

Guidance and information for induction loop requirements and compliance

Created by the Minnesota Commission of the Deaf, DeafBlind and Hard of Hearing and Loop Minnesota

Up to 20% of Minnesotans have hearing loss and many of them use hearing aids or cochlear implants to improve their ability to communicate. Looping is one technology for people with hearing aids and cochlear implants that invites them into meetings and discussions. It pushes Minnesota towards becoming a more inclusive environment for people with disabilities.

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1. Frequently Asked Questions

A. What is a hearing or induction loop?

A Hearing or Induction Loop is an *assistive listening system* for people with hearing loss who give and receive information audibly through speech rather than through writing or sign language.

The system consists of the **loop setup** and wireless antennas called **T-coils or telecoils**, which are located inside hearing aids and other hearing devices. The telecoils allow the listener to connect to the hearing loop. Loop and T-coils work together. Both are needed for the loop to provide access to people with hearing loss.

B. Who uses loops?

Anybody who has a telecoil-equipped hearing or listening device can use the loop, regardless of hearing status. European countries have widespread use of loops in public places and throughout private businesses. In the U.S. the number of hearing loops is on a steady increase.

In Minnesota, many churches, museums, schools, businesses and other facilities have installed hearing loops. Check the Loop Minnesota website for a partial list of loop accessible venues www.loopminnesota.org.

C. Why are they important or useful?

Hearing or induction loops that are installed and calibrated according to international standards provide access to communication to those with hearing loss. Such loops deliver a clear and uniform sound signal across the entire looped area. This allows for improved understanding of speech, especially in places with significant background noise. Clear speech with less environmental noise is one of the major advantages of hearing or induction loops.

Provided that hearing loops are installed in such a way that they allow for clear and effective communication, they satisfy the Americans with Disabilities Act (ADA) accessibility requirements for people with hearing loss who receive information audibly (not through sign language).

D. Are they expensive?

Prices vary with the size and complexity of the project. **It is always cheapest to consider the design and loop installation at the beginning of new construction or refurbishment projects.** The most expensive parts of the project are the loop amplifier(s) and labor.

Once installed, hearing loops are long-lasting and do not require maintenance. Considering that one loop accommodates all listeners with hearing loss at a venue, hearing loops have been found to be cost-effective.

E. Will loops become outdated quickly?

Unless the looping wire is accidentally cut or damaged, a hearing loop lasts for the duration of the venue. Like any technology, hearing loop technology has also evolved. With improved, reliable sound quality looping is gaining rapidly in popularity as a communication access resource and is here to stay.

F. Why should I embrace looping?

When paired with telecoils or T-coils in hearing instruments, hearing loops offer clearer sound to those with hearing challenges. This is especially important for understanding speech in background noise. With a click of a switch, listeners turn on the telecoils or T-coils on their hearing devices. The telecoils connect wirelessly to the loop, without the need for *obvious* headsets or earbuds.

By providing access to communication for those with hearing loss, hearing loops also facilitate group participation, discussions and socializing.

Hearing loops make workplaces accessible, decrease the potential for errors related to misunderstandings and make for a less tiring listening experience. Anybody who has ever listened to a well-performing hearing loop wants to have the same ease of communication anywhere. The experience turns people into loop believers and advocates.

G. Do I need to install a loop in every room of the project?

Yes. Each meeting room or classroom that is to be made accessible through looping for those with hearing loss has to have its separate loop and amplifier. Each loop is tailored to the individual space. The installer has to consider variables such as building materials, proximity to mechanical equipment that could cause interference and audio-visual technology that will be integrated with the loop.

H. How will this benefit my organization?

Hearing loops provide clear sound and ease the understanding of speech in noisy places for those with hearing loss. This allows for better participation and communication in meetings. It reduces the chances for errors due to misunderstandings. Listening through a loop makes for an improved and relaxed

listening experience. This can translate into less employee fatigue and increased productivity.

Let the public know! Looping customer areas, such as meeting spaces, service windows, and information desks encourage people with hearing loss to frequent “accessible” businesses, groups or congregations.

Also, provided that hearing loops are installed in such a way that they allow for clear and effective communication, they satisfy the Americans with Disabilities Act (ADA) accessibility requirements for people with hearing loss who receive information audibly (not through sign language).

2. Technical guidelines and information

A. How does induction looping compare to Bluetooth, WiFi, or other Assistive Systems?

It may be helpful to provide the pros and cons of the available technologies so that the person understands the advantages and limitations of each.

Induction Hearing Loops

Advantages

- Clear sound reaches the hearing aid through the telecoils. Sound is without background noise, crackles, hums, feedback or fluctuations
- People with T-coils hear the presenter clearly and can adjust the volume themselves
- Listeners with hearing aids with telecoils or T-coils do not have to wear obvious headsets—as is the case with other technology such as Frequency Modulation (FM) or InfraRed (IR) systems.
- Clear sound makes for a more comfortable listening experience, especially in noisy places. This allows for active participation in discussions.
- Hearing loops that are installed in such a way that they allow for clear and effective communication satisfy the Americans with Disabilities Act (ADA) accessibility requirements for people with hearing loss.
- Hearing loops can also benefit those without hearing loss. Anybody with a telecoil or T-coil equipped device can hear clearly through a loop.

Disadvantages

- In general, induction hearing loops are installed under carpeting or floorboards or along the ceiling, which can make installation challenging. Therefore, it is best to install loops during new construction or refurbishment projects.
- Installed loops are set in place and are not portable.
- People without T Coils in their hearing aids must use a telecoil or T-coil equipped listening device with headphones. Some T-coils may need checking from the audiologist to make sure they have enough gain.

Bluetooth or WiFi

Wi-Fi or **WiFi** is a technology for [wireless local area networking](#) with devices based on the [IEEE 802.11](#) standards. Wi-Fi most commonly uses the 2.4 gigahertz and 5.8 gigahertz bands. The WiFi system would transmit a signal to the user's device via the radio signal. The user would need a telephone or other device to receive the signal and then a way to listen privately (using a headset or earpiece).

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength [UHF](#) radio waves in the ISM band from 2.4 to 2.485 GHz^[4]) from fixed and mobile devices. Some newer hearing aids can also connect wirelessly to the user's cellphone via Bluetooth.

Bluetooth is a shorter range system –with radio transmission of data from 3 ft. to approximately one hundred feet.

Advantages

- Clear sound
- The people with compatible telephones may be able to listen using their phone and headset or earpiece.
- Bluetooth streams signals from other electronic devices to certain hearing aids
- Systems are not currently available to allow groups of users to join without individually pairing them to the system (e.g., joining the WiFi network, pairing the Bluetooth devices)

Disadvantages

- Each device must be synchronized with the system individually
- Cannot listen directly with Bluetooth hearing aids at this time
- If multiple devices are used simultaneously, the system bogs down and in the case of an auditorium, the sound could become intermittent or choppy

FM / IR Systems

FM (Frequency Modulation)

Systems use an FM or VHF Radio transmitter to send out the signal from the microphones or computer audio output. The listener turns on an FM listening device on or near them and listens using headphones. The sound of the presenter (or music program) is heard directly by the listener.

IR (Infrared) Systems

The system uses an invisible light (infrared) to send out the signal from the microphones or computer audio output. The listener turns on an IR listening device and listens using headphones.

How an FM or IR Transmission system works:

1. The presenter has a microphone – wireless or with cord
2. The microphone is hooked up to an amplifier and transmitter
3. The transmitter sends a signal using FM – frequency modulation or IR – Infra-Red light
4. A person with an FM or IR receiver picks up the signal
5. The person hears the signal using headphones

Advantages

- Clear sound
- The people with receivers can hear the presenter very clearly and as loud as they would like
- The installation is simply a transmitter connected to the PA system

Disadvantages

- Each person must wear a headset and have a receiver
- The FM signal will travel outside the room
- The IR signal – the person must be in sight of the IR transmitter

Hearing loops that are installed in such a way that they allow for clear and effective communication satisfy the Americans with Disabilities Act (ADA) accessibility requirements for people with hearing loss who use listening and spoken language to communicate.

B. Procurement guidelines

When creating a Request For Proposal, or soliciting quotes or bids, we recommend that you place an emphasis on the vendor (or the vendor's sub-contractor) having references from previous loop installations and the ability to visit those locations to test the quality of their work. Many vendors understand

the logistics of a loop and attest to their ability to install one properly without having adequate experience in the field. We recommend including language in the contract that stipulates that the installation shall be done by the IEC standard and that the Certificate of Conformity (see additional resources) be completed and the results will be within the measurement guidelines created by the IEC. We also recommend that language be added stating that the vendor will commit to making any adjustments necessary at the end of the installation as part of the initial proposal bid price to guarantee a quality installation and a positive experience for induction loop users.

C. How does a loop connect to a cochlear implant, hearing aid, or other sound amplification device?

In order to connect to a hearing loop, hearing devices must have a telecoil or T-coil. Telecoils and loops work together to produce a clear sound signal for the listener. The connection between loop, telecoil and hearing device is wireless. How it works:

- 1) Signals from a sound source, such as voice or music from a microphone computer, TV, or another audio source to energize the wire loop.
- 2) As electricity flows through the wire, a *magnetic* field forms around the wire.
- 3) Listeners switch on the telecoils or T-coils, which turns the microphones of hearing aids, implants and other devices off.
- 4) The telecoils tap into the *magnetic field*
- 5) A clean source-only signal (speech or music) is delivered wirelessly to the hearing devices without hums, feedback and significantly less background noise.

This makes for a much improved and relaxed listening experience. Speech that would be drowned out in background noise becomes clear and understandable

D. The longevity and reliability of looping

Before coming to the U.S., communication systems combining hearing loops and telecoils enjoyed widespread popularity in Europe ever since the 1930s, and do so to this day. Like any technology, hearing loop technology has undergone changes and improvements. Complementary technology like electrical current amplifiers and microphones have also been significantly refined.

When installed and calibrated according to international standards, looping is a tested and reliable technology that provides improved communication access for those with hearing loss

E. Loop signage standards

There is no specification or guidance from any certifying body or organization that provides instruction on signage for loops. However, since the wiring is under the floor and the equipment is typically in the Audio/Visual equipment cabinet or shelf, it is not easy to know a room is looped without a sign in a prominent location. We recommend a looping sign at the entrance of a room and a sign towards the front of the room, near where a speaker would stand to give a presentation. We all want our participants to be aware of the assistive technology that is available to them. It is also good practice to verbally announce to the audience during a presentation that if they have a t-coil in their hearing aid or cochlear implant, to please turn their device to “t-coil mode.”

The industry standard organizations use different images represent looping or telecoils; we recommend this alternate image as it is instructive and clear to loop-users but not offensive to other individuals.



HEARING LOOP INSTALLED
Switch hearing aid to T-coil