STANDARDS AND INFORMATION DOCUMENTS

AES53-2018
(revision of AES53-2006)
(r2023)

AES standard for digital audio — Digital input-output interfacing — Sample-accurate timing in AES47

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Abstract
This document specifies how the timing markers specified in AES47 may be used to associate an absolute timestamp with individual audio samples. AES47 specifies a format for the transmission of digital audio over asynchronous transfer mode (ATM) networks. A recommendation is made to refer these timestamps to the SMPTE epoch which in turn provides a reference to UTC and GPS time.

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Foreword

This foreword is not part of AES53-2006 *AES standard for digital audio - Digital input-output interfacing - Sample-accurate timing in AES47*

This document was prepared by J. Grant for working group SC-02-02, under project AES-X148, "Sample-accurate timing in AES47". The task group members included K. Brown, R. Caine, C. Chambers, P. Eastty, C. Gaunt, K. Gross, U. Horbach, H. Lemcke, M. Page, M. Schindele, J. Strawn, T. Thompson, J. Waas, and M. Yonge.

Foreword to 2018 edition

AES53-2006 uses the SMPTE epoch which was specified in SMPTE 404M at the time. That has been superseded by a different epoch specified in SMPTE ST 2059-1. This edition uses the current SMPTE epoch, and also includes some improvements to the text. Contributors include J. Fletcher, B. Harris, I. Rudd, and S. Scott.

J Grant, chair, SC-02-02

Note on normative language

In AES standards documents, sentences containing the word "shall" are requirements for compliance with the document. Sentences containing the verb "should" are strong suggestions (recommendations). Sentences giving permission use the verb "may". Sentences expressing a possibility use the verb "can".

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0 Introduction

0.1 General

This document provides a standard way of identifying the time to which each sample in an AES47 audio stream relates.

It thus provides a way of aligning streams from disparate sources, including synchronizing audio to video, and also allows the total delay across a network to be controlled when the transit time of individual cells is unknown.

This is most effective in systems where the audio is aligned with an absolute time reference such as GPS, but can also be used with a local reference.

The identification repeats every 16 seconds if sequence numbers are used in the AES47 stream, 1 second if only the "ATM user to ATM user indication" (UI) bit in the cell header is used. If absolute time can be distributed by a means outside the scope of this standard (see, for example, 4.4 and A.4.4 of AES51-2006), absolute timestamps can be associated with all audio samples.

0.2 Patents

Attention is drawn to the possibility that some of the elements of this AES standard may be the subject of patent rights other than those identified herein. AES shall not be held responsible for identifying any or all such patent rights.

1 Scope

This standard specifies how the timing markers specified in 4.1.4.1.1 and 4.5 of AES47 may be used to associate an absolute timestamp with individual audio samples.

It does not specify how the recipient of a call is informed whether the timing markers will conform to this standard or merely meet the minimum specifications laid down in AES47.

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.

AES47: *AES standard for digital audio — Digital input-output interfacing — Transmission of digital audio over asynchronous transfer mode (ATM) networks*: Audio Engineering Society, New York, NY., US. 2002, 2006

SMPTE ST 2059-1:2015: Generation and Alignment of Interface Signals to the SMPTE Epoch, Society of Motion Picture and Television Engineers, White Plains, NY., US.