

TECHNICAL REPORT



Code of practice for hearing-loop systems (HLS)
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CODE OF PRACTICE FOR HEARING-LOOP SYSTEMS (HLS)

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IEC TR 63079, which is a Technical Report, has been prepared by IEC technical committee 29: Electroacoustics.

The text of this Technical Report is based on the following documents:

Enquiry draft	Report on voting
29/917/DTR	29/923/RVC

Full information on the voting for the approval of this Technical Report can be found in the report on voting indicated in the above table.

This document has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific document. At this date, the document will be

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INTRODUCTION

The performance of induction-loop systems is specified in IEC 60118-4, whereas IEC TR 63079 gives recommendations and guidance for their design, planning, installation, testing, operation and maintenance. Provisions for components of a system are given in IEC 62489-1. Methods of calculation and measurement of the magnetic field, in the context of human exposure, are given in IEC 62489-2.

This document takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this document is expected to be able to justify any course of action that deviates from its recommendations.

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CODE OF PRACTICE FOR HEARING-LOOP SYSTEMS (HLS)

1 Scope

This document, which is a Technical Report, gives recommendations for and guidance on the design, planning, installation, testing, operation and maintenance of a hearing-loop system (HLS) intended for communicating speech, music and/or other signals. It is mainly concerned with HLS for hearing enhancement, in which the signals are communicated to users of hearing aids equipped with magnetic pick-up coils.

This document does not apply to induction-loop systems which use a carrier frequency, nor to other systems for hearing enhancement purposes which do not use magnetic induction.

2 Normative references

There are no normative references in this document.

3 Terms, definitions, signs and symbols

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1 Terms and definitions

3.1.1

hearing-loop system

HLS

system including amplifier(s), microphones and/or other signal sources, in which magnetic fields are created by the flow of audio-frequency current in a conductor arranged in the form of one or more loops or a coil or solenoid

Note 1 to entry: The technical term for a hearing-loop system is "audio-frequency induction-loop system" (AFILS).

3.1.2

HLS for hearing enhancement

HLS in which the intended receivers are hearing aids or specially designed listening devices equipped with coils acting as magnetic antennas

3.1.3

direct-to-reverberant ratio

ratio, at a given point in the sound field, of the sound pressure due to the wanted sound source to the sound pressure due to reverberation

3.1.4

hearing aid

personal amplification system, worn entirely on the listener, which is designed to enable a person with impaired hearing to hear more easily

3.1.5**loop listener**

listening device which is designed to give an audible output in response to signals transmitted by an HLS

3.1.6**HLS monitoring receiver**

equipment designed to verify the performance of an HLS by audio and visual means

- a) providing visible indication that it is powered and when the strength of the magnetic field produced by the loop falls within a specified range,
- b) providing an audio-frequency output by which the sound quality of the HLS transmissions can be assessed, and
- c) providing other, optional facilities (see Annex A)

3.1.7**magnetic field strength**

magnitude of the magnetic field, at a stated point in space and in a stated direction, generated by the flow of alternating current in an HLS

3.1.8**listening plane**

plane perpendicular to the axis of telecoils in hearing aids (see Annex B)

3.1.9**useful magnetic field volume**

volume within which the system provides hearing-aid users with a signal of acceptable quality

[SOURCE: IEC 60118-4:2014, 3.2, modified — The brackets have been deleted from the definition, as well as the notes.]

3.1.10**system designer**

technically competent person who takes responsibility for the technical specification, design and performance of the system

3.1.11**simple system**

HLS that is neither large nor complex and does not require specialist skills in order to achieve a satisfactory result

3.1.12**counter system**

ticket office system

small area HLS designed to assist communication between (usually) two persons, sometimes through a transparent screen

Note 1 to entry: For example at a ticket office or bank.

3.1.13**complex installation**

HLS installation in which any of the following apply:

- HLS that has an approximate coverage area greater than 400 m²;
- it is required to operate close to another HLS, which could lead to co-interference;
- it is required that a certain area is not covered by the HLS, in case it might interfere with sensitive electronic equipment, for example electric guitars or dynamic microphones;

- it is required that the system operates on a number of different listening planes;
- an unconventional layout of loop conductors is indicated;
- there is metal in the building's structure and this causes irregularity in the field strength when using a perimeter loop

Note 1 to entry: Such installations are likely to require specialized design knowledge in order to obtain a satisfactory result.

3.1.14

direction of the magnetic field

resultant direction of the magnetic field at a point in three dimensional space, arising from the phasor sum of components of the field derived by integration over all elements of the induction-loop

3.1.15

HLS reference plane

the plane to which the magnetic characteristics of the HLS are referred when stating specified values

Note 1 to entry The reference plane specification includes its inclination to the horizontal.

3.1.16

reference magnetic field strength level

0 dB reference for magnetic field strength levels, which is 400 mA/m

[SOURCE: IEC 60118-4:2014, 3.1, modified – The definition has been rephrased, and the note has been deleted.]

3.1.17

overspill

magnetic field of usable strength that is present outside the volume in which it is required

Note 1 to entry This magnetic field extends outside the useful magnetic field volume because a field of lower strength than the minimum specified in IEC 60118-4 can still interfere with other nearby HLS or be received with suitable equipment.

3.2 Signs and symbols

3.2.1 Symbol for an induction-loop

The symbol shown in Figure 1 should be used on circuit diagrams to indicate an HLS.

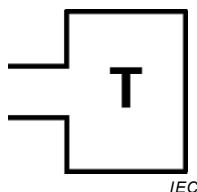
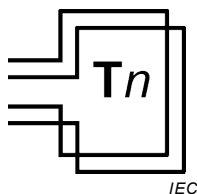


Figure 1 – Symbol for use on diagrams

3.2.2 Symbol for multiple loops

The symbol shown in Figure 2 should be used on circuit diagrams to indicate a complex or low-spill HLS.



NOTE n is the number or letter corresponding to the classification of loop. See Clause 11.

Figure 2 – Symbol for multiple loops for use on diagrams

3.2.3 Sign for display in premises where an HLS is installed and for HLS equipment identification

Signs for display should be produced on a durable material.

Areas where the reception of the HLS is satisfactory should be clearly indicated at visible positions by means of the sign shown in Figure 3, which is based on the one originally adopted by the World Federation of the Deaf. The sign should indicate T as shown. The background colour should be Pantone reference 661 or 662 (blue) and the printing should be in white.

NOTE Some organizations that support people with hearing loss do not approve HLS unless signs are displayed. Signs of other colours are found in use.

Normally the dimensions of the display signs should be a minimum of 100 mm × 100 mm; when used on equipment, they can be of any convenient size.

The sign should appear at a position visible in normal use on HLS equipment, on loop cable junction boxes and adjacent to the loop cable itself where it would be helpful to maintenance personnel or help to prevent accidental disturbance.



Figure 3 – Sign for display in premises to indicate that an HLS is installed and for HLS equipment identification

3.2.4 Identification of areas where reception of the HLS is not satisfactory

Areas where the reception of the HLS is not satisfactory should be clearly indicated on a plan of the space by means of the sign shown in Figure 4. The plan should be placed where it can be seen by both hearing-aid users and staff. This sign should also be placed visibly in the unsatisfactory area and/or on all seats in that area.