



BSI Standards Publication

Electroacoustics - Hearing aids

Part 4: Induction-loop systems for hearing aid purposes - System performance requirements

National foreword

This British Standard is the UK implementation of EN IEC 60118-4:2015+A1:2018. It is identical to IEC 60118-4:2014, incorporating amendment A1:2017. It supersedes BS EN 60118-4:2015, which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to IEC text carry the number of the IEC amendment. For example, text altered by IEC amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted to Technical Committee EPL/29, Electroacoustics.

A list of organizations represented on this committee can be obtained on request to its secretary.

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© The British Standards Institution 2018
Published by BSI Standards Limited 2018

ISBN 978 0 580 97036 8

ICS 17.140.50

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2015.

Amendments/corrigenda issued since publication

Date	Text affected
30 April 2018	Implementation of IEC amendment 1:2017 with CENELEC endorsement A1:2018

English Version

**Electroacoustics – Hearing aids – Part 4: Induction-loop
systems for hearing aid purposes – System performance
requirements**

Électroacoustique – Appareils de correction
auditive – Partie 4: Systèmes de boucles
d'induction utilisées à des fins de correction
auditive – Exigences de performances système

Akustik – Hörgeräte – Teil 4: Induktionsschleifen
für Hörgeräte – Leistungsanforderungen

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CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

European foreword

The text of document 29/855/FDIS, future edition 3 of IEC 60118-4, prepared by IEC TC 29, Electroacoustics, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 60118-4:2015.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2015-10-15
- latest date by which the national standards conflicting with the document have to be withdrawn (dow) 2018-01-15

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In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 61938 NOTE Harmonized as EN 61938.

IEC 61260-1 NOTE Harmonized as EN 61260-1.

Foreword to amendment A1

The text of document 29/952/CDV, future edition 1 of IEC 60118-4:2014/A1:2017, prepared by IEC/TC 29 "Electroacoustics" was submitted to the IEC-CENELEC parallel vote and approved by CENELEC as EN IEC 60118-4:2015/A1:2018.

The following dates are fixed:

- latest date by which the document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2018-09-14
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Annex ZA (normative)

Normative references to international publications with their corresponding European publications

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE 1 When an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: www.cenelec.eu.

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60268-3	2013	Sound system equipment -- Part 3: Amplifiers	EN 60268-3	2013
IEC 60268-10	1991	Sound system equipment -- Part 10: Peak programme level meters	HD 483.10 S1	1993
IEC 61672-1	2013	Electroacoustics - Sound level meters -- Part 1: Specifications	EN 61672-1	
IEC 62489-1		Electroacoustics - Audio frequency induction loop systems for assisted hearing -- Part 1: Methods of measuring and specifying the per- formance of system components	EN 62489-1	2010

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FOREWORD

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International Standard IEC 60118-4 has been prepared by IEC technical committee 29: Electroacoustics.

This third edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition: Addition of [Annexes G, H](#) and [I](#) where more information is provided about practical considerations and methods of measurement.

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

A list of all parts of the IEC 60118 series, published under the general title *Electroacoustics – Hearing aids*, can be found on the IEC website.

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

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

INTRODUCTION

Audio-frequency induction-loop systems are widely used to provide a means for hearing aid users, whose hearing aids are fitted with induction pick-up coils, generally known as 'telecoils', to minimise the problems of listening when at a distance from a source of sound, shielded from the person speaking by a protective window, and/or in a background noise. Background noise and distance are two of the main causes of hearing aid users being unable to hear satisfactorily in other than face-to-face quiet conditions. Induction-loop systems have been widely installed in churches, theatres and cinemas, for the benefit of hearing-impaired people. The use of induction-loop systems has been extended to many transient communication situations such as ticket offices, bank counters, drive-in/drive-through service locations, lifts/elevators etc. The widespread provision of telephone handsets that provide inductive coupling to hearing aids is another significant application, where ITU-T Recommendation P370 [1]¹⁾ applies.

Transmission of an audio-frequency signal via an induction-loop system can often establish an acceptable signal-to-noise ratio in conditions where a purely acoustical transmission would be significantly degraded by reverberation and background noise.

One form of audio frequency induction-loop system comprises a cable installed in the form of a loop usually around the perimeter of a room or area in which a group of hearing impaired persons wish to listen. The cable is connected via an amplifier to a microphone system or other source of audio signal, such as a radio receiver, CD player etc. The amplifier produces an audio-frequency electric current in the induction loop cable, causing a magnetic field to be produced inside the loop. The design and implementation of the induction loop is determined by the construction of the building in which it is installed, particularly by the presence of large amounts of iron, steel or aluminium in the structure. In addition the layout and position of electrical cables and equipment may generate high levels of background audio frequency magnetic fields that may interfere with the reception of the loop signal.

Another form of induction-loop system employs a small loop, intended for communication with a hearing-aid user in its immediate vicinity. Examples are: neck loops, ticket-counter systems, self-contained 'portable' systems and chairs incorporating induction loops. (See [Annex A](#))

The pick-up device for an audio-frequency induction-loop system is usually a personal hearing aid, of a type fitted with a pick-up coil (telecoil); however, special induction loop receivers may be used in certain applications.

1) Numbers in square brackets refer to the Bibliography.

Electroacoustics - Hearing aids —

Part 4: Induction-loop systems for hearing aid purposes - System performance requirements

1 Scope

This part of IEC 60118 is applicable to audio-frequency induction-loop systems producing an alternating magnetic field at audio frequencies and intended to provide an input signal for hearing aids operating with an induction pick-up coil (telecoil). Throughout this standard, it is assumed that the hearing aids used with it conform to all relevant parts of IEC 60118.

This standard specifies requirements for the field strength in audio-frequency induction loops for hearing aid purposes, which will give adequate signal-to-noise ratio without overloading the hearing aid. The standard also specifies the minimum frequency response requirements for acceptable intelligibility.

Methods for measuring the magnetic field strength are specified, and information is given on appropriate measuring equipment (see [Annex B](#)), information that should be provided to the operator and users of the system (see [Annex C](#)), and other important considerations.

This standard does not specify requirements for loop driver amplifiers or associated microphone or audio signal sources, which are dealt with in IEC 62489-1, or for the field strength produced by equipment, such as telephone handsets, within the scope of ITU-T P.370.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60268-3:2013, *Sound system equipment — Part 3: Amplifiers*

IEC 60268-10:1991, *Sound system equipment — Part 10: Peak programme level meters*

IEC 61672-1:2013, *Electroacoustics – Sound level meters — Part 1: Specifications*

IEC 62489-1:2010, *Electroacoustics — Audio-frequency induction-loop systems for assisted hearing – Part 1: Methods of measuring and specifying the performance of system components*

3 Terms and definitions

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

3.1

reference magnetic field strength level

level of 0 dB referred to a magnetic field strength of 400 mA/m

Note 1 to entry: This is measured as specified in [8.2](#).