ASG
APPLICATION SUPPORT GROUP
EAW

APPLICATION GUIDE

for

MultiMedia Spaces

EAW
EASTERN ACOUSTIC WORKS

The Laws of Physics / *The Art of Listening*

Image courtesy of Charles M. Salter Associates, Inc. Photo by Bob Swanson / Swanson Images

Eastern Acoustic Works Application Guide: An Introduction

This is the fifth installment in the Eastern Acoustic Works Application Support Guide series. The goal of this series is to offer concise, accurate guidance on the use of EAW loudspeaker products for specific applications. No general handbook can address every situation you might encounter or realistically cover the full range of options available from EAW to the designer/installer.

Working with the most commonly employed design concepts we discuss the pros and cons of each option and suggest a range of EAW products that could be applied to each design.

This chapter will focus on MultiMedia Presentation Spaces including boardrooms, training and teleconferencing spaces, small meeting rooms and large multimedia lecture halls. As with each facility type this one presents its own unique challenges and problems for the sound system designer/installer. EAW's goal for this and all other application types is to provide you with a comprehensive set of tools that you can use to solve specific application problems.

General Design Criteria for MultiMedia Presentation Spaces

The main design criteria are determined by the primary program material used in this type of space: audio for video playback. Images of various types including video, film, computer graphics, overhead projection and 35mm slides require accurate, source-localized sound reinforcement. Intelligible, source-localized speech reinforcement is also required in most designs.

Aesthetic considerations play an important role in any design for this type of space. Loudspeaker systems will quite often need to be either fully concealed or carefully integrated into the interior design, in some cases potentially compromising audio performance.

Full stereo capabilities will be needed as a minimum, with the ability to handle surround audio becoming more common as digitally based multi-channel signal sources proliferate.

Spaces designed to accommodate teleconferencing or distance learning systems require specialized reinforcement capabilities including speaker/microphone zone and muting control. Loudspeakers require tightly controlled coverage patterns to optimize gain before feedback, and smooth off-axis frequency response (power response) to prevent the creation of hot spots.

Finally, applications requiring loudspeakers to be placed in immediate proximity to CRT video monitors (as opposed to projection systems) must specify magnetically shielded systems. EAW's UB12Se and JF50S shielded loudspeaker systems have been specifically engineered for use next to CRT-type video monitors.

General Design Concepts

In the majority of designs, two types of system design approaches could be utilized: the left/right screen system approach and the distributed approach.

For the former approach incorporates a pair of two- or three-way loudspeakers to handle the broadband reinforcement or playback of various audio sources as well as to provide speech reinforcement when required. These would normally consist of Left and Right main channel systems at either side of the primary image presentation screen. An optional center channel system could be installed behind, above or below the screen.

One or more subwoofers would be a fairly common option, depending on program source requirements, total room volume, and the extended low frequency capabilities of the chosen main L/(C/)R systems. Because the long LF sound waves can "see through" many objects, they can easily be built into cabintery or tables, removing them from view.

If surround capability is desired, smaller JF or UB Series systems designed specifically for unobtrusive installation can be used with excellent results.

Alternatively, a distributed design may be implemented using a variety of ceiling- or wall-mounted loudspeakers, depending on the room's major function, the amount of space available, and overall system requirements. If full bandwidth music playback is also desired, optional subwoofers can be incorporated.

Concealment of main channel loudspeaker systems can be accomplished by building them into walls, furniture and other interior finish elements. EAW's custom painting capability lets us match any Pantone color so loudspeakers can blend with any interior decor scheme. Thus it is possible to provide virtually invisible audio if needed.

Boardroom/Presentation Suite

While these installation can vary widely in size and overall audio system requirements, nominally the system installed will have to supply the following in almost every case:

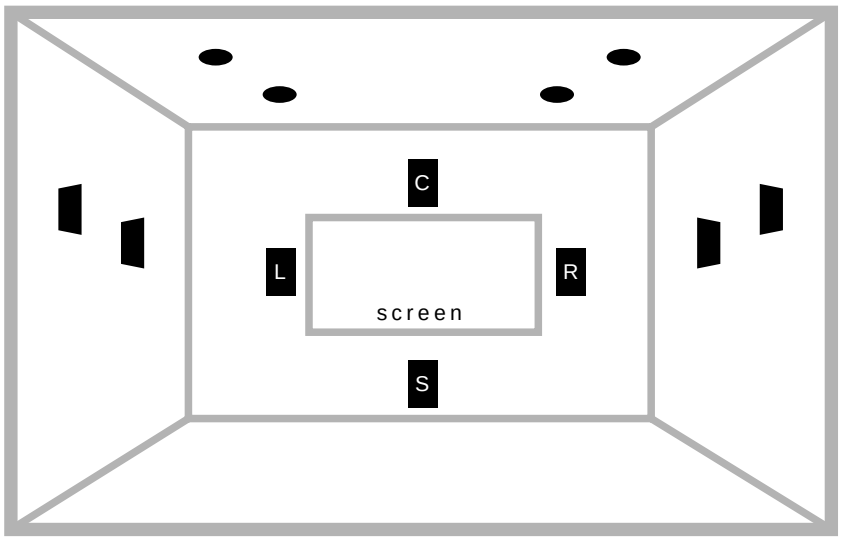
• A stereo L/R soundtrack reproduction system for video, film and audio only sources, placed left and right of the projection surface, and

• a separate speech reinforcement system for intelligibility enhancement (depending upon the size, budget and layout of the space).

Often, the soundtrack system can also be used for speech reproduction. A center channel system behind/above/below the screen should be considered if this approach is implemented. It can be used alone for mono sources, and speech only playback and reinforcement if desired.

Options for such an approach would include the use of a subwoofer and surround loudspeaker systems.

Boardroom



▮ = Surround Channel

L R = Left / Right Channel

S = Subwoofer

● = Distributed Ceiling Speaker

Suggested L/R Loudspeakers

ASR695
ASR665
ASR690
ASR660
DS122e
DS123e
DS153e
DS223e
JF100e
JF200e
LS432
LS832
MK8196
MK2194
MK5194
MS20
MS30Ci
MS63
MS103

Suggested Subwoofers

SB150P
SB180P
SB250P

Suggested Ceiling Loudspeakers

L8Cx2x0
JF60
JF80
UB12Se

Suggested surround Loudspeakers

DS122e
DS123e
JF60
MK8196
MS20
MS30Ci
UB12Se
UB80

Teleconferencing/Distance Learning Spaces

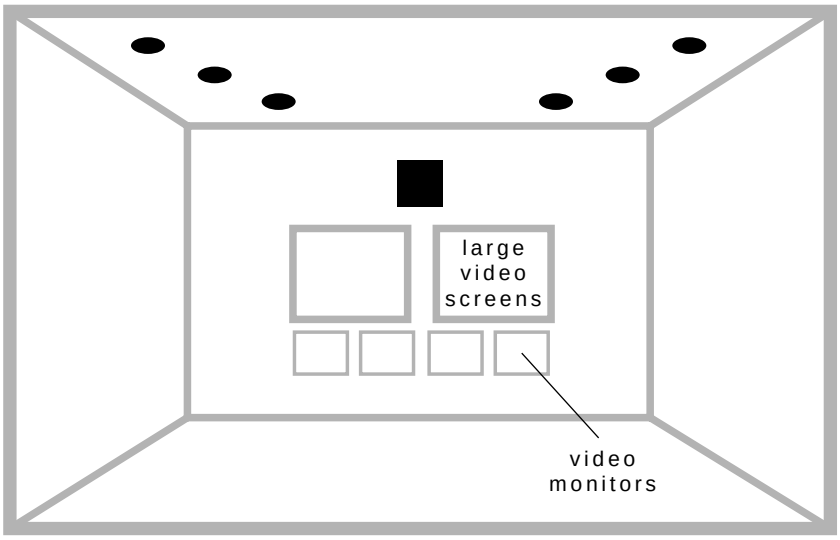
The primary challenge for systems installed in these spaces is signal routing as opposed to playback. The system will have to accomodate any number of input signal types including CODEC outputs, satellite feeds, telecom feeds and local/in-room feeds. The loudspeakers must then provide accurate, intelligible playback/reinforcement of these speech signals.

For larger spaces needing strict coverage zones, loudspeakers with tightly controlled coverage patterns will help in the creation of zones as well as in suppressing feedback and maximizing gain before feedback.

While the use of Left/Right loudspeakers will provide better source localization of projected image audio, larger spaces will most likely require a distributed approach using wall- or ceiling-mounted speakers to achieve the necessary coverage. Smaller spaces should require only Left/Right loudspeaker(s).

In fact, speech reinforcement requirements both for this application and others in this market segment are best served by a distributed approach. The flexibility of this method can accommodate a wide range of room conditions, and will provide a generally higher degree of intelligibility than other options. Source localization will be sacrificed, however, when this approach is used.

Teleconferencing



Suggested Source Loudspeakers

ASR695
ASR690
AS690i
JF100e
JF200e
LS432
LS832
MK8196
MS20
MS30Ci
MS63
MS103
UB12Se
UB80

Suggested ceiling-Mounted Loudspeakers

JF60
JF80
JF100e
JF200e
L8Cx2x0
MS20
MS30Ci
MS63
MS103

MultiMedia Lecture Halls

In this type of space, where seating may accommodate anywhere from around 50 to 250, the system design process must consider the increased physical volume, and often raked seating surfaces as well. Half round-designs, and various other arced layouts are also quite common, along with stadium style seating planes, potentially presenting reflection and focusing problems as well.

Audience-to-presenter microphones are quite common and these will also need to be dealt with from a loudspeaker placement and coverage standpoint, as well as within the rooms' electronic systems.

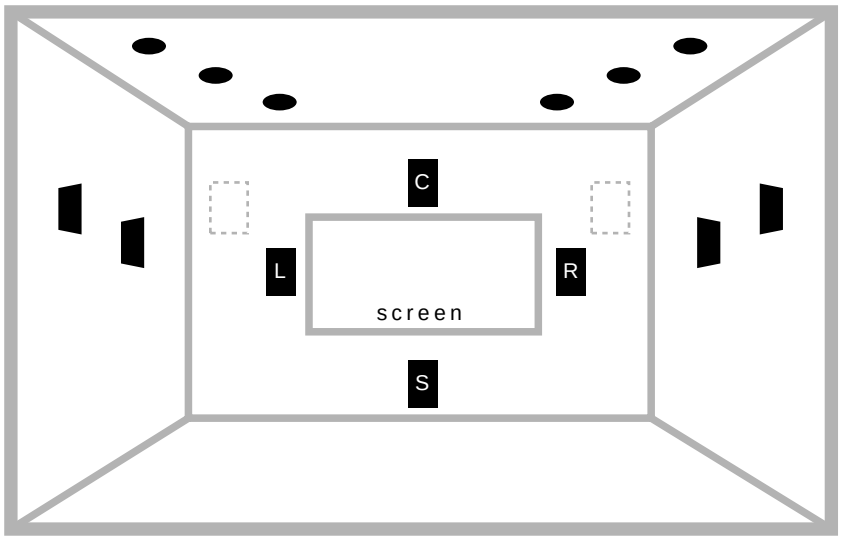
While the overall requirements from a source standpoint are not going to vary much from those in the Boardroom, or Teleconferencing/ Distance learning applications, the increased number of audience members will require higher output loudspeaker systems with enhanced directional control.

A number of options exist for placement of these systems largely dependent on whether or not they can be visible.

Since it is likely that these loudspeaker systems will be medium to large in size to provide the needed output and control, placing them into a mini-cluster or array either centrally or left and right of the main projection image area is one approach. A center channel system is more of a requirement than an option in rooms of this size. Use of a center channel helps listeners on the sides perceive the sound as coming from the screen.

Subwoofers should be specified if any full bandwidth sources are to be used.

Auditorium / Lecture



= Surround Channel

L R = Left / Right Channel

S = Subwoofer

= Distributed Ceiling Speaker

= Surround Channel (back of room)

More likely, a separate speech reinforcement system will be required. A distributed design will normally be the choice, and the ceiling will be the preferred location.

If full concealment is a requirement, then a larger number of smaller systems will be needed to insure adequate and seamless coverage across the width and depth of the space. A signal delayed system run down the length of the walls is one option, as are any of the myriad other distributed design approaches.

Suggested L/C/R Loudspeakers

AS660i
AS690i
JF100e
JF200e
JF260z
JF290z
LS432
LS832
MK8196
MK2164
MK2194
MK5164
MK5194
MS20
MS30Ci
MS63
MS103

Suggested Surround Loudspeakers

JF60
JF80
MS20
MS30Ci
UB12Se
UB80

Suggested Subwoofers

SB150P
SB180P
SB250P

Suggested Ceiling Loudspeakers

L8Cx2x0
JF60
JF80
UB12Se

1543/04.99

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One Main Street, Whitinsville, MA 01588 tel··800 992 5013··508 234 6158 fax··508 234 8251 web··http://www.eaw.com
EUROPE: EAW International Ltd., tel··+44 1494 539090 fax··+44 1494 539091