# IEC 61937-11

Edition 1.0    2010-05

# INTERNATIONAL STANDARD

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

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION
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## Part 11: MPEG-4 AAC and its extensions in LATM/LOAS

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International Standard IEC 61937-11 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 standard is based on the following documents:

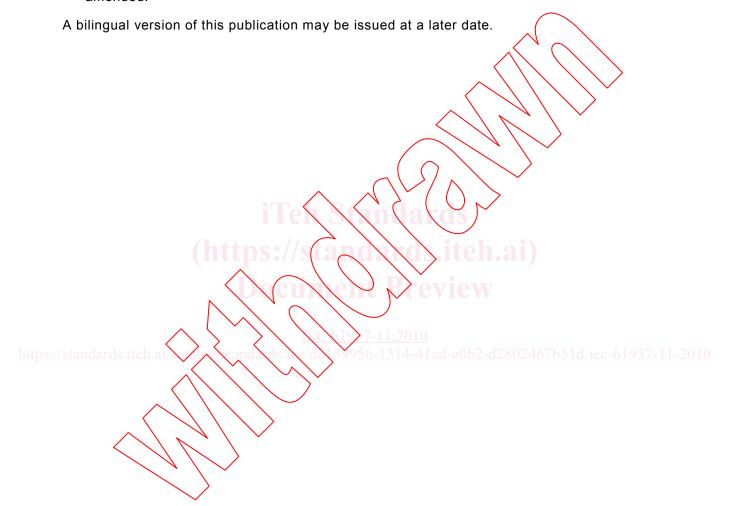| CDV | Report on voting |
|-----|------------------|
| 100/1491/CDV | 100/1580/RVC |

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.

A list of all 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 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• withdrawn,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

Modern digital video broadcasting standards such as DVB include support for the MPEG-4 HE AAC and/or HE AAC v2 audio codecs as specified in ISO/IEC 14496-3. An increasing number of countries are adopting these new codecs for their standard definition and high definition digital video broadcasting services and have started with implementations.

For MPEG-2 AAC audio (ISO/IEC 13818-7) the specified framing format for the audio bit stream is ADTS and its transport over an IEC 60958 interface is specified in IEC 61937-6.

However, the MPEG-4 (ISO/IEC 14496-3) audio codecs introduce new features and capabilities that require a framing format that supports more flexible signaling and delivery mechanisms. Therefore, MPEG-2 Systems (ISO/IEC 13818-1) specifies the MPEG-4 LATM/LOAS framing format for MPEG-4 audio codecs to overcome the limitations of ADTS.

In order to be able to pass the MPEG-4 audio bit stream from a Set Top Box to an A/V receiver connected via the IEC 60958 interface without needing to reframe the audio bit stream within ADTS, the MPEG-4 LATM/LOAS framing format needs to be supported by IEC 61937.

# DIGITAL AUDIO –
# INTERFACE FOR NON-LINEAR PCM ENCODED
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## Part 11: MPEG-4 AAC and its extensions in LATM/LOAS

## 1 Scope

This part of IEC 61937 describes the method to convey non-linear PCM bitstreams encoded according to the MPEG-4 AAC format and its extensions spectral band replication, parametric stereo and MPEG surround, framed in MPEG-4 LATM/LOAS.

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

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

ISO/IEC 14496-3:2009, *Information technology – Coding of audio-visual objects – Part 3: Audio*

## 3 Terms, definitions and abbreviations

For the purposes of this document the terms, definitions and abbreviations of IEC 61937-1, IEC 61937-2 and the following apply.

### 3.1 Terms and definitions

#### 3.1.1
**access unit**
smallest entity to which timing information can be attributed; an access unit is the smallest individually decodable unit; a decoder consumes access units

#### 3.1.2
**AudioMuxElement(1)**
LATM element that carries payload data for at least one audio elementary stream, related payload length information and multiplex configuration information

NOTE   This element carries payload data in form of PayloadMux elements. The number in brackets indicates multiplexing configuration (StreamMuxConfig) is multiplexed into AudioMuxElements, that is in-band transmission.

#### 3.1.3
**AudioSpecificConfig**
configuration structure used to convey parameters to initialize the MPEG-4 audio decoder

**3.1.4**
**low overhead MPEG-4 audio transport multiplex**
**LATM**
multiplexing layer defined by ISO/IEC 14496-3; used for multiplexing of audio elementary streams

**3.1.5**
**low overhead audio stream**
**LOAS**
synchronisation layer defined by ISO/IEC 14496-3; three different formats of LOAS are defined, each of which is designed to address the specific characteristics of the underlying transmission layer

**3.1.6**
**MPEG-4 AAC profile**
contains only the MPEG-4 AAC low complexity audio object type; MPEG-4 AAC low complexity object type is the counterpart to the MPEG-2 AAC low complexity profile; in addition to the MPEG-2 AAC LC profile the MPEG-4 AAC low complexity object type enables the usage of the PNS tool

NOTE   The MPEG-4 AAC Low Complexity object type is used when there are restrictions on the usage of RAM and processing complexity.

**3.1.7**
**MPEG-4 high efficiency AAC profile**
contains the spectral band replication object type in conjunction with the MPEG-4 AAC low complexity object type

NOTE   For further information please refer to ISO/IEC 14496-3. The MPEG-4 high efficiency AAC profile is a superset of the MPEG-4 AAC profile.

**3.1.8**
**MPEG-4 high efficiency AAC profile version 2**
contains the parametric stereo object type and the spectral band replication object type in conjunction with the AAC low complexity object type

NOTE   The MPEG-4 high efficiency AAC profile version 2 is a superset of the MPEG-4 high efficiency AAC profile.

**3.1.9**
**MPEG surround**
technology used for coding of multichannel signals based on a downmixed signal of the original multichannel signal, and associated spatial parameters

NOTE   MPEG surround is defined in ISO/IEC 23003-1.

**3.1.10**
**PayloadMux**
payload data chunk in an AudioMuxElement that contains potentially multiplexed payload data for multiple audio elementary streams; in general PayloadMux elements can be concatenated inside AudioMuxElements

**3.1.11**
**SpatialSpecificConfig**
configuration structure used to initialize the MPEG surround decoder

**3.1.12**
**StreamMuxConfig**
configuration structure that describes the structure of the LATM payload multiplex

**3.1.13**
**Sub-data-type**
reference to the type of payload of the data-bursts defined for the use with the specified data-type

**3.1.14**
**modified discrete cosine transformation**
**MDCT**
transformation schema used by AAC

**3.1.15**
**transformation length** (of the AAC codec or core codec)
AAC can operate in two modes using either a 960 lines or 1 024 lines MDCT transformation for long blocks; an MDCT line is a spectral component described by frequency, amplitude and phase

## 3.2    Abbreviations

AAC            Advanced Audio Coding

AAC LC        MPEG-4 AAC Low Complexity

HE AAC        MPEG-4 High Efficiency AAC and MPEG-4 High Efficiency AAC Version 2

ADTS          Audio Data Transport Stream

DVB            Digital Video Broadcasting

MDCT          Modified Discrete Cosine Transformation

MPEG          Moving Picture Experts Group

MPS            MPEG Surround

PNS            Perceptual Noise Substitution

PS              Parametric Stereo

SBR            Spectral Band Replication

TL              AAC Transformation Length

## 4    Mapping of the audio bit stream on to IEC 61937-1

### 4.1    General

The coding of the bit stream and data-burst is in accordance with IEC 61937-1 and IEC 61937-2.

### 4.2    Burst-info for MPEG-4 AAC and its extensions in LATM/LOAS

The 16-bit burst-info contains information about the data which will be found in the data-burst (see Table 1).