

INTERNATIONAL STANDARD

IEC
61937-1

First edition
2003-05

**Digital audio –
Interface for non-linear PCM encoded
audio bitstreams applying IEC 60958 –**

**Part 1:
General**

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Reference number
IEC 61937-1:2003(E)

Publication numbering

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Commission Electrotechnique Internationale
International Electrotechnical Commission
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PRICE CODE

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

DIGITAL AUDIO –
INTERFACE FOR NON-LINEAR PCM ENCODED
AUDIO BITSTREAMS APPLYING IEC 60958 –

Part 1: General

FOREWORD

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International Standard IEC 61937-1 has been prepared by technical area 4: Digital system interfaces, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This standard cancels and replaces IEC 61937, published in 2000, which has been divided into four parts (see below). This first edition constitutes a technical revision.

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

FDIS	Report on voting
100/644/FDIS	100/670/RVD

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.

IEC 61937 consists of the following parts under the general title *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958*:

Part 1: General

Part 2: Burst-info

Part 3: Non-linear PCM bitstreams according to the AC-3 format

Part 4: Non-linear PCM bitstreams according to the MPEG audio formats

Part 5: Non-linear PCM bitstreams according to the DTS (Digital Theatre Systems) format(s)

Part 6: Non-linear PCM bitstreams according to the MPEG-2 AAC format

Part 7: Non-linear PCM bitstreams according to the ATRAC and ATRAC2/3 formats

The committee has decided that the contents of this publication will remain unchanged until October 2005. At this date, the publication will be

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- withdrawn;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

The contents of the corrigendum of March 2004 have been included in this copy.

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DIGITAL AUDIO – INTERFACE FOR NON-LINEAR PCM ENCODED AUDIO BITSTREAMS APPLYING IEC 60958 –

Part 1: General

1 Scope

This International Standard applies to the digital audio interface using the IEC 60958 series for the conveying of non-linear PCM encoded audio bitstreams.

It describes a way in which this digital interface can be used in consumer applications.

The professional mode (AES/EBU) is not considered within the scope 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 61937-2, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 2: Burst-info*

IEC 61937-3, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 3: Non-linear PCM bitstreams according to the AC-3 format*

3 Terms and definitions

3.1 Definitions

3.1.1

audio data-burst

data-burst with an encoded audio frame as burst-payload

3.1.2

audio data-word

16-bit data word

3.1.3

audio frame

fixed number of audio samples

NOTE The number of samples in an audio frame is dependent on the particular encoding system which is used to encode the audio frame into the encoded audio frame.

3.1.4

audio gap

period in the sequence of baseband audio samples where valid samples of audio are not available

3.1.5**bitstream**

non-linear PCM encoded audio source, represented in a sequence of bits

NOTE In this interface the bitstream consists of a sequence of data-bursts.

3.1.6**data-burst**

packet of data, including the burst-preamble, to be transmitted across the interface

3.1.7**burst-payload**

information content of the data-burst

3.1.8**burst-preamble**

header for the data-burst, containing synchronization, and information about the data contained in the burst-payload

3.1.9**data-type**

reference to the type of payload of the data-bursts

3.1.10**encoded audio frame**

minimum decodable unit of an encoded data sequence

NOTE Each encoded audio frame is the encoded representation of a fixed number of audio samples (for each original audio channel). The number of samples which are encoded into an encoded audio frame depends on the particular encoding system which is used to encode the audio frame into the encoded audio frame.

3.1.11**idle**

state in which the interface is not used to convey any sequence of data-bursts, or PCM data

NOTE The channel status data is still active (bit b1 is set to '1' when further non-linear PCM encoded audio is anticipated – see Figure 7).

3.1.12**length-code**

code indicating the length of the data-burst-payload in bits

3.1.13**repetition period**

period between the reference point of the current data-burst and the reference point of the immediately following data-burst of the same data-type

3.1.14**sampling frequency**

sampling frequency of the encoded PCM audio samples (i.e. before encoding and after decoding)

3.1.15**sampling period**

time period related to the sampling frequency of the PCM audio samples, represented in the encoded bitstream

3.1.16**stuffing**

occupying the unused data capacity of the interface

3.1.17**stuffing sub-frame**

occupying the unused data capacity in 16-bit audio data words

3.1.18**stream gap**

period within the encoded audio bitstream without any audio frame; a discontinuity in the bitstream

NOTE Typically, a stream gap will occur between encoded audio frames.

3.2 Abbreviations**3.2.1****MPEG**

Moving Pictures Expert Group, a joint committee of ISO and IEC

3.2.1**ITU-R**

International Telecommunication Union, Radio Communication Bureau

3.3 Presentation convention**F872h**

Value 'F872' in hexadecimal format

4 General description

The format of the IEC 60958 interface consists of a sequence of IEC 60958 subframes. Each IEC 60958 subframe is normally used to carry 1 linear PCM sample but may also be used to convey data. The non-linear PCM encoded audio bitstreams to be transported over this interface are formed into a sequence of data-bursts.

Each data-burst consists of a 64-bit burst-preamble, followed by the burst-payload. The burst-preamble consists of a sync-word, information about the burst-payload and a bitstream number.

The interface may convey one or more bitstreams. Each type of bitstream may impose a particular requirement for the repetition period for the data-bursts that make up the bitstream (see Clause 7).

The 16 bits of a data-burst are placed in time-slots 12-27 of an IEC 60958 subframe. Both odd and even IEC 60958 subframes (ch1, ch2) are simultaneously used to carry 32 bits of data. This allows IEC 60958, in the consumer mode, to convey either two-channel linear PCM audio, or a set of non-linear PCM encoded bitstreams (alternating data words), but not both simultaneously.

5 Interface format

The interface format as defined in IEC 60958-1 and IEC 60958-3 is used.