

# Avalon Ballroom

## House System Technical Documentation

This document contains technical information on the Avalon Ballroom sound system. It is intended for users of the system who plan to connect their own equipment directly to the system rather than using the provided DJ system. See the DJ System User Documentation if you intend to use the DJ System. This document primarily covers the types of equipment provided as well as the wiring conventions used throughout the system.

### Installed Equipment

Type	Count	Model
Amplifiers	4	QSC ISA 1350
Mains Speakers	2	QSC MD-F122/124r
Subwoofers	2	QSC MD-S215
Fill Speakers	4	QSC AD-S82H
DSP	1	QSC Basis 722AZ

### System Wattage Maximums

Mains Speakers	2 x 800 Watts @ 8 Ohms
Subwoofers	2 x 4,000 Watts @ 4 Ohms
Fill Speakers	4 x 650 Watts @ 4 Ohms

### Audio Wiring Standard

XLR	TRS	Connection
Pin 1	Sleeve	Chassis Ground
Pin 2	Tip	Positive
Pin 3	Ring	Negative

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### System Inputs

There are three inputs to the Avalon house system on the wall panel located at stage left. All inputs to the house system are balanced line-level and adhere to the AES48 interconnect standard. The connectors are Neutrik Combo connectors which combine both XLR female and TRS female into a single panel jack.

The three inputs on the input panel are: DJ, Left/Mono, and Right.

The Left/Mono and Right inputs have two modes of operation. When the system switch is set to the "On" position, these inputs are mixed together and the entire system runs in a monaural configuration. When the switch is set to the "Cinema" position, the main speakers to the left and right of the stage are run in a stereo configuration with the left/right inputs operating as labeled. In both configurations the subs and fill speakers in the hall are always fed the sum of both inputs. In the "Cinema" stereo mode, however, the level of the fill speakers is reduced by 6dB.

The dedicated DJ input is always active and is mixed with the other inputs. The DJ system is always monaural, regardless of the switch setting. The DJ system should not be disconnected.

All inputs to the system are connected to the Basis DSP unit, where they are mixed before being sent to the amplifiers. The signals going to the two rows of fill speakers are also delayed to match the propagation delay of the sound originating at the stage. In addition, the DSP unit is responsible for all crossovers and the equalization of the system. All DSP settings have been optimized for the system and are not user adjustable.

As always, when connecting unbalanced devices to the balanced inputs on the Avalon Ballroom house system, an isolation transformer may be required.

### Snake

A 28-channel snake is permanently installed in the ballroom. It runs from the front of the stage, at stage right, to the back of the hall, at house left. There is approximately 10 feet of slack cable on the stage and approximately 10 feet of slack cable at the back of the house. All connectors on the snake are XLR and use the conventional genders for inputs (female) and outputs (male). There are 24 sends and 4 returns.

### Ballroom Electrical Wiring

The stage, as well as the south central and south east ballroom outlets, are served from the electrical panel marked SR. This panel is located in the coat room to the east of the stage area.

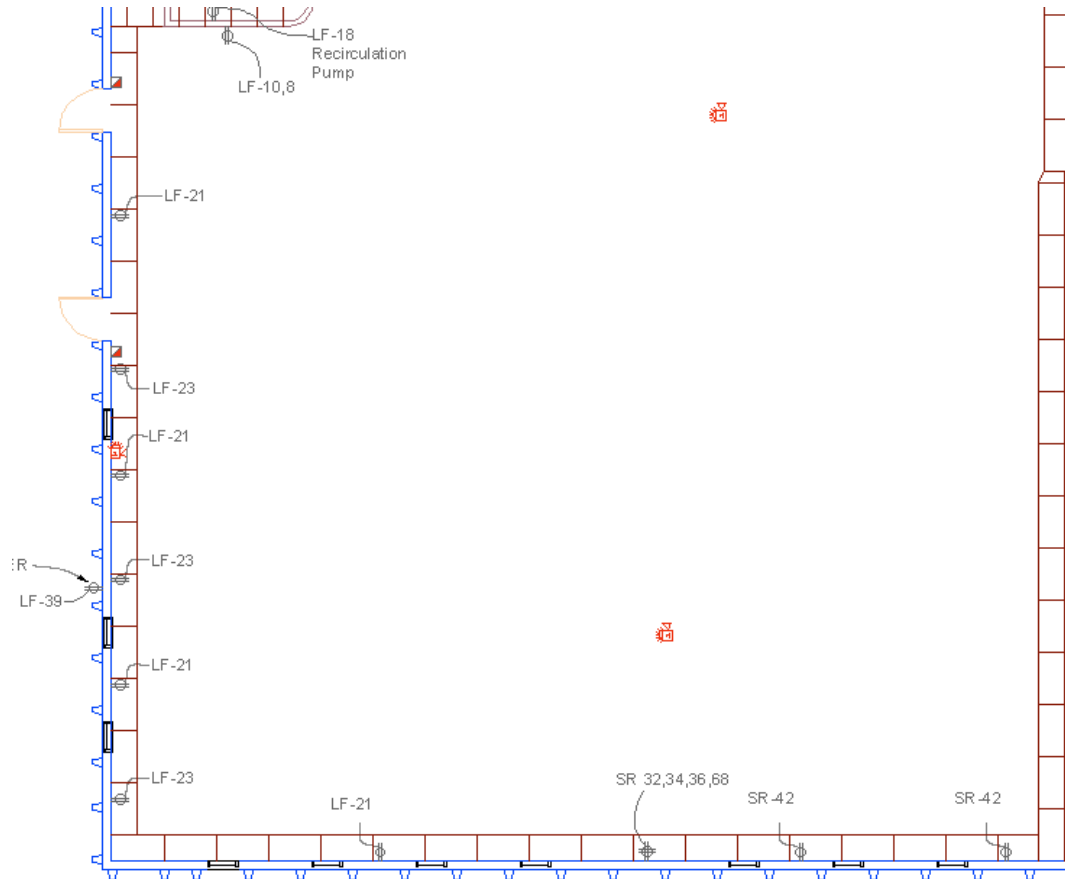
The west and southwest ballroom outlets are on the panel marked LF. This panel is located next to the janitor closet to the west of the stage.

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The outlets nearest the termination of the snake are on a different sub-panel from the rest of the house system. While not optimal from a sound system perspective, this has been well tested and works correctly assuming balanced lines and proper shielding conventions are used. If necessary, an extension cord can easily be run across the back of the hall to the outlets on the SR panel.

Here is the layout of the outlets in the ballroom. The stage is located at the top of this drawing. North is up.



### Assistive Listening System

An output suitable for connecting to Assistive Listening Systems is available on the backside of the audio equipment rack. Users of the facility are welcome to connect their own systems using this output.

This output is a balanced line level signal on a TRS jack.

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### Reference Material

For questions regarding audio system interconnect standards and best practices for avoiding and eliminating hum, we highly recommend the following white paper on audio system interconnects and grounding.

<http://www.rane.com/note110.html>

For more information on electrical safety issues when connecting audio systems.

<http://www.prosoundweb.com/studyhall/sr/whitlock/grounding.php>

### General Audio Grounding Guidelines to prevent hum

- \* Keep things balanced if they start that way
- \* Balance and isolate things that are unbalanced
- \* Keep unbalanced cables under 10 feet in length
- \* If hum still occurs the use of isolation transformers may be required

*Never, under any circumstance, should you lift the AC ground pin on electrical equipment to solve audio system ground loop problems. This can lead to serious electrical safety issues.*

All of the equipment for the Avalon house system has been generously donated by QSC Audio to support the Avalon and its community focused events. For more information on QSC Audio products please see their website at: <http://www.qscaudio.com>

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