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INTERNATIONAL STANDARD

Interface for loudspeakers with digital input signals based on IEC 60958

INTERNATIONAL
ELECTROTECHNICAL
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INTERNATIONAL ELECTROTECHNICAL COMMISSION

INTERFACE FOR LOUDSPEAKERS WITH DIGITAL INPUT SIGNALS BASED ON IEC 60958

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International Standard IEC 62537 has been prepared by technical area 4: Digital system interfaces and protocols, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this standard is based on the following documents:

CDV	Report on voting
100/1433/CDV	100/1700/RVC

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

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

The committee has decided that the contents of this publication 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- withdrawn,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.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

The IEC 60958 interface allows transmission of 2-channel digital audio with up to 24 bit word length at 192 kHz sampling rate. This is adequate for loudspeakers, however, there are additional needs in practice that require standardisation, which go beyond what's currently defined in IEC 60958. This standard is aimed at fulfilling those needs.

IEC 60958 features a user bit that can form the basis of a control data channel that addresses those additional requirements. The format of this user bit data channel is based on the existing MIDI standard.

Beyond the needs given in IEC 60958, the following offers an exemplary, but incomplete list of of what a digital loudspeaker interface should support:

- Remote control of operating parameters of the loudspeaker.
- Remote power-on of the loudspeaker – preferably without requiring standby power in the loudspeaker.
- Remote configuration of loudspeaker, for example crossover configuration, or firmware update.
- Remote supervision of loudspeakers, for example chassis temperature or amplifier integrity.
- Remote identification of loudspeakers, to allow auto-configuration of the entire system.
- Control of individual or groups of loudspeakers through a single interface.
- Remote control of Audio System through remote control receiver mounted in loudspeaker enclosure (allowing Audio System to be placed out of sight).
- Extensions to allow for future applications.

NOTE 1 Level and mute control in the loudspeaker is preferred over digital attenuation by the signal source, as this allows the full audio data word length for the filter network; level should be controlled at the last stage in front of power amplifiers. In this case, the advantage is that the full audio word length of the given format is available at any time and at any volume setting. Especially, if a fully digitally constructed crossover network has been implemented, more precise arithmetical operations can also be made at low volumes. Volume control can thus be carried out after the crossover network or even after the relevant final amplifier. Even under the most unfavourable conditions (digital pre-attenuation and analogue gain) the filters and controllers receive the full audio word width under all operating conditions (ideal state).

NOTE 2 Not all of the listed features are required in all applications. It should therefore be up to the implementer to select from this standard the parts that are required in his application, and omit the unnecessary features. See Annex D for application examples.

INTERFACE FOR LOUDSPEAKERS WITH DIGITAL INPUT SIGNALS BASED ON IEC 60958

1 Scope

This International Standard specifies the requirements for a digital loudspeaker interface based on the IEC 60958 series of standards and the MIDI specification. It maximizes flexibility and value by combining these previously separate standards. Together, the two standards provide a simple and flexible digital interface for loudspeakers.

Examples for applications of the interface can be found in Annex C of this standard.

2 Normative references

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

IEC 60958 (all parts), *Digital audio interface*

IEC 60958-4, *Digital audio interface – Part 4: Professional applications*

The Complete MIDI 1.0 Detailed Specification v96.1:2001, (Second edition)