IEC 61937-2

Edition 2.1   2011-12

INTERNATIONAL STANDARD

NORME INTERNATIONALE

colour inside

Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 –
Part 2: Burst-info

Audionumérique – Interface pour les flux de bits audio à codage MIC non linéaire conformément à la CEI 60958 –
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DIGITAL AUDIO –
INTERFACE FOR NON-LINEAR PCM ENCODED
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Part 2: Burst-info

FOREWORD

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This consolidated version of IEC 61937-2 consists of the second edition (2007) [documents 100/1115/CDV and 100/1221/RVC] and its amendment 1 (2011) [documents 100/1811/CDV and 100/1884/RVC]. It bears the edition number 2.1.

The technical content is therefore identical to the base edition and its amendment and has been prepared for user convenience. A vertical line in the margin shows where the base publication has been modified by amendment 1. Additions and deletions are displayed in red, with deletions being struck through.

International Standard IEC 61937-2 has been prepared by technical area 4: Digital system interfaces and protocols, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

a) New audio data-types of enhanced AC-3 data, MPEG-2 AAC low sampling frequency, MPEG-4 AAC, DTS type IV, ATRAC-X, WMA professional and MAT are added.

b) Data-type field in Pc is expanded from bit 0-4 to 0-6.

The bilingual version (2011-10) corresponds to the monolingual English version, published in 2007-05.

The French version of this standard has not been voted upon.

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

The list of all the parts of the IEC 61937 series, 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 the base publication and its amendments 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

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- replaced by a revised edition, or
- amended.

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INTRODUCTION
(to Amendment 1)

The revision of IEC 61937-2 (2007) has become necessary to define additional data types, in order to be consistent with the data-type field description in IEC 61937-1 and to clarify the rule and definition of this data-type. Amendment 1 contains the following significant technical changes with respect to the base publication (IEC 61937-2, second edition).

– New audio data-types of MPEG-4 ALS, MPEG-4 AAC LC in LATM/LOAS, MPEG-4 HE AAC in LATM/LOAS and DRA are added.

– The description of data-type and subdata-type fields in Pc is clarified.

– A rule has been defined for new data-types.

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

Part 2: Burst-info

1 Scope

This part of IEC 61937 specifies the digital audio interface to convey non-linear PCM encoded audio bitstreams applying IEC 60958-1 and IEC 60958-3. This standard specifies burst-info which defines content information about the data contained in the burst payload.

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 60958-1, *Digital audio interface – Part 1: General*

IEC 60958-3, *Digital audio interface – Part 3: Consumer applications*

IEC 61937-1, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 1: General*

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*

IEC 61937-4, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 4: Non-linear PCM bitstreams according to the MPEG audio format*

IEC 61937-5, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 5: Non-linear PCM bitstreams according to the DTS (Digital Theater Systems) format(s)*

IEC 61937-6, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 6: Non-linear PCM bitstreams according to the MPEG-2 AAC and MPEG-4 AAC audio formats*

IEC 61937-7, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 7: Non-linear PCM bitstreams according to the ATRAC, ATRAC2/3 and ATRAC-X formats*

IEC 61937-8, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 8: Non-linear PCM bitstreams according to the Windows Media Audio (WMA) Professional format*

IEC 61937-9, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 9: Non-linear PCM bitstreams according to the MAT format*[1]

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[1] To be published.

IEC 61937-10, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 10: Non-linear PCM bitstreams according to the MPEG-4 audio lossless coding (ALS) format*

IEC 61937-11, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 11: MPEG-4 AAC and its extensions in LATM/LOAS*

IEC 61937-12, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 12: Non-linear PCM bitstreams according to the DRA formats*

ISO/IEC 11172-3: *Information technology – Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mb/s – Part 3: Audio*

ISO/IEC 13818-3, *Information technology – Generic coding of moving pictures and associated audio information – Part 3: Audio*

ISO/IEC 13818-7, *Information technology – Generic coding of moving pictures and associated audio information – Advanced Audio Coding (AAC)*

ISO/IEC 14496-3, *Information technology – Coding of audio-visual objects – Part 3: Audio*

ITU-R Recommendation BS.1196, *Audio coding for digital terrestrial television broadcasting*

3 Terms, definitions and abbreviations

3.1 Terms and definitions

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

audio data-burst	data-burst with an encoded audio frame as burst-payload
audio data-word	16-bit data word
audio frame	fixed number of audio samples. 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
audio gap	period in the sequence of baseband audio samples where valid samples of audio are not available
bitstream	non-linear PCM encoded audio source, represented in a sequence of bits. In this interface the bitstream consists of a sequence of data-bursts
data-burst	packet of data, including the burst-preamble, to be transmitted across the interface
burst-payload	information content of the data-burst
burst-preamble	header for the data-burst, containing synchronization and information about the data contained in the burst-payload
data-type	reference to the type of payload of the data-bursts
encoded audio frame	minimum decodable unit of an encoded data sequence. 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
length-code	length of the data-burst-payload in bits
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

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

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

stuffing   occupying the unused data capacity of the interface

stuffing sub-frame   occupying the unused data capacity in 16-bit audio data words

stream gap   period within the encoded audio bitstream without any audio frame; a discontinuity in the bitstream. Typically, a stream gap will occur between encoded audio frames

3.2 Abbreviations

ATRAC   Adaptive TRansform Acoustic Coding

ATRAC2   Adaptive TRansform Acoustic Coding 2

ATRAC3   Adaptive TRansform Acoustic Coding 3

ATRAC2/3   ATRAC2 and/or ATRAC3

ATRAC-X   Adaptive TRansform Acoustic Coding-X

ATSC   Advanced Television Systems Committee

IEC   International Electrotechnical Commission

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

ITU-R   International Telecommunication Union, Radiocommunication Bureau

MPEG   Motion Pictures Expert Group, a joint committee of ISO and IEC

SMPTE   Society of Motion Picture and Television Engineers

4 Burst-info

4.1 General

The 16-bit burst-info contains information about the data which will be found in the data-burst. Fields of burst-info is specified in Table 1.

Table 1 – Fields of burst-info

Bits of Pc	Value	Contents
0-4		Data-type
	0-31	See Table 2
5-6		Subdata-type
	0-3	See Table 2
7		Error-flag
	0	Error-flag indicating a valid burst-payload
	1	Error-flag indicating that the burst-payload may contain errors
8-12		Data-type-dependent info
13-15	0-7	Bit-stream-number
NOTE Refer to IEC 61937-1, 6.1.7 and 6.1.7.1.		

Bits of Pc		Value	Contents
0-6			Data-type (defined in IEC 61937-1)
	0-4		*Conventional* data-type
		0-31	See Table 2
	5-6		Subdata-type
		0-3	See Table 2
7			Error-flag
		0	Error-flag indicating a valid burst-payload
		1	Error-flag indicating that the burst-payload may contain errors
8-12			Data-type-dependent info
13-15		0-7	Bit-stream-number
NOTE Refer to IEC 61937-1, 6.1.7 and 6.1.7.1.			

4.2   Data-type and subdata-type

~~Data type defined in PC bits 0-6 in IEC 61937-1 consists of conventional data-type (0-4) and subdata-type (5-6) for historical reasons. All data-types are defined in Table 2.~~

~~Any combination of data-type and subdata-type which is not defined in Table 2 shall not be transmitted.~~

Data-type defined in PC bits 0-6 in IEC 61937-1 consists of *conventional* data-type (0-4) and subdata-type (5-6) for historical reasons. All *conventional* data-types and subdata-types are defined in Table 2.

Further definition of data-type in the reserved area of Table 2 shall be allocated in PC bits 0-6, in ascending order and without skipping gap.