



Accessibility TipSheet Radio Frequency (RF), Induction Loop (IL), and Infrared (IR) Assistive Listening Devices

From the Access Office

Before determining which type of Assistive Listening Devices (ALD) or Assistive Listening System (ALS) is best for your venue, it is important to understand the different types available and how they work. Where and how you plan to use the system will determine which is the best option for your purposes and space.

The following are general tips and questions to ask yourself before purchasing an Assistive Listening System, as well as links to publications with detailed information.

What is it going to cost?

RF systems are usually cheaper as an initial investment but tend to require more maintenance and routine replacement of batteries, adding to the cost in the long run. IL system costs vary depending on the size and complexity of installation. IR systems are often more expensive as an initial investment but appear to need less maintenance and usually come with rechargeable batteries.

How do you plan to use the ALDs?

All of these systems can be customized for both large and small spaces. It is important to look at whether the system will be temporary, permanent or portable. RF systems are the most portable, simple to move from space to space, and easily carried by tour leaders or docents.

Is the space where you are using the ALDs indoors or outdoors?

IR does not work outdoors where it has to compete with sunlight or in areas with strong florescent lights. RF and IL systems will work both indoors and outdoors in any kind of light.

Will ALDs be used simultaneously in two different spaces?

- RF signals will go through walls and other obstructions so if you have more than one theater or performance space, patrons could end up listening to the wrong program. That scenario can be avoided by using a multi-channel RF system where each space is assigned a different frequency or channel.
- IL signals will also go through walls and other physical obstructions. Intrusion or spill between spaces can be minimized by choosing a system with the appropriate signal strength and ensuring that it is properly installed.
- IR signals cannot go through walls or other obstructions so there will be no interference between adjacent spaces using the same system. Like RF systems, IR systems can broadcast on multiple frequencies for use in the same space.

Do you have a lot of obstructed seats, a small, or an irregularly-shaped space?

- RF signals travel in all directions and through obstructions, however the reception quality is affected by the number of physical barriers the signal has to pass through and how far the signal has to travel. To minimize the effect of barriers and distance on the quality of reception it is important to get a system large enough to cover the entire area.
- IL signals can be directed and controlled, depending on the installation and strength of the system. Like RF, the IL signals are affected and reception can decrease as it passes through physical barriers and as the receiver moves away from the IL cable.

- IR systems work best when the receivers are in direct line-of-sight with the emitter panels. The signals will “bounce” off solid objects and walls but the strength of the signal will be diminished. Additional emitter panels will minimize areas of poor reception in irregularly shaped spaces or theaters with lots of obstructed seats.

Do you want to use the system for both Assistive Listening and Audio Description?

A multi-channel system allows you to use one system to provide Assistive Listening and Audio Description simultaneously. Multi-channel RF and IR systems are available but IL systems do not have multiple channels.

Which has better sound quality?

All systems can provide high-quality sound if you keep three things in mind:

1. Maintenance – Spend the time and effort to maintain the system. Keep batteries charged, clean the receivers, test the system regularly, and make sure nothing has been unplugged, moved or damaged.
2. Microphones – These systems cannot take a “bad” feed and make it good. It is imperative that you invest time, effort, and money into excellent microphones for the system.
3. Mixing – Treat the audio feed for the ALDs as you would any other audio output by mixing it properly. Sound that is controlled and mixed properly will be better than unmixed sound.

What else is necessary for a good Assistive Listening System?

The basic receivers that are a part of all systems work well for people who have mild hearing loss or who do not use hearing aids. To make the system usable by a broad spectrum of people with hearing loss you are required to have receivers with 1/8 inch (3.2 mm) standard mono output jacks and will need to invest in some accessories, such as headphones and neckloops.

Patrons who use hearing aids or have cochlear implants with a “T” switch may want to use a receiver with an induction neckloop. The neckloop is plugged into the output jack on the receiver and, when the patron turns his or her ‘T’ switch on, the signal is broadcast directly to the patron’s personal hearing device. If you have installed an IL system, the patron with “T” switch in their own hearing aid will not need to use a receiver; they only need to turn the “T” switch on. Patrons with cochlear implants may bring their own Personal Audio Cable. Single-bud ear pieces are also needed if you intend to use the system to deliver audio description.

RESOURCES

“Assistive Listening Devices for People with Hearing Loss: A Guide for Performing Arts Settings”, produced by the Kennedy Center Accessibility Program. www.kennedy-center.org/accessibility/guide_alds_KC.pdf.

“ALS Bulletin for Consumers”, “ALS Bulletin for Installers” and the “ALS Bulletin for Providers” produced by the U.S. Access Board. www.access-board.gov/adaag/about/bulletins/als-index.htm

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