

Audio Systems Design

The audio system is a critical component of any AV system. A professional audiovisual designer is able to identify audio performance requirements and issues, and create an audio system that ensures that the audience will be able to hear the presenter or program materials via an audio system that produces clear and undistorted audio.

In many cases, the audio system can be one of the most challenging aspects of an AV system design. Audio system design requires:

- Thoughtful consideration of room acoustics.
- Careful analysis of the system performance requirements.
- Application of design best practices to achieve the required system performance.

The functionality of an audio system is often times reduced to three easily understood concepts:

1. Can the audio be understood? (Intelligibility)
2. Is the audio loud enough to be heard? (Loudness)
3. Does the audio system operate in a stable manner? (Stability)

The first parameter - intelligibility - considers if the acoustic energy that is being received can be understood. If there is intelligence in the audio signal, is it being faithfully reproduced so it may be decoded and heard? Distortions introduced in the signal chain or lack of frequency response of a component are but two of the methods that can destroy the intelligibility of the airborne signal.

The second parameter - loudness - is perhaps the simplest to grasp: Can the listener hear the intended audio? If the answer to this question is “No”, we have a serious problem that needs to be addressed. This may be a simple matter of listener or loudspeaker location or increasing the volume. It may also be a sign of a much greater issue, such as unfriendly acoustics as previously discussed.

The third - stability - speaks to how hard we are driving the audio system and the amount of headroom we may have available for momentary excursions of the loudspeakers or movement of microphones within the space.

Work with a CTS certified design professional to:

- Determine the requirements for an audio system to meet performance requirements.
- Predict performance before an audio system is built.
- Verify that the audio system design meets identified performance requirements.