

TECHNICAL BULLETIN

Improvements to Zone Management

About this Technical Bulletin

This technical bulletin is for TouchTunes Jukebox Operators, TouchTunes field service, customer support, and sales personnel in North America.

About Zone Management

It is now possible to split the three existing output zones, for a total of 6 mono output zones whose volumes can be managed independently.

This allows venues to double their jukebox music coverage areas, offering further customization in venue and an increased revenue opportunity.

Contents

- About this Technical Bulletin..... 1
- About Zone Management 1
- Safety Considerations and Recommendations 2
- Activating New Zones 3
- Remote Control..... 5
 - New Overlay Decal 5
 - Switching between Zone Sets 5
 - Changing the Volume 5
 - Synchronized Zone Volumes..... 5
- Reverting..... 6
- Zone Management Examples..... 6
 - A** - Adding an Internally Amplified Zone 6
 - B** - Adding an Externally Amplified Zone 7
 - C** - Using All 6 Zones 8
 - Real-World Situations with Solutions..... 9
- Troubleshooting 10
- Contacting TouchTunes Technical Support 11

Safety Considerations and Recommendations

Before you proceed with activating any of the new zones, we recommend that you:

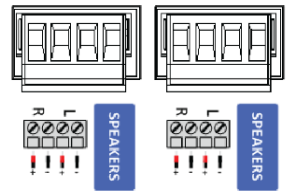


- Bring the volume down to a low, but still audible level on any zones you plan to impact
- Rewire the speakers according to your chosen zone configuration (see the Zone Management Examples section for more help on figuring out the wiring)



When rewiring speakers for new zone configurations, make sure that the impedance on both channels of each amplifier zone matches. Mismatched impedance on a particular zone could lead to audio quality degradation, abnormally low volume, or the amplifier shutting down to protect itself.

In particular, remember that the internal amps offer two euroblock connectors per zone, with a left and a right pair on each connector, and that internally, the two left pairs and the two right pairs are wired in parallel. This means that if you connect a second speaker circuit to the same channel, the two speaker circuits will lower the total impedance on that channel. If that impedance goes too low, the amplifier could shut down to protect itself.



Lower all volumes before you rewire speakers, and rewire the speakers before you activate or deactivate the new zones. This will reduce the risk of causing the volume to suddenly get much louder on the affected speakers.



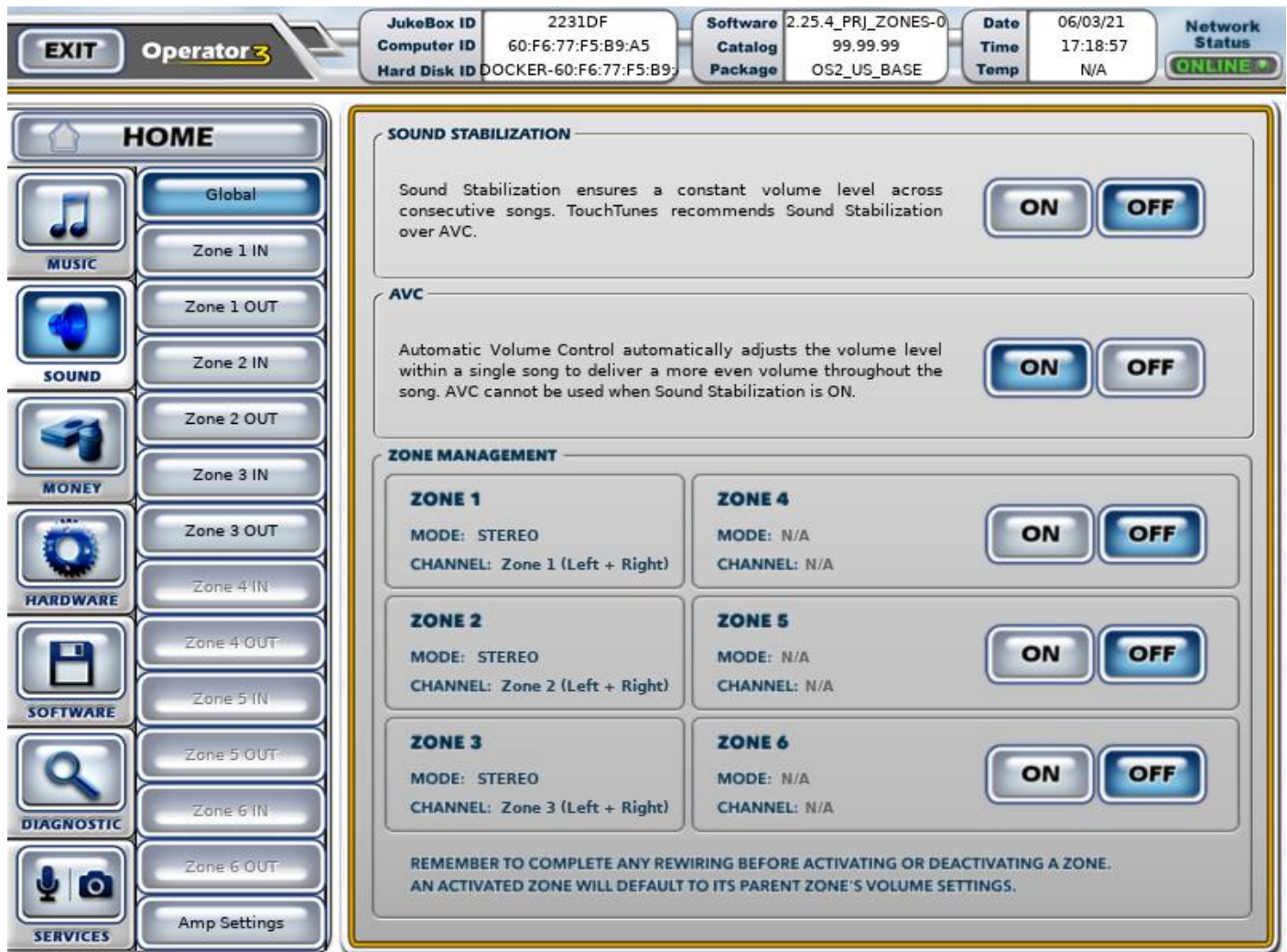
Make sure the polarity of all speakers matches to avoid phase issues, except where you have to intentionally flip the polarity to fix such an issue.



If you are moving a hard disk from a jukebox that has the Amplifier Bridging feature turned on, to a second jukebox that does not support bridging (such as Playdium), deactivate the bridging before taking the hard disk out. If the amp bridging setting gets copied over to the second jukebox, this will disable the zone management options for the zone where bridging was turned on, but the bridging option will not be accessible to turn it off.

Activating New Zones

Once your jukebox is running software that supports Zone Management, you may notice that the Sound section features new Zone buttons for zones 4 to 6. For now, these zones are disabled, but you can activate any or all of them from the Global section.



Any of the first 3 zones can be split into two independent mono zones.

Zones are split as follows:

Activated Zone	Channels Used	
Zone 4	Zone 1 Left channel becomes Zone 1	Zone 1 Right channel becomes Zone 4
Zone 5	Zone 2 Left channel becomes Zone 2	Zone 2 Right channel becomes Zone 5
Zone 6	Zone 3 Left channel becomes Zone 3	Zone 3 Right channel becomes Zone 6

Once you activate Zones 4, 5 or 6, the IN and OUT sub-sections for that zone will be **enabled**, allowing you to adjust its audio settings independently of the zone from which it was split.

Split zones are forced to mono, so the mono/stereo and balance controls are **now disabled**. (Zones that are not split can still be set to either stereo or mono, as needed.)

Note: When activating a zone, all its associated volume and tone settings are copied from its “parent” zone. In other words, Zone 4, when activated, will have the same volume and tone settings as Zone 1.

Note: A single split zone will provide less power than using both channels of a zone that is not split. In other words, activating additional zones will not provide more volume than you would get from a full-volume zone that is not split.

Note: Zone splitting is incompatible with Amplifier Bridging. While a particular zone is bridged, its zone splitting controls will be disabled, and while a particular zone is split, its bridging controls will be disabled.

For more on amplifier bridging (available on Virtuo and Angelina jukeboxes, as well as other MHP-based jukeboxes) see:

<http://documents.touchtunes.com/900674-001-Bridging%20Virtuo%27s%20Internal%20Amplifier-Rev00.pdf>

Remote Control

In order to allow you to control the volume of the new zones using your existing wireless remote control, we've added a way to toggle between controlling the volumes of zones 1 to 3 or 4 to 6.

New Overlay Decal

As part of your Zone Management package, you will find a new overlay decal for the remote control that includes six-zone compatibility.

Switching between Zone Sets

Press the '9' button on the remote control to toggle between controlling Zones 1 to 3, or Zones 4 to 6. The remote will remain toggled in this state indefinitely; it does not revert, except after a reboot.

For zones that are not split, the volume buttons for that zone apply regardless of which zone set you have toggled on the remote.

Changing the Volume

Pressing the volume up or down buttons on the remote for a particular zone will move the volume up or down accordingly for that zone, and at the same time, the LED Array (on a Virtuo) or the On-Screen Display (on other jukeboxes) will indicate which zone is being changed and how its volume is changing.

The volume controls function differently if the Synchronize Volumes setting is ON.

Synchronized Zone Volumes

When zone volumes are synchronized, all volumes change at once, regardless of which volume buttons are pressed. If at least one of the extra zones is activated, the 6-zone volume bars are displayed on the LED Array or OSD, though any inactive zones won't be displayed.



Reverting

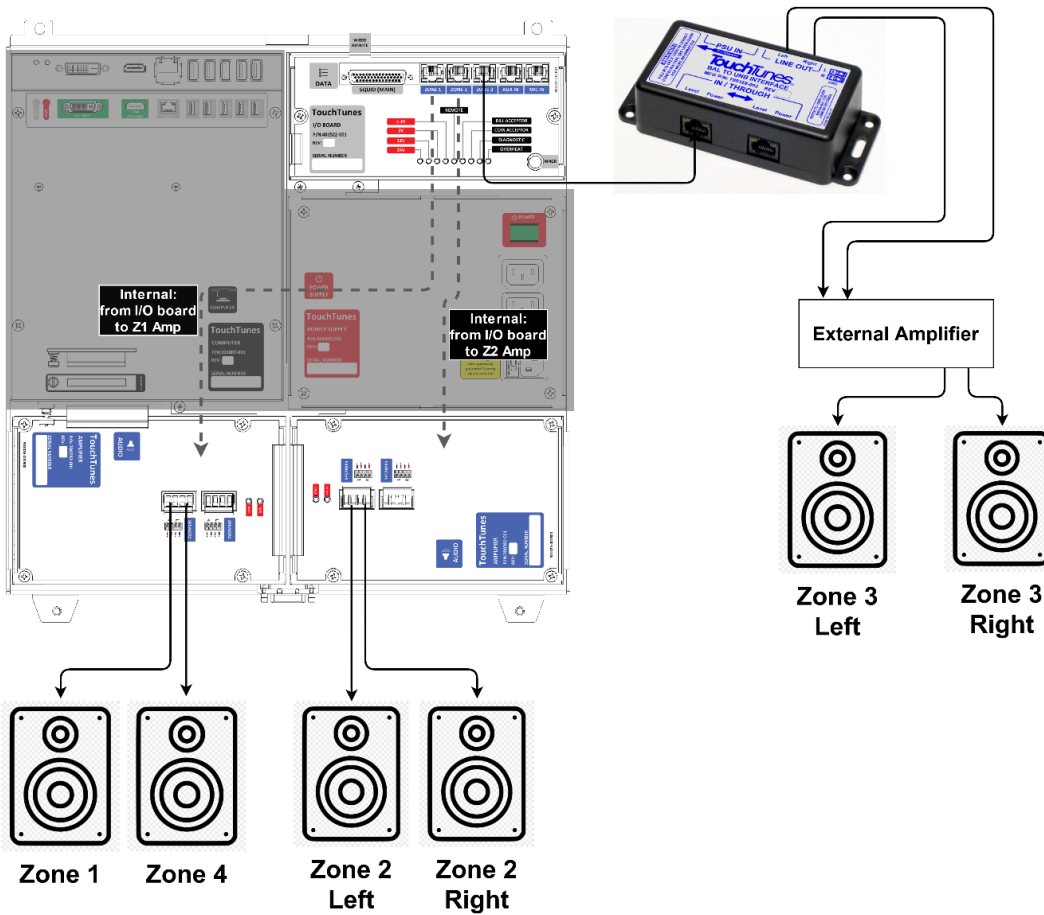
If you ever need to revert / disable zone 4, 5 or 6, remember to reduce the volume, then rewire the speakers appropriately before de-activating the zone.

Zone Management Examples

Below are some common use cases for activating additional zones with wiring suggestions and diagrams.

A - Adding an Internally Amplified Zone

The jukebox's internal amplifier normally powers up to 2 independent zones. If you need more zones powered by that internal amp, you can turn on Zone 4 or 5, which will effectively split Zone 1 or 2, and provide you with the extra zone you need.

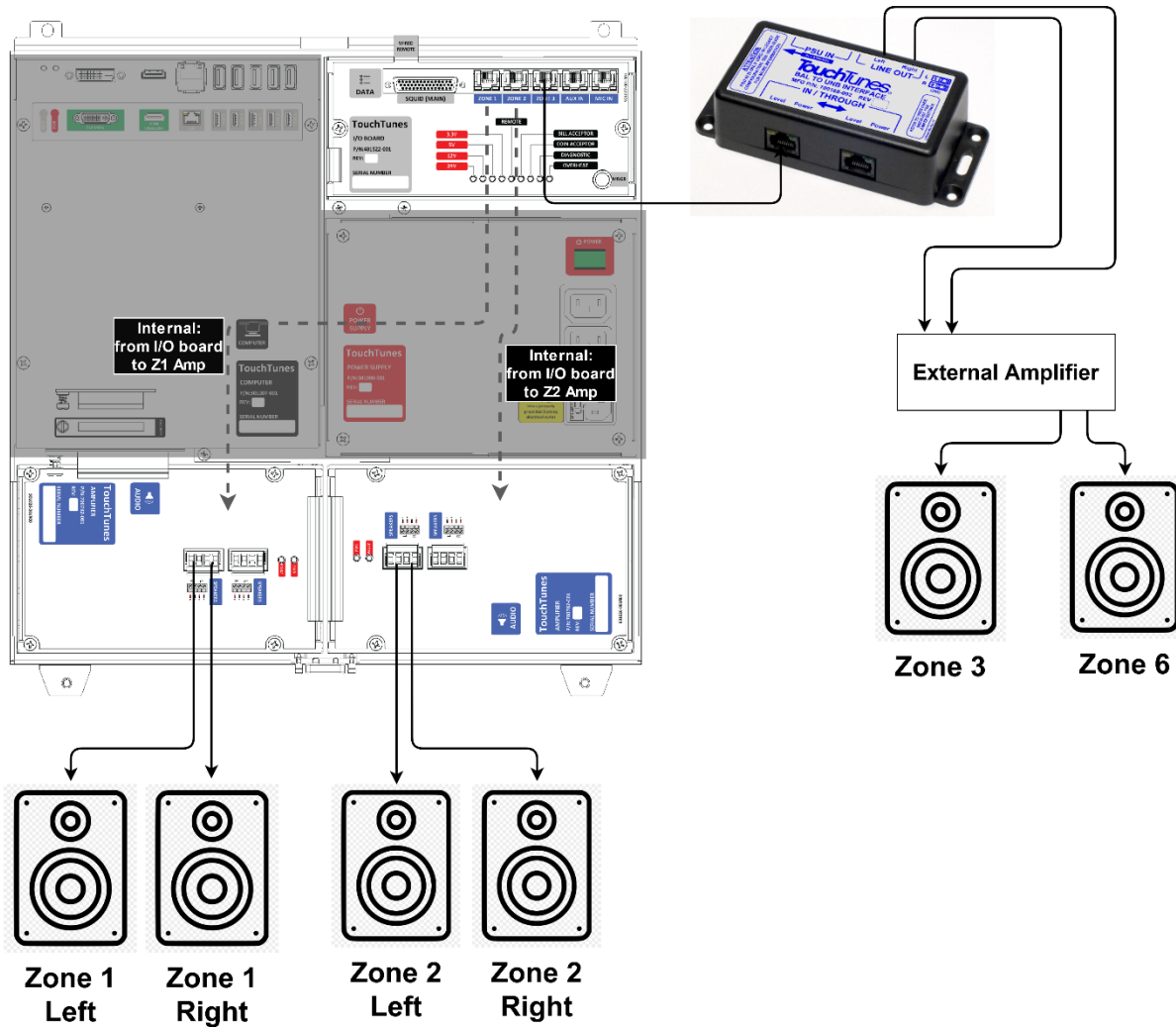


ZONE MANAGEMENT	
ZONE 1 MODE: MONO CHANNEL: Zone 1 (Left)	ZONE 4 MODE: MONO CHANNEL: Zone 1 (Right) <input type="button" value="ON"/> <input type="button" value="OFF"/>
ZONE 2 MODE: STEREO CHANNEL: Zone 2 (Left + Right)	ZONE 5 MODE: N/A CHANNEL: N/A <input type="button" value="ON"/> <input type="button" value="OFF"/>
ZONE 3 MODE: STEREO CHANNEL: Zone 3 (Left + Right)	ZONE 6 MODE: N/A CHANNEL: N/A <input type="button" value="ON"/> <input type="button" value="OFF"/>

REMEMBER TO COMPLETE ANY REWIRING BEFORE ACTIVATING OR DEACTIVATING A ZONE.
AN ACTIVATED ZONE WILL DEFAULT TO ITS PARENT ZONE'S VOLUME SETTINGS.

B - Adding an Externally Amplified Zone

If a single channel on the jukebox's internal amplifier is not enough to power the speakers you plan to use for an additional zone, you may consider splitting Zone 3 (which is usually connected to an external amplifier) and running the resulting Zones 3 and 6 through to a more powerful external amplifier that fits your needs.

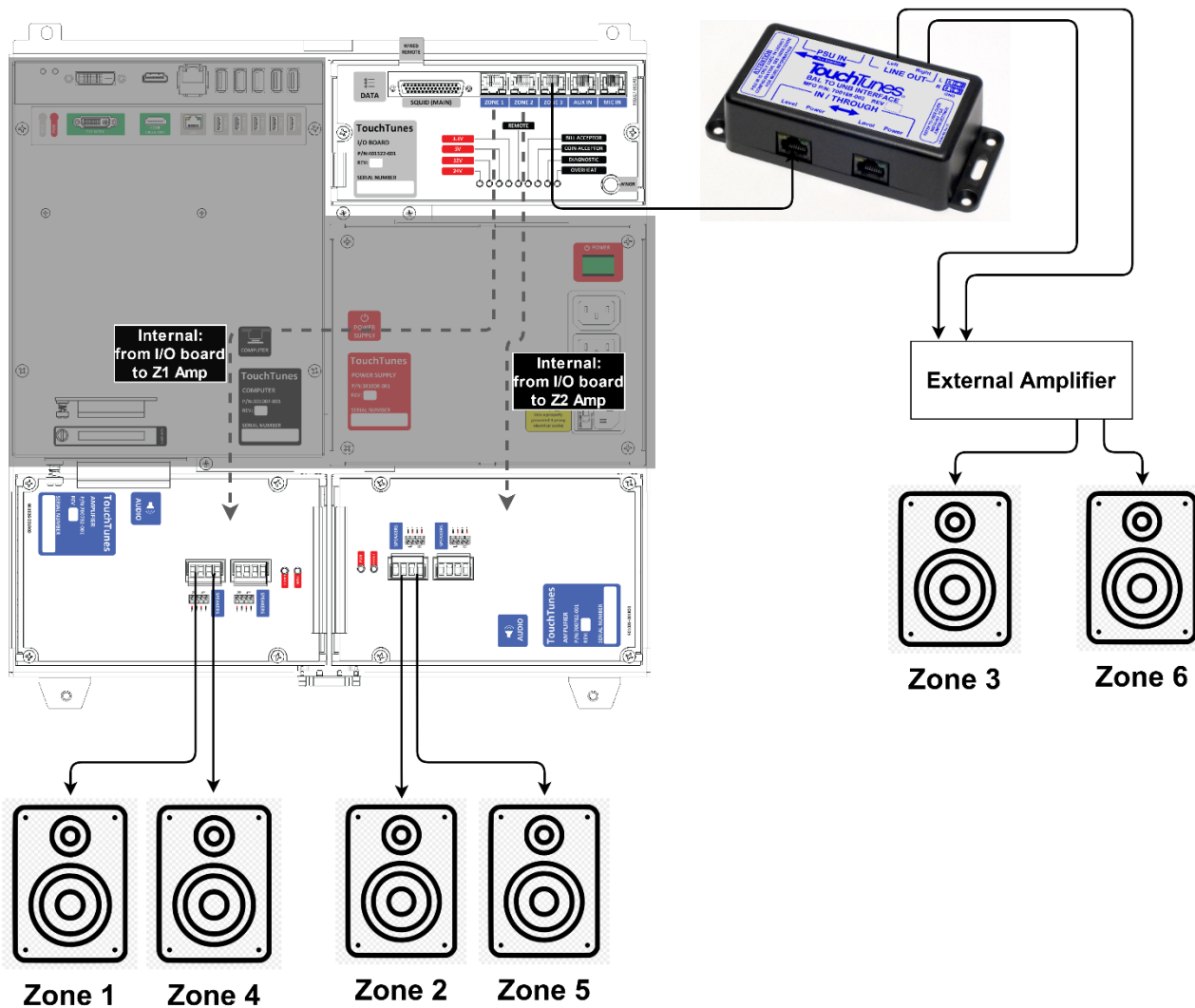


ZONE MANAGEMENT	
ZONE 1 MODE: STEREO CHANNEL: Zone 1 (Left + Right)	ZONE 4 MODE: N/A CHANNEL: N/A <input type="button" value="ON"/> <input type="button" value="OFF"/>
ZONE 2 MODE: STEREO CHANNEL: Zone 2 (Left + Right)	ZONE 5 MODE: N/A CHANNEL: N/A <input type="button" value="ON"/> <input type="button" value="OFF"/>
ZONE 3 MODE: MONO CHANNEL: Zone 3 (Left)	ZONE 6 MODE: MONO CHANNEL: Zone 3 (Right) <input type="button" value="ON"/> <input type="button" value="OFF"/>

REMEMBER TO COMPLETE ANY REWIRING BEFORE ACTIVATING OR DEACTIVATING A ZONE.
 AN ACTIVATED ZONE WILL DEFAULT TO ITS PARENT ZONE'S VOLUME SETTINGS.

C - Using All 6 Zones

When you need more direct control of the volume in many different places of the venue, you may consider turning on all the extra zones, which provides you with a total of 6 zones (with Zones 3 and 6 connected to an external amplifier.)



ZONE MANAGEMENT	
ZONE 1 MODE: MONO CHANNEL: Zone 1 (Left)	ZONE 4 MODE: MONO CHANNEL: Zone 1 (Right) <input type="button" value="ON"/> <input type="button" value="OFF"/>
ZONE 2 MODE: MONO CHANNEL: Zone 2 (Left)	ZONE 5 MODE: MONO CHANNEL: Zone 2 (Right) <input type="button" value="ON"/> <input type="button" value="OFF"/>
ZONE 3 MODE: MONO CHANNEL: Zone 3 (Left)	ZONE 6 MODE: MONO CHANNEL: Zone 3 (Right) <input type="button" value="ON"/> <input type="button" value="OFF"/>

REMEMBER TO COMPLETE ANY REWIRING BEFORE ACTIVATING OR DEACTIVATING A ZONE.
 AN ACTIVATED ZONE WILL DEFAULT TO ITS PARENT ZONE'S VOLUME SETTINGS.

Real-World Situations with Solutions

Situation	Zone Setup	Description
<p>The barman wants to control the volume of the speaker behind the bar separately from the others, so he can still hear orders when the place gets loud.</p>	<p>Activate Zone 4 (see diagram A)</p>	<p>Wire zone 4 (formerly zone 1 right channel) to the speaker behind the bar, leaving zone 1 (formerly zone 1 left channel) to power a different speaker in the venue, at an independent volume.</p>
<p>The venue has an open area covered by two speakers wired to zone 1, while zone 2 is wired with one speaker for an area with tables and chairs, and another speaker covering the pool tables area. The people at the pool tables are complaining that the music is too loud and distracting, but when the volume is lowered, the people at the tables complain they can't hear the songs they queued.</p> <p>I want to set their volumes separately, but I don't want to have to buy an external amp just to power the speaker in the pool tables area.</p>	<p>Activate Zone 5 (see diagram A)</p>	<p>Wire zone 2 (formerly zone 2 left channel) to the tables, and zone 5 (formerly zone 2 right channel) to the pool tables, and adjust their volumes accordingly.</p>
<p>The bar has added a patio area for the warmer months, and they want to hear the music there as well, but I'm already using all 3 zones on the jukebox.</p> <p>I need to be able to set the patio volume separately from the indoor volumes, because of the neighbors...</p>	<p>Activate Zone 4, 5 or 6 (see diagrams A and B)</p>	<p>To save yourself some rewiring, figure out which zone currently has the speakers closest to the patio. If the speakers were using both channels from that zone, move those speakers to the Left channel, freeing the Right channel's wiring for the patio.</p> <p>Once you're all wired up, split the closest zone by activating the corresponding extra zone, and adjust the volumes as needed.</p> <p>Caution: make sure the impedance on both channels of the split zone is the same. If the impedance is different, it could cause some audio quality issues, and might even lead to the amplifier shutting down.</p>
<p>I'm installing a new jukebox in a venue that used to have a different jukebox with 4 independent zones, powered by the juke's internal amp.</p>	<p>Activate Zones 4 and 5 (see diagram A)</p>	<p>Wire your four speaker zones to the internal amp's Zone 1 Left, Zone 1 Right, Zone 2 Left and Zone 2 Right, and then activate Zones 4 and 5.</p> <p>On the screen where you activate those zones, it will tell you what each zone is wired to (for example, Zone 4 will say its Channel is Zone 1 (Right)).</p> <p>With music playing, you can now adjust the volumes for each of these 4 zones.</p>

Troubleshooting

Below are some solutions to issues you may face after rewiring your speakers and activating extra zones:

Problem	Probable Cause	Solution
No sound at all	<ul style="list-style-type: none">• Certain connections were not made properly, preventing audio from being transmitted• Jukebox's internal amplifier has gone into protection mode, due to an electrical problem (short-circuit, overload, etc.)• Jukebox is paused, or volume is too low	<ul style="list-style-type: none">• Review all connections• Lower the output volume to its lowest setting, then slide it up slowly until you hear music again• Make sure jukebox is not paused
Degraded sound quality (no bass, distortion, abnormal artifacts)	<ul style="list-style-type: none">• One or more speaker wires may not be properly connected• If multiple speakers are connected to a single amplifier channel, the impedance of the speaker circuit maybe out of range for the amplifier• Bass and treble settings may need adjustment, and Bass Boost setting may be wrong for this speaker configuration	<ul style="list-style-type: none">• Disconnect, then re-connect each speaker wire in turn, making sure each wire makes a positive connection.• Use different speakers or reconfigure speaker groupings. In particular, when multiple speakers are connected to a single amplifier output channel, try keeping only one speaker connected to the channel. If that fixes the issue, the other speakers might be causing the problem, or the speaker circuit created by wiring the speakers together might have an impedance that is out of range for the amp. Aim for an impedance of about 4Ω for optimal results.• Rewire the speaker circuit for an impedance load that is closer to 4Ω• Some speakers might be out of phase with one another. First, verify the polarity of every speaker and every amp output connection (the label on the jukebox's amp indicates polarity). If the issue persists, try disconnecting each speaker in turn until the issue goes away – then, try inverting the polarity on the last speaker you disconnected.

Problem	Probable Cause	Solution
Volume too low, despite volume setting being at or close to maximum	<ul style="list-style-type: none"> Problems with wiring (wires are not fully connected) Speakers have impedance much higher than 4Ω. The power of a single amplifier channel is not enough for the speaker(s) used or the size of the room. 	<ul style="list-style-type: none"> Disconnect, then re-connect each speaker wire in turn, making sure each wire makes a positive connection. Use speakers rated with an impedance of 4Ω. Many speakers designed for home use are rated for 8Ω: those speakers will be quieter. If more than one speaker is connected to a single amplifier output channel, rewire the speaker circuit for an impedance load that is closer to 4Ω Use more than one channel from the internal amplifier to power the speakers used for that room, add more speakers, or consider using an external amplifier that provides more power.

Contacting TouchTunes Technical Support

If you need help or have questions, call the TouchTunes Tech Line at 888-338-5853.

To help us assist you more effectively with problem reports, the following information may be required when contacting TouchTunes support:

- Jukebox model and ID
- Operator ID
- Serial number or part number of the component you believe to be defective
- Date/time of the problem
- Actions performed immediately before the problem occurred
- Any additional comments relevant to the problem

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