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INTERNATIONAL STANDARD

Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958
Part 1: General

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Part 1: General

FOREWORD

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

This second edition of IEC 61937-1 cancels and replaces the first edition published in 2000. This edition contains the following significant technical changes with respect to the previous edition.

a) The data-type field in Pc is expanded from bit 0-4 to bit 0-6.
b) A new additional definition of Pd is specified.
c) The numbers of times for symbol frequency are changed to refer to each part of IEC 61937.
d) The requirement for burst spacing is changed.

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

FDIS	Report on voting
100/1101/CDV	100/1192/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 list of all the parts of IEC 61937, under the general title *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958* can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the maintenance result 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- withdrawn;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.

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

Part 1: General

1 Scope

This part of IEC 61937 applies to the digital audio interface using the IEC 60958 series for the conveying of non-linear PCM encoded audio bitstreams.

It describes the 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 (all parts), *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958*

3 Terms, definitions, abbreviations and presentation

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

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 or bytes

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 subframe
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

3.2.2

SMPTE
The Society of Motion Picture and Television Engineers

3.2.3

ETSI
European Telecommunication Standards Institute

3.2.4

ATSC
Advanced Television Standards Committee

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 one 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.