

Theatre Accessibility via Assistive Listening Systems

What is an Assistive Listening System (ALS)?

Background noise, reverberation (i.e. echoing), and the distance to the sound source can all negatively impact a hard of hearing individual's ability to comprehend sound and speech – whether they wear hearing aids or not. As a result, people with hearing loss are often prevented from participating on equal terms with hearing individuals in larger assembly areas not equipped with an ALS. Even the best in digital sound systems technology, combined with the best in digital hearing aid technology, cannot solve all of the sound and speech comprehension difficulties that hard of hearing individuals are faced with. In recognition of this, the availability of assistive listening systems and devices is a requirement for places of assembly in new builds/construction according to the Ontario Building Code.

The purpose of an ALS is to transmit sound as directly as possible to the hard of hearing individual. **This can be done using FM, induction loop or infrared technology.**

While each type of ALS technology has its own advantages and disadvantages, all three can easily and successfully be used for personal and commercial applications alike, as long as their individual limitations are kept in mind.

FM technology – currently at Cahoots Studio and Theatre Passe Muraille

An FM system uses FM radio waves to transmit sound from the speaker to the listener, and consists of two basic components: a transmitter and a receiver.

FM transmitters can be either:

- a) fixed (i.e. connected to an existing PA or sound system) or,
- b) portable (i.e. worn by the speaker and used in conjunction with a lapel or headset microphone).

The speaker's voice is then transmitted to the receiver which includes either a headset (multiple styles) or a neckloop (if the individual has a T-coil setting on their hearing aid or cochlear implant), allowing the listener to adjust the volume as needed. Both single channel and multi-channel receivers (for language interpretation or a tour group, for example) are available, depending on the application.

Advantages:

- Cost-effective
- Highly portable
- Easy to install

Disadvantages:

- Individual receivers required for all users
- Channel management – for multi-applications, receivers must operate on different channels

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Induction loop technology

Induction loop technology is based on electromagnetic transmission. It has the unique advantage of having the signal received directly by the user's hearing aid or cochlear implant when it is equipped with a T-coil. A loop system consists of an amplifier and a discrete wire (the loop) that runs along the perimeter of the room. When the loop amplifier is hooked up to an audio source such as a TV or PA system, the sound is received wirelessly by the user's hearing aid or cochlear implant without the need for an additional receiver. Induction receivers are available for hard of hearing individuals without hearing aids or cochlear implant or those whose devices do not have the T-coil feature.

Advantages:

- Transmits directly to hearing aids and cochlear implants equipped with T-coils
- Fewer receivers required than with FM and infrared systems

Disadvantages:

- Loops may be difficult to install at some facilities
- Installation post-build may be considered a more costly option

Infrared technology

An infrared system uses light waves to transmit sound from the speaker to the listener and consists of three basic components: a transmitter (base station), an emitter, and a receiver. Unlike FM transmission and induction loop technology, infrared light cannot pass through walls. Therefore, infrared light transmission is ideal for facilities operating several systems simultaneously in different rooms in that all receivers can be identical with no need for frequency coordination.

As with FM technology, each individual must use a receiver and can adjust the volume as needed. Receiver types include lightweight under-the-chin style or over-the-head receivers.

Advantages:

- Multiple applications can run simultaneously without interfering with one another
- Ensures confidentiality (audio cannot be accessed outside the room)
- Personal systems are easy to install
- No size limitation as emitter panels may be daisy-chained

Disadvantages:

- Individual receivers are required for all users
- Not practical for outdoor applications (sunlight interference)
- Installation required for large area systems