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AMENDMENT 2

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

IEC 61937-2:2007-05/AMD2:2018-03(en)

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FOREWORD

This amendment 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 amendment is based on the following documents:

CDV	Report on voting
100/2944/CDV	100/3032/RVC

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

The committee has decided that the contents of this amendment and the base 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- withdrawn,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 to Amendment 2

The revision of IEC 61937-2:2007 has become necessary to define additional data types. Amendment 2 contains the following significant technical changes with respect to the base publication (IEC 61937-2:2007 and IEC 61937-2:2007/AMD1:2011):

a) new audio data-types of ATRAC-X low latency, MPEG-H 3D Audio, MPEG-H 3D Audio HBR, AC-4, AC-4 HBR4, AC-4 HBR16, AC-4 LD and MPEG-4 ALS in LATM/LOAS are added;

b) units of Pd column is added to Table 2;

c) update SMPTE reference.

In the next full revision of IEC 61937-2, it is planned to relinquish the use of "Conventional data-type" and "Subdata-type", replacing them with "data-type bits 0 to 4" and "data-type bits 5 to 6", respectively.

2 Normative references

Insert, in the list of normative references, the following new publications:

IEC 61937-13, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 13: MPEG-H 3D Audio*

IEC 61937-14, *Digital audio – Interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 14: Non-linear PCM bitstreams according to the AC-4 format*

In the entry for IEC 61937-1, replace "IEC 61937-1" *with* "IEC 61937-1:2007".

In the entry for IEC 61937-8, replace "IEC 61937-8" *with* "IEC 61937-8:2006".

3.1 Terms and definitions

Replace the entire existing entry for length-code by the following new entry:

length-code — length of the data-burst-payload in bits, bytes or 8-bytes

Table 2 – Data-types

Replace Table 2 and the amendments brought to it in Amendment 1 by the following new table:

Table 2 – Data-types

Data-type value of Pc bit 0 to 6		Contents	Reference point R	Repetition period of data-burst measured in IEC 60958 frames	Units of Pd
Conventional data-type Value of data-type bits 0 to 4	Subdata-type Value of data-type bits 5 to 6				
0	0	Null data		[a]	
1	0	AC-3 data	R-AC-3	1 536	bits
2	0 – 3	Refer to SMPTE ST 338			bits
3	0	Pause	bit 0 of Pa	[b]	bits
4	0	MPEG-1 layer 1 data	bit 0 of Pa	384	bits
5	0	MPEG-1 layer 2 or 3 data or MPEG-2 without extension	bit 0 of Pa	1 152	bits
6	0	MPEG-2 data with extension	bit 0 of Pa	1 152	bits
7	0	MPEG-2 AAC	bit 0 of Pa	1 024	bits
8	0	MPEG-2, layer-1 low sampling frequency	bit 0 of Pa	768	bits
9	0	MPEG-2, layer-2 low sampling frequency	bit 0 of Pa	2 304	bits
10	0	MPEG-2, layer-3 low sampling frequency	bit 0 of Pa	1 152	bits
11	0	DTS type I	bit 0 of Pa	512	bits
12	0	DTS type II	bit 0 of Pa	1 024	bits
13	0	DTS type III	bit 0 of Pa	2 048	bits
14	0	ATRAC	bit 0 of Pa	512	bits
15	0	ATRAC 2/3	bit 0 of Pa	1 024	bits
16	0	ATRAC-X	bit 0 of Pa	2 048	bits
	1	ATRAC-X low latency	bit 0 of Pa	512	bits
	2	ATRAC-X low latency	bit 0 of Pa	256	bits
	3	ATRAC-X low latency	bit 0 of Pa	128	bits
17	0	DTS type IV	bit 0 of Pa	See IEC 61937-5	bytes
18	0	WMA professional type I	bit 0 of Pa[c]	2 048	bits
	1	WMA professional type II	bit 0 of Pa	2 048	bits

Data-type value of Pc bit 0 to 6		Contents	Reference point R	Repetition period of data-burst measured in IEC 60958 frames	Units of Pd
Conventional data-type Value of data-type bits 0 to 4	Subdata-type Value of data-type bits 5 to 6				
	2	WMA professional type III	bit 0 of Pa	1 024	bits
	3	WMA professional type IV	bit 0 of Pa	512	bits
19	0	MPEG-2 AAC low sampling frequency	bit 0 of Pa	2 048	bits
	1	MPEG-2 AAC low sampling frequency	bit 0 of Pa	4 096	bits
	2 – 3	MPEG-2 AAC low sampling frequency	reserved	reserved	bits
20	0	MPEG-4 AAC	bit 0 of Pa	1 024	bits
	1	MPEG-4 AAC	bit 0 of Pa	2 048	bits
	2	MPEG-4 AAC	bit 0 of Pa	4 096	bits
	3	MPEG-4 AAC	bit 0 of Pa	512	bits
21	0	Enhanced AC-3	bit 0 of Pa	6 144	bytes
22	0	MAT	R-MAT	15 360	bytes
23	0	MPEG-4 ALS	bit 0 of Pa	See IEC 61937-10	8-bytes
	1	MPEG-4 AAC LC in LATM/LOAS	bit 0 of Pa	See IEC 61937-11	bits
	2	MPEG-4 HE AAC in LATM/LOAS	bit 0 of Pa	See IEC 61937-11	bits
	3	DRA	bit 0 of Pa	See IEC 61937-12	bits
24	0	AC-4	bit 0 of Pa	See IEC 61937-14	bytes
	1	AC-4 HBR4	bit 0 of Pa	See IEC 61937-14	bytes
	2	AC-4 HBR16	bit 0 of Pa	See IEC 61937-14	8-bytes
	3	AC-4 LD	bit 0 of Pa	See IEC 61937-14	bytes
25	0	MPEG-H 3D Audio	bit 0 of Pa	See IEC 61937-13	bytes
	1	MPEG-H 3D Audio HBR	bit 0 of Pa	See IEC 61937-13	8-bytes
	2	MPEG-4 ALS in LATM/LOAS	bit 0 of Pa	See IEC 61937-10	8-bytes
	3	Reserved (do not use until defined)			
103 – 107		Reserved (do not use until defined)			
(26)	*(0 – 3)*				
27 – 30	0 – 3	Refer to SMPTE ST 338			bits
31	0 – 3	Extended data-type (do not use until defined)			

[a] Refer to IEC 61937-1:2007, 7.3.

[b] The repetition period of pause data-bursts depends on the application. The repetition period of pause data-bursts is defined for each audio data-burst.

[c] Refer to IEC 61937-8:2006, 4.2.

4.3 Audio data-bursts

Add, after the existing subclause 4.3.25, the following new subclauses:

4.3.26 ATRAC-X low latency

The payload of ATRAC-X represents 512 samples of each encoded channel and can be transferred by assigning 16 to data-type bits 0 to 4 and 1 to data-type bits 5 to 6, or it represents 256 samples of each encoded channel and can be transferred by assigning 16 to data-type bits 0 to 4 and 2 to data-type bits 5 to 6, or 128 samples of each encoded channel and can be transferred by assigning 16 to data-type bits 0 to 4 and 3 to data-type bits 5 to 6. The data-burst is headed with a burst-preamble, followed by the burst-payload; see IEC 61937-7.

4.3.27 MPEG-H 3D Audio

The MPEG-H 3D Audio bitstream consists of a sequence of frames. The value of data-type bits 0 to 4 of an MPEG-H 3D Audio data-burst is 25 and the value of data-type bits 5 to 6 is 0. The value of data-type bits 0 to 4 of an MPEG-H 3D Audio HBR data-burst is 25 and the value of data-type bits 5 to 6 is 1. The data-burst is headed with a burst-preamble, followed by the burst-payload. The burst-payload of each data-burst of MPEG-H 3D Audio shall contain one complete MPEG-H 3D Audio frame. The length of the MPEG-H 3D Audio data-burst depends on the encoded bit rate (which determines the MPEG-H 3D Audio frame length); see IEC 61937-13.

4.3.28 AC-4, AC-4 HBR4, AC-4 HBR16 and AC-4 LD

The AC-4 bitstream consists of a sequence of frames. The value of data-type bits 0 to 4 of an AC-4 data-burst is 24 and the value of data-type bits 5 to 6 is 0. The value of data-type bits 0 to 4 of an AC-4 HBR4 data-burst is 24 and the value of data-type bits 5 to 6 is 1. The value of data-type bits 0 to 4 of an AC-4 HBR16 data-burst is 24 and the value of data-type bits 5 to 6 is 2. The value of data-type of an AC-4 LD data-burst is 24 and the value of data-type bits 5 to 6 is 3. The data-burst is headed with a burst-preamble, followed by the burst-payload. The burst-payload of each data-burst of AC-4 data shall contain one complete AC-4 frame. The length of the AC-4 data-burst depends on the encoded bit rate (which determines the AC-4 frame length); see IEC 61937-14.

4.3.29 MPEG-4 ALS in LATM/LOAS

The MPEG-4 ALS in LATM/LOAS bitstream consists of a sequence of frames. The value of data-type bits 0 to 4 of an MPEG-4 ALS in LATM/LOAS data-burst is 25 and the value of data-type bits 5 to 6 is 2. The data-burst is headed with a burst-preamble, followed by the burst-payload. The burst-payload of each data-burst of MPEG-4 ALS in LATM/LOAS data shall contain one complete MPEG-4 ALS frame. The length of the MPEG-4 ALS in LATM/LOAS data-burst depends on the encoded bit rate (which determines the MPEG-4 ALS frame length); see IEC 61937-10.

Add, after 4.3.29, the following bibliography.

Bibliography

SMPTE ST 338, *Format for Non-PCM Audio and Data in AES3 – Data Types*

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