

Hearing loop (Induction loop amplifier)

Device for receiving or transmitting audio information using magnetic, wireless signal in induction loop systems, that is picked up by the hearing aid when it is set to the T-position (Telecoil setting). An induction hearing loop consists of a microphone to pick up the spoken word; an amplifier (driver) which processes the signal which is then sent through the final piece; the loop cable, a wire placed in the perimeter beneath the room's carpeting or flooring in a facility (i.e. a meeting room, a church, a service counter), which acts as an antenna that magnetically transfers the sound signals to the hearing aids and cochlear implants with Telecoil (T-coil) receiver (sensor). Inductive hearing loops are not visible: for this reason, a specific sign (symbol of the ear with diagonal line and T letter) must inform the user that an inductive hearing loop facility is installed, available, and connected to an active microphone or audio system.

Possible configuration variants concern the dimensions of the induction loop aerial, where the magnetic signal can be received (which can be for a specific area of a room, or around the entire room, e.g. theatres, classrooms, auditoriums, place of worship), the quantity of hearing aids that can receive the signal (which can be also for an one-to-one situation, e.g. bank counters, ticket offices and supermarket checkouts), the installation (which also can be also portable and battery powered), the connectivity (which can be also connected to the room audio system); loop and driver can be also integrated in the machines (e.g. ticket machines, door entry intercoms and supermarket checkouts).

- Product Classification
 - APL (WHO Assistive Product Priority List): 18 (Hearing loops/FM systems)
 - ISO 9999:2016: 221830 (Induction loop devices)
- Possible configuration variants
 - Connectivity to room audio systems.
 - Portable and battery powered.
- Possible accessories or optional components
 - Specific sign (symbol of the ear with diagonal line and T letter).
- Product goals

Activities or functions the product is mainly intended to support, according to WHO ICF Classification:

- Hearing [\[b230\]](#).
- Listening [\[d115\]](#).
- Understanding spoken words [\[d310\]](#).

- Indicated impairments

Difficulties the product is mainly intended to address, according to the WHO ICF Classification:

- Hearing [\[b230\]](#).

- Contraindicated impairments

Difficulties for which the product may be inappropriate:

None specified.

- Indicated environments

Specific environments in which the product should be used:

- Indoors.

- **Contraindicated environments**

Environments in which the product may be inappropriate:

- Adjacent rooms with hearing loop (due to spill-over effect).

- **Other indicated factors**

Other factors or situations the product is intended to address:

- Cutting out unwanted background noise into a hearing aid.
- Sending audio information directly to hearing aids or cochlea implants with integrated T-coil sensor.

- **Other contraindicated factors**

Other factors or situations in which the product may be inappropriate:

- Wearing a hearing aid without telecoil sensor (such as complete-in-the-canal or invisible-in-the-canal hearing aids).

- **Points to be considered in product selection**

- Before selecting a hearing loop system, define the dimension of the area to connect to the induction loop.
- Through the loop, the sound goes directly into the hearing aid: it can be used by anyone with a compatible hearing aid, it is inconspicuous and unobtrusive with "T" coil hearing aids or cochlear implants, it is cost effective, and any number of users can use the system installed in public facilities.
- If a hearing loop is added to an existing audio system, ensure that the selected product is compatible and connectable to the existing audio system; ensure that the induction loop wire can be placed beneath the room's carpeting or flooring in a facility, behind the skirting, or on the ceiling.
- Ensure that the loop aerial, where the installation is planned, is free from metal elements, power lines, and devices with a strong magnetic field that may interfere with the magnetic signal of the hearing loop system.
- In case of installation of two or more loops in the same facility, ensure that the distances between the loops are large enough to avoid magnetic field interference.
- Device-integrated hearing loops must be integrated during the construction of the device, be certified by the manufacturer, and be labeled with a Telecoil symbol.
- If the place where the hearing loop system is needed changes frequently, select a portable hearing loop system.

- **Points to be considered in product fitting**

- Ensure that the induction loop wire is fixed safely under the floor covering, behind or above the skirting; in case of ceiling installation the power of the magnetic field decreases, if the wire is positioned too high.
- The installer of the hearing loop should ensure that there will be no possibilities to touch or to pull the loop wire.
- In case of churches, theaters, congress rooms or other facilities where people listen to a speaker, place the loop aerial near to the podium or to the speaker, so that the person with hearing loss can better observe the speaker's face and lips.
- In case of cinema, large stage or screen, the loop aerial must be placed not too near to the screen or to the stage, to offer the users a better visual field.
- At home, the hearing loop aerial can be installed around the entire living room and connected to the TV or home theater, to increase clarity and volume, and to permit the user a greater freedom of movement.
- Ensure that no architectural element is placed between the loop and the screen / podium that can obstruct the view.
- After connecting the loop to the amplifier, microphone, or audio system, the power and quality of the magnetic signal inside the loop aerial must be checked by the installer.
- Removable elements with strong magnetic field, that may have interference on magnetic signal quality, should be removed from the loop aerial.
- The hearing aid users should be informed by a hearing loop sign, that the room / seat / place is equipped with a hearing loop system.

- **Points to be considered in product use**

- Ensure that the hearing loop system is active when people with hearing aids are present in the facility.
- For receiving the magnetic audio signal from anywhere inside the loop, the deaf and hard of hearing users of a hearing aid must turn their telecoil enabled hearing device to the T-position i.e., deactivating the microphone of the hearing aid.

- Inform the users by the hearing loop sign that the area, room, seat row or place is equipped with an induction hearing loop.
- Do not place metal structures or devices with magnetic field emission in the loop aerial.
- Increase the amplification when the magnetic signal is weak.
- In case of use of multiple microphones, all microphones must be connected to the hearing loop system.
- Switch off the hearing loop system when it is not used.
- Points to be considered in product maintenance / follow-up
 - Regularly control if the hearing loop system is working correctly and if the loop area has an adequate quality of magnetic signal.
 - Permit hearing aid users to give a feedback on clarity and volume receiving the audio information in T-setting.
- Examples of products available on the market
 - Live product search in the EASTIN website <https://www.eastin.eu/en/searches/products/list?iso=220625>

Source

This Fact Sheet was compiled in 2021 by an international team of experts, to provide the initial knowledge base for a project ("An online system to assist the selection of assistive product") supported by the World Health Organization in 2020-2021 within the GATE Initiative (Global collaboration on Assistive Product). Fact Sheets were compiled for each of the 50 types of products included in the WHO APL (Assistive Product Priority List).

The team was composed of Renzo Andrich (Italy, group leader), Natasha Layton (Australia), Stefan von Prondzinski (Italy), Jerry Weisman (USA), Silvana Contepomi (Argentina) and Hasan Minto (Pakistan).

The project led to a prototype online tool called ASPREX (ASsistive PProduct EXplorer). At the end of the project, it was transferred to a WHO collaborating center (the Global Disability Hub in the UK), in view of possible future developments.