speakers.
11. Adjust EQ to the room, or to taste.
12. See page 12 for setting AutoWarmth™ and LevelGuard™.

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## 1.0 Introduction

### 1.1 JBL Soundzone Controller

The JBL Z21S/Z32S Soundzone Controllers are specifically designed for flexible routing and control of multiple audio sources. To facilitate this, JBL has equipped the Z21S/Z32S with a wide array of input and output capabilities.

The Z32S has inputs for three stereo line (-10dB RCA) sources and a microphone input. The Z32S outputs two stereo signals, two subwoofer signals, and an isolated auxiliary output, all on Euroblock connectors. Both Z21S/Z32S convert the incoming -10dB signal and boost it to the +4dB output required by professional grade amplifiers.

JBL's AutoWarmth™ and LevelGuard™ controls give you excellent sounding, easy to use equalization and dynamics control. This circuitry allows the signal to be tailored for a wide variety of rooms, taste, and volume requirements.

These features allow you to bring the same audio quality many of your patrons are used to hearing at home into the realm of business. The Soundzone Controllers have been designed to make them easier to operate than any other product in their class. In reality the feature set provided by the Soundzone Controllers puts them in a class by themselves.

### 1.2 Other Soundzone Features

Soundzone Controllers also feature linking capability. This is accomplished by connecting standard Category 5 UTP cables to the Soundzone's LINK jacks.

Linking of multiple controllers provides additional output zones yet does not increase the number of inputs. SOURCE Linking simply allows multiple controllers to share the same input source, eliminating the need for Y-cables. Main linking allows multiple controllers to share Paging Mic, Music Mute, and Direct Input functions. When multiple units are linked, there is no master or slave designation. The functions are simply paralleled so that Sources, Paging Mic, Music Mute, and Direct Input can be run into ANY of the linked Sound Zone controllers.

JBL offers several optional remote control wall plates -- the ZR-3SV, ZR-2SV, and the ZR-V. These plates provide for remote source selection and/or volume adjustments from within a zone location.

## 2.0 Installation

### 2.1 Unpacking

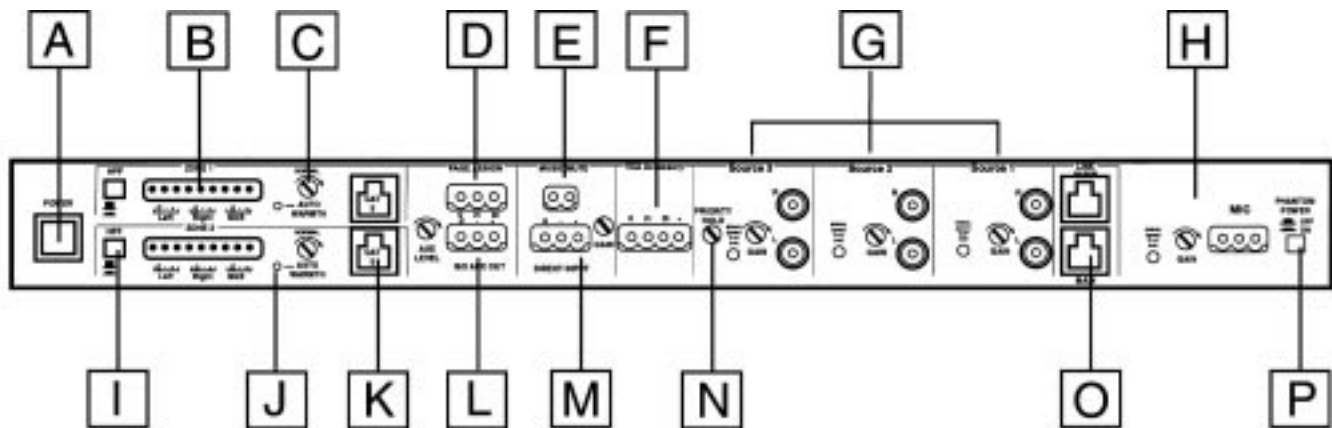
This product is carefully checked before packing to ensure flawless appearance and operation and that it reaches you in first class condition.

After unpacking the unit, please inspect it for any physical damage. If any damage has occurred, notify your dealer immediately. A written claim for damages can then be initiated. Please retain the shipping carton and all the packing materials for use should the unit need to be transported or returned for any reason.

### 2.2 Mechanical Requirements

Adequate ventilation must be provided by allowing sufficient space around the sides, top, and rear of the Z21S/Z32S to ensure free circulation of air. Forced cooling is not required. The Z21S/Z32S requires a vertical rack space of 1U. Failure to do so may damage the case and invalidate the warranty.

### 3.0 Rear Panel



Model Z32S shown

**A Power Supply Input**

Connect your included JBL power supply here. The power supply can be left loose or double-sided tape is provided for holding the power supply in place. Alternatively, the installer can affix the power supply with a bracket of their own making.

**B Zone Output(s)**

The Z21S/Z32S outputs utilize balanced Euroblock connectors. These outputs carry the Left, Right, and Subwoofer signals. Connect these to your zone power amplifier

**C AutoWarmth™ Trim Pot**

This trim pot adjusts at what point AutoWarmth™ is engaged

**D Page Assign**

This allows you to assign pages between output Zones. This can be accomplished with a simple remote selector switch or can be hard wired if pages are to the same Zone every time. Shorting a zone pin (Z1 or Z2 or both) to the “+” pin assigns the page to that zone.

**E Music Mute**

This can be wired to a switch that mutes the background music when pin 2 is shorted to ground pin 1.

■ Boxes in black are the controls also found on the JBL Z21S Sound Zone Controller.

NOTE 1: MUSIC MUTE DOES NOT MUTE THE PAGING MIC. IN AN EMERGENCY SITUATION, THE SYSTEM USER MAY NEED TO USE THE PAGING MIC FOR EMERGENCY ANNOUNCEMENTS.

NOTE 2: WHILE MODEL Z21S DOES NOT HAVE A MUSIC MUTE JACK, IT CAN ACCEPT A MUSIC MUTE THROUGH THE MAIN LINK CABLE. THIS IS FOR INSTANCES WHERE THE Z21S AND Z32S ARE LINKED TO PROVIDE AN ADDITIONAL OUTPUT ZONE

### **F** VCA Accessory

This provides for future accessory implementation.

### **G** Source Inputs

Connect your RCA equipped source signals here.

### **H** Microphone Input

Connect the paging microphone here. Line level paging inputs from telephone systems must be externally transformer isolated and reduced in volume to microphone level.

### **I** High Pass Filter

This switch activates the Zone output 100 Hz High Pass Filter, which allows all frequencies above 100Hz to pass. Use this filter if the bass response of your room is too boomy, when you are using inexpensive loudspeaker transformers or in conjunction with the subwoofer crossover (see subwoofer crossover section).

### **J** AutoWarmth™ Indicators

These indicators flash red when the AutoWarmth circuitry is being activated.

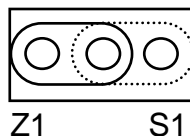
### **K** Zone Remote Jacks

These inputs are for the optional Remote Wall Plates ZR-3SV, ZR-2SV, and ZR-V.

### **L** Isolated Auxiliary Output

This sends a transformer isolated mono signal for a music-on-hold system, or for a separate mono auxiliary Zone. The +/- outputs are 600 Ohm transformer isolated so that they can interface to another system (telephone or remote amplifier) without having undesirable ground interaction. The level control adjusts the output level to match a variety of applications.

NOTE : AS SHIPPED, THE SOURCE FEEDING THE AUXILIARY OUTPUT IS SELECTED BY THE ZONE 1 SOURCE SELECTOR. WHATEVER SOURCE IS SELECTED BY ZONE 1 IS WHAT COMES OUT OF THE AUXILIARY OUTPUT. THIS CAN BE CHANGED TO ALWAYS BE SOURCE 1 BY MOVING AN INTERNAL JUMPER FROM Z1 TO S1.



■ Boxes in black are the controls also found on the JBL Z21S Sound Zone Controller.



### **M** Direct Input

The Direct Input signal is buffered and sent directly to the outputs. This is useful for alarms, emergency pages, or for another priority level of paging. The gain control adjusts the volume of Direct Input to the Zones.

NOTE 1: THE DIRECT INPUT REQUIRES A LINE-LEVEL SIGNAL, A MICROPHONE PRE-AMP IS NEEDED TO BOOST A MIC LEVEL SIGNAL BEFORE IT CAN BE RUN INTO THE DIRECT INPUT.

NOTE 2: WHILE MODEL Z21S DOES NOT HAVE A DIRECT INPUT JACK, IT CAN ACCEPT A DIRECT INPUT SIGNAL THROUGH THE MAIN LINK CABLE. THIS IS FOR INSTANCES WHERE THE Z21S AND Z32S ARE LINKED TO PROVIDE AN ADDITIONAL OUTPUT ZONE. IN THIS CASE A VOLUME CONTROL IS PROVIDED FOR THE ADJUSTMENT OF DIRECT INPUT TO THAT ZONE.

### **N** Priority Hold

Priority Hold smoothly adjusts the time it takes for the normal input source to become audible after the priority source ceases. This allows for compatibility with the many different types of priority sources that exist in business environments.

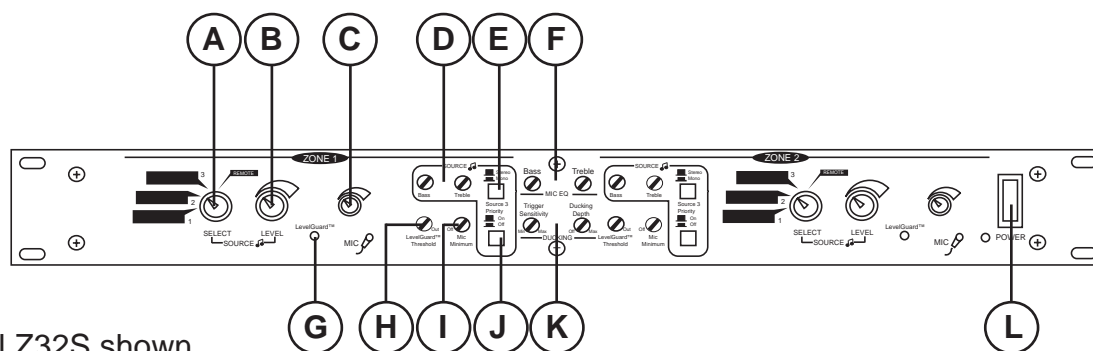
### **O** Link Jacks

These inputs allow you to network multiple Soundzone controllers together. The units are connected by standard Category 5 UTP cables.

### **P** Phantom Power

This switch provides +12V power for condenser microphones.

## 4.0 Front Panel



Model Z32S shown

### **A** Source Selector

This knob selects which source is sending to that Zone, or selects remote control with a Remote Wall Plate. For the wall plate source selector to be active, this control must be set to the REMOTE position.

### **B** Music Level Knob

This knob increases or decreases the output level of the background music.

### **C** Mic Level Knob

This knob increases or decreases the level of the Paging mic.

### **D** Bass & Treble Zone EQ

The Bass trim pot cuts/boosts the Zone's low frequencies. The Treble trim pot cuts/boosts the Zone's high frequencies.

### **E** Mono Switch

This switch reduces the stereo image to mono. This is helpful for adjusting for mono input sources, or for stereo input sources into a mono system.

● Circles in black are the controls also found on the JBL Z21S Soundzone Controller.



### **Bass & Treble Mic EQ**

The Bass trim pot cuts/boosts by +/-10dB the Microphone's low frequencies. The Treble trim pot cuts/boosts by +/-10dB the Microphone's high frequencies.



### **LevelGuard™ Indicator**

This LED flashes amber when the LevelGuard™ circuitry has been activated.



### **LevelGuard™ Threshold**

Adjusts the threshold at which the LevelGuard™ circuitry is activated. Fully Clockwise is off



### **Min. Mic Volume Trim Pot**

Sets the desired minimum Paging Mic level, enabling the mic's lowest preferred level to be set. This ensures that the main mic level control cannot be accidentally set to totally turn off a page into that zone.



### **Priority Switch**

Selects whether Sources 1 and 2 are overridden by the Source 3 input.




### **Ducker**

Ducking automatically decreases the level of the background music when a page takes place. Set the Sensitivity control so that the ducking occurs reliably whenever a mic page occurs. Set the depth control to suit the application. Typical ducking would be with the control straight up, letting through some of the background music during a page. You can set the depth for full, minimal, or no ducking of the music, as required.



### **Power Switch**

Turns the Soundzone Controller on/off.

 Circles in black are the controls also found on the JBL Z21S Sound Zone Controller.

### 5.0 Getting To Know Your Soundzone Controller

#### 5.1 Source

What is a Source? This is a line-level input signal such as programmed music, CD player, VCR/DVD, satellite feed, tape player, radio, message repeater, or juke box. These sources are then equalized, dynamically controlled, and routed by your selections and priorities on the Soundzone Controller.

#### 5.2 Zones

What is a Zone? This is the area where you wish the signal to end up. The Z21S/Z32S outputs a stereo or mono signal to your chosen Zone. Built-in subwoofer crossovers allow you to include a subwoofer in that Zone. This allows you to attain the wide bandwidth sound your patrons are used to hearing.

#### 5.3 Volume

What is a good volume? Determining a good volume is a balance of art and science. You need maximum coverage without interfering with the workplace environment or customer comfort and communication. The Z21S/Z32S give you the tools you need in the form of AutoWarmth™ and LevelGuard™ to get the best sound quality from the volume that each application requires. Once you have set your volume preferences, AutoWarmth™ and LevelGuard™ help you keep it that way.

#### 5.4 AutoWarmth™

What is AutoWarmth™? In its simplest terms JBL's AutoWarmth™ can be thought of as being similar to the "loudness" control on a home stereo, except it's actual functions are considerably more complex. AutoWarmth™ operates on a variable basis and automatically makes the proper adjustments to maintain an even tonal perception. This circuitry constantly adjusts for the ear's tendency to hear less low frequencies at low volumes, and more low frequencies at high volumes. AutoWarmth™ automatically ensures full music fidelity at all volumes.

#### 5.5 LevelGuard™

What is LevelGuard™? The LevelGuard™ circuitry helps keep the volumes of various sources consistent by sensing the level of the incoming audio source and automatically compressing the signal to a user selected preference.

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## 6.0 Setup

### 6.1 Determining Source Priorities

Determining the hierarchy of your sources is easier than it sounds. Generally it follows this order:

1. Emergency/Alarm (Direct Input with Music Mute engaged)
2. Pages (Paging Mic)
3. Pre-recorded announcements (or another source into Source 3 with Priority engaged).
4. Background music (Sources 1 and 2)

In this example, your alarms would connect to the Direct Input, your Page Mic connects to the Mic Input, pre-recorded announcements connect to Source 3, and background music connects to Source 1 and 2.

NOTE: MUSIC MUTE DOES NOT MUTE THE PAGING MIC. IN AN EMERGENCY SITUATION IT IS USUALLY BEST TO KEEP ALL MICROPHONES ACTIVE FOR ANNOUNCEMENTS.

### 6.2 Connecting Sources

Connecting your Sources is also very simple. Just connect the Left and Right outputs of your Source to the Left and Right input of the Soundzone Controller.

### 6.3 Adjusting Source Gain

Check the input level LED's, they should show green for continuous signal. Red will flash if the input is too strong. Occasional flashes into the red are not harmful if no distortion is apparent.

### 6.4 Use Of EQ

The best determination for needed equalization is to trust your ears. Does the output sound boomy? Reduce bass setting or engage the high pass filter, this will reduce the bass frequencies. Does it sound dark or muffled? Turn up the treble. Or if it sounds thin or harsh, decrease the treble. Just like the tone controls on a car or home stereo.

## 6.0 Setup

### 6.5 Using Subwoofer Crossover

The subwoofer outputs are low passed at 100 Hz with a slope of 24 dB per octave.

Traditional crossover: When the High Pass Filter switch is engaged, then the main speakers are high passed at 100 Hz with a slope of 24 dB per octave, forming a full traditional subwoofer crossover. This traditional crossover configuration is recommended wherever possible, resulting in the smoothest frequency response as long as there are enough subwoofers to keep up with the main speakers.

Overlap crossover: When the High Pass Filter is NOT engaged, then the main speakers receive a full range signal. This overlap can allow for stronger mid-bass for installations where there may not be enough subwoofers to cover the low end by themselves. Care must be taken when using an overlap crossover because it can result in a large mid bass bump in the range where both the main and subwoofer speakers overlap. The size and nature of this bump depends on the frequency response and rolloff characteristics of the main loudspeakers. This bump can sound muddy and may require a fairly sophisticated equalizer to remove, without also removing too much of the bass content.

### 6.6 Setting Up AutoWarmth™ Method1

To set up AutoWarmth™ begin by turning the AutoWarmth™ trimmer to 12:00. Use this as your “baseline” setting. Now turn up the Source volume (on front panel) to a typical operating level for that Zone. Check the AutoWarmth™ indicator LED, on quieter passages the indicator should flash red. If it does not, start turning the trimpot clockwise until it does. If the indicator is constantly on, turn the trimpot counter-clockwise until it flashes only occasionally. Then adjust the bass and treble tone controls for that zone. To check the adjustments, turn the volume down to as low as its ever going to be used in that zone and make sure the tone sounds full enough. If not then turn the Autowarmth™ trimmer further clockwise to increase its effect. Go back and forth between typical level, low level, and high level. Adjust AutoWarmth™ for the best overall sound at all the compared levels.

## 6.0 Setup

### 6.7 Setting Up AutoWarmth™ Method2

An alternate method is to turn the AutoWarmth™ trimmer full counter-clockwise. Turn the Source volume (on front panel) to the highest volume at which that zone will be operated. Adjust the AutoWarmth™ trimmer clockwise until the red LED just starts to light on musical peaks. Then turn the AutoWarmth™ trimmer back counter-clockwise until it does not light at all. Next turn the zone's level down to normal operating level and adjust the bass and teble controls for that zone, the AutoWarmth LED will light.

With either of these setup methods, AutoWarmth™ should shut off when operating at higher volumes and be lit at both normal and lower volumes.

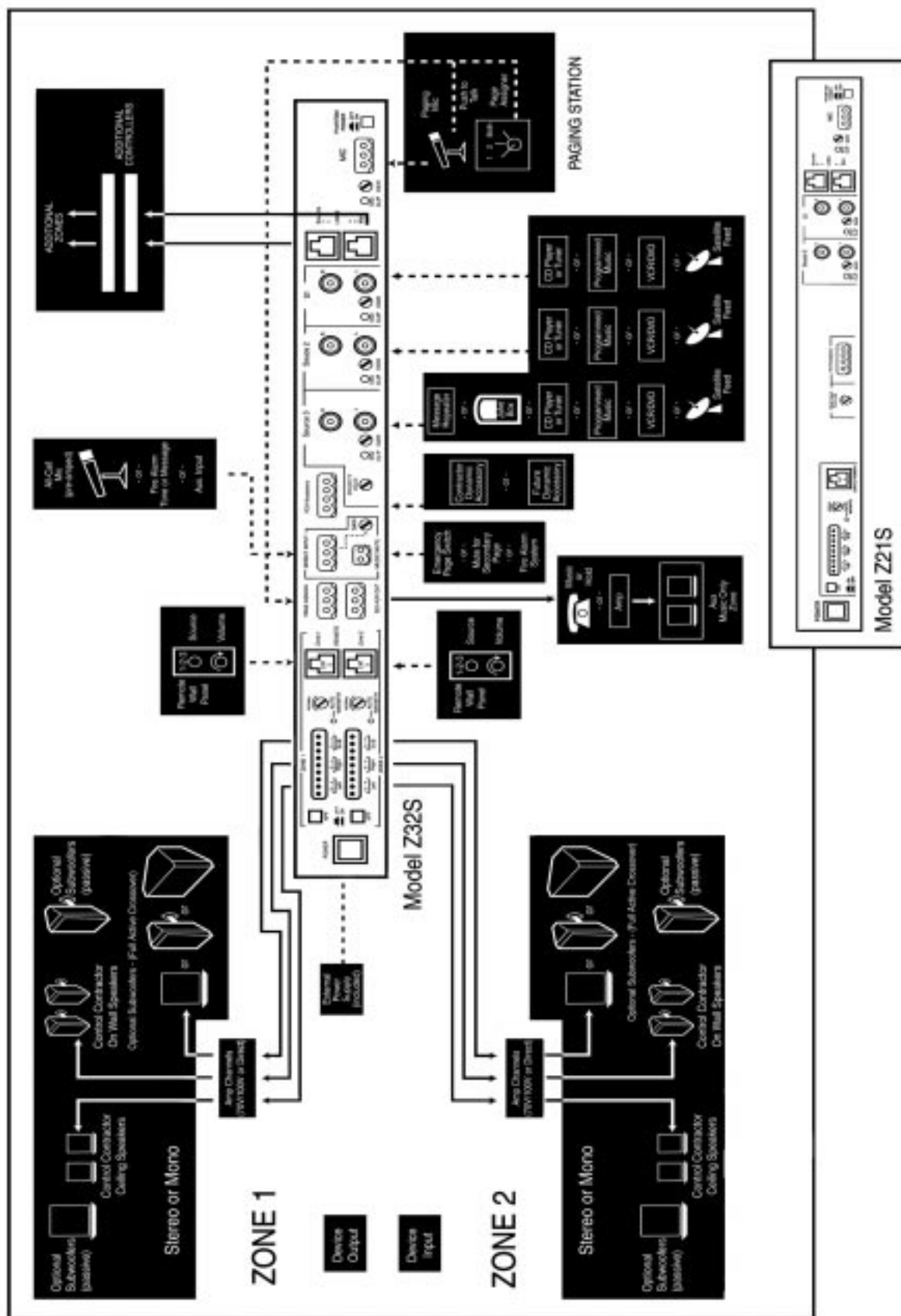
### 6.8 Setting Up LevelGuard™

To set up LevelGuard™ begin by turning the LevelGuard™ trim pot to 12:00. Use this as your "baseline" setting. Now turn up the Source volume to the level desired for a particular Zone. Check the LevelGuard™ indicator LED, on quieter passages the indicator should be off. On peak volumes the indicator will flash amber. If the indicator is constantly on, turn the trimpot clockwise until it flashes only occasionally. It is useful to set LevelGuard™ so that the LED stays unlit during very low volume music, flashes on and off during normal volume, and then lights continuously as the volume increases. Adjust by ear to sound best.

### 6.9 Security Cover

Affix the security panel over the front panel setup controls to prevent tampering.

# A.1 Setup Diagram





## A.2 Optional Items

Optional Remote Wall Plates are available from JBL to increase the flexibility of your Sound Zone Controller.



ZR-3SV  
3 SOURCES  
& VOLUME  
FOR USE WITH Z32S.



ZR-2SV  
2 SOURCES & VOLUME  
FOR USE WITH Z21S, OR  
WITH Z32S TO CONTROL  
ONLY 2 SOURCES.



ZR-V  
FOR USE WITH EITHER  
Z32S OR Z21S,  
CONTROLS VOLUME  
ONLY.

### SOURCE SELECTION

The Source Selection control on the wallplate only functions when the Source Selector switch for that zone is set to “Remote” on the controller. When the wallplate control is active, the red LED on the wallplate below the Source switch (labeled Control Active) lights. When this LED is not lit, the control is not operational.

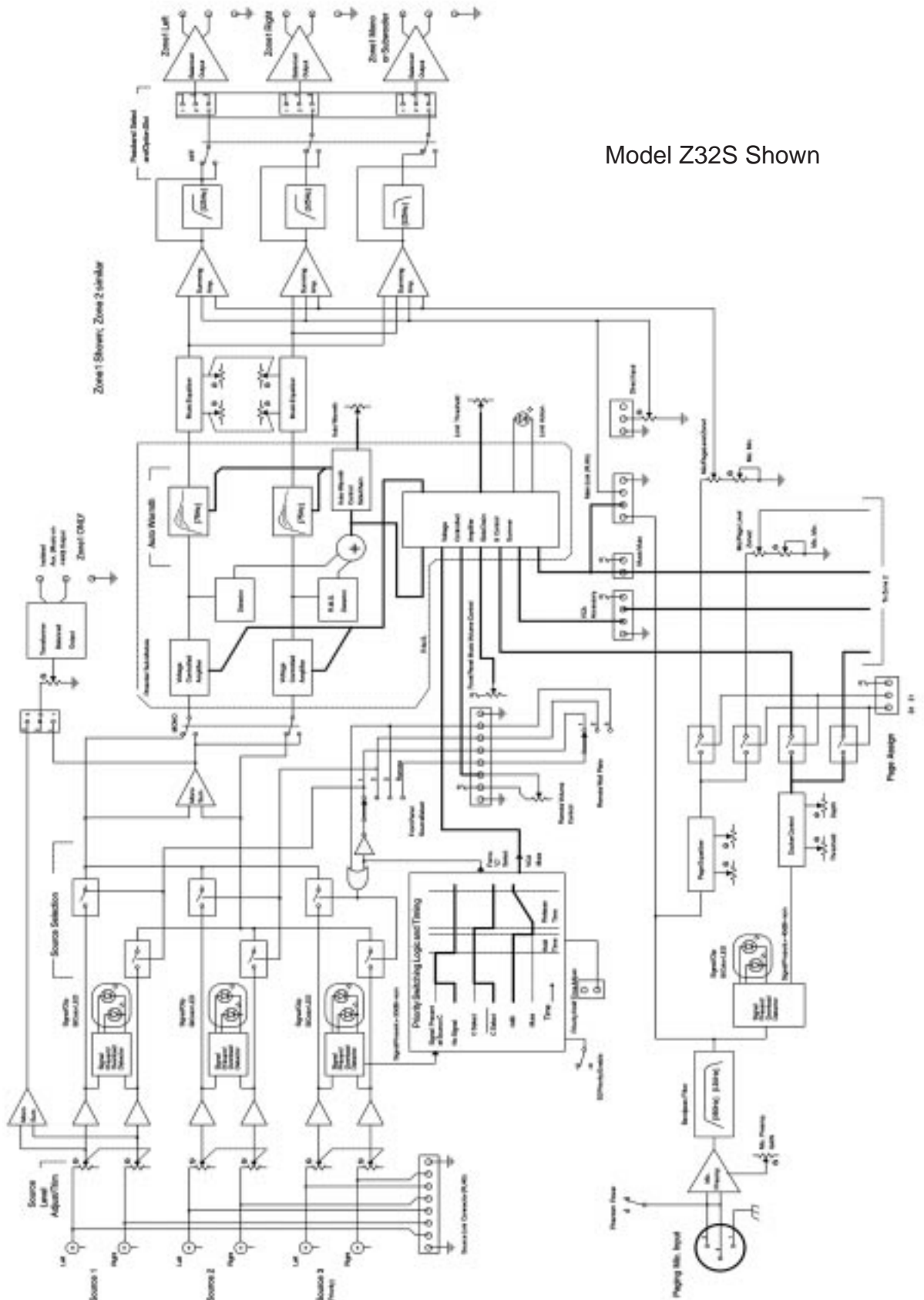
### VOLUME CONTROL

The Volume Control on the wallplate is ALWAYS operational, regardless whether the Source Selector is active or not. This control is ATTENUATE ONLY.

To set:

1. Turn the wallplate volume to maximum (full clockwise)
2. Set the volume control on the controller to the loudest you will ever need the system to be.
3. Turn the wallplate volume control down to a comfortable or typical operating level. Now the wallplate volume control cannot turn the volume up above what is set on the controller.

# A.3 Schematic



Model Z32S Shown

## A.4 Specifications

### LINE INPUT

Type: Unbalanced, RCA connector x 2, per source

Nominal Sensitivity: -10 dBV

Input Impedance: 20 k ohms

Headroom: >25 dB (-10 dBV nominal)

Noise: <0.06%, 20 Hz - 20 kHz (0 gain)

Frequency Response: 30 Hz - 20 kHz  $\pm$  1dB

Equalization: Bass  $\pm$  10 dB @ 50 Hz  
Treble  $\pm$  10 dB @ 10 kHz

### MIC INPUT

Type: Balanced, Euroblock connector for bare wire

Input Impedance: 2 k ohms

Sensitivity: -60 dBV to -20 dBu

Noise: -118 dBu EIN 150 source impedance, 22 kHz bandwidth

Frequency Response: Band limited to 250 Hz - 8 kHz  $\pm$  1 dB

Common Mode Rejection: > 40 dB, typically > 55 dB

Equalization: Bass  $\pm$  10 dB @ 200 Hz  
Treble  $\pm$  10 dB @ 8 kHz

### ZONE OUTPUTS

Type: Balanced, Euroblock connector for bare wire

Nominal Output: +4 dBu (1.2 V)

Maximum Output: +18 dBu (6.2 V)

Subwoofer Output: Low-passed 100 Hz, 24 dB/oct Linkwitz-Riley

HPF: High-pass, 100 Hz, 24 dB/oct Linkwitz-Riley

### MISCELLANEOUS

Direct Input: -2 dBu (0.62 V) nominal sensitivity  
10 k ohms nominal input impedance

Priority Hold: Adjustable from approx 1 second to approx 20 seconds.

Iso Aux Out: Isolated via 600 ohm balanced isolation transformer.  
Output level adjustable to +13 dBu (3.5 V) max.

Remote Wall Plates: Connection via Category 5 UTP, Category 5 connectors both ends, no audio runs through wires. RJ45 connector.

Mute Terminals: Shorting the pins mutes all Source inputs, does not mute Mic input.

VCA Port: 0 V for no attenuation,  
+5 V for full attenuation

Page Assign: Shorting zone pin to ground (provided) assigns page to that zone.

Source Linking: Category 5 cable, RJ45 connector. With more than 2 units, Category 5 Y-cable required. Recommended max of 4 units for direct linking. More with outboard DA. Recommended max link cable length 6 ft (2.4M).

### GENERAL

Power Consumption: 20 W

Power Requirements: 115V  $\pm$ 10% or 230V  $\pm$ 10%  
Thermal fuse in external transformer

Dimensions (W x H x D): 19.0" x 1.8" (no feet) x 7.0" (including knobs and connectors), 6.3" deep behind rail. (482 mm x 46 mm x 178 mm, 160 mm behind rail)

Weight: 5 lb (2.2 kg)



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