



Edition 2.0 2007-11

INTERNATIONAL STANDARD

**Digital audio – Interface for non-linear PCM encoded audio bitstreams applying
IEC 60958 –
Part 3: Non-linear PCM bitstreams according to the AC-3 and enhanced AC-3
formats**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

PRICE CODE

M

CONTENTS

FOREWORD.....	3
1 Scope.....	5
2 Normative references.....	5
3 Terms, definitions and abbreviations	5
3.1 Terms and definitions.....	5
3.2 Abbreviations.....	6
4 Mapping of the audio bitstream on to IEC 61937-1	6
4.1 General	6
4.2 AC-3 and enhanced AC-3 burst-info.....	6
5 Format of AC-3 and enhanced AC-3 data-bursts	6
5.1 General	6
5.2 Pause data-burst	7
5.3 Audio data-bursts	7
5.3.1 AC-3 data	7
5.3.2 Latency of AC-3 decoding	8
5.3.3 Enhanced AC-3 data	9
5.3.4 Latency of the enhanced AC-3 decoder	10
Bibliography	13
Figure 1 – AC-3 data-burst, with reference point R	7
Figure 2 – Latency of AC-3 decoding	8
Figure 3 – Enhanced AC-3 data-burst.....	10
Figure 4 – Latency of enhanced AC-3 decoding	11
Table 1 – Fields of burst-info.....	6
Table 2 – Repetition period of the pause data-bursts	7
Table 3 – Data-type-dependent information when data-type = 1	7
Table 4 – Data-type-dependent information when data-type = 21	10
Table 5 – Frame repetition period and maximum data rate for enhanced AC-3 bitstreams	10

INTERNATIONAL ELECTROTECHNICAL COMMISSION

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

Part 3: Non-linear PCM bitstreams according to the AC-3 and enhanced AC-3 formats

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
- 5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard IEC 61937-3 has been prepared by technical area 4: Digital system interfaces, of IEC technical committee 100: Audio, video and multimedia systems and equipment.

This second edition of IEC 61937-3 cancels and replaces the first edition published in 2003. This edition contains the following significant technical changes with respect to the previous edition.

- a) The definition of the audio data-burst required to deliver enhanced AC-3 bitstreams has been added.
- b) The definition of the latency of an enhanced AC-3 decoder has been added.
- c) The use of pause data-bursts when delivering enhanced AC-3 bitstreams has been added.

This is a preview of "IEC 61937-3 Ed. 2.0 ...". [Click here to purchase the full version from the ANSI store.](#)

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

CDV	Report on voting
100/1207/CDV	100/1291/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 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 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 3: Non-linear PCM bitstreams according to the AC-3 and enhanced AC-3 formats

1 Scope

This part of IEC 61937 describes the method used to convey non-linear PCM bitstreams encoded according to the AC-3 and enhanced AC-3 formats.

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 61937-1:2007, *Digital audio interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 1: General*

IEC 61937-2:2007, *Digital audio interface for non-linear PCM encoded audio bitstreams applying IEC 60958 – Part 2: Burst-info*

ATSC Standard A/52B, *Digital Audio Compression (AC-3, E-AC-3), Rev. B*

ETSI TS 102 366, *Digital Audio Compression (AC-3, Enhanced AC-3)*

3 Terms and definitions

For the purposes of this standard, the following terms, definitions and abbreviations apply.

3.1 Terms and definitions

3.1.1

latency

delay time of an external audio decoder to decode an AC-3 or enhanced AC-3 data burst, defined as the sum of two values of the receiving delay time and the decoding delay time.

3.1.2

stream type

an enhanced AC-3 bitstream is constructed from one or more substreams, with each substream being constructed from a sequence of frames. The stream type parameter of an enhanced AC-3 frame identifies the type of substream of which the frame is a part