STANDARDS AND INFORMATION DOCUMENTS

AES-2id-2012

AES information document for digital audio engineering — Guidelines for the use of the AES3 interface (revision of AES-2id-2006)

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AES-2id-2012
(revision of AES-2id-2006)

AES information document for digital audio engineering — Guidelines for the use of the AES3 interface

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Abstract
This document provides guidelines for the use of AES3, *AES recommended practice for digital audio engineering — Serial transmission format for two-channel linearly represented digital audio data*, together with AES5, *AES recommended practice for professional digital audio applications employing pulse-code modulation — Preferred sampling frequencies*, and AES11, *AES recommended practice for digital audio Engineering — Synchronization of digital audio equipment in studio operations*.

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Foreword to 1996 edition

In 1990, the SC-02 Subcommittee on Digital Audio of the Audio Engineering Society Standards Committee (AESSC) set up a working sub-group, SC-02-02-01, under the chairmanship of S. Lyman, to prepare a guideline document, AES-2id, for use with the AES3 digital interface. To expedite discussion of these guidelines, the AESSC made public draft clauses of the document by means of publication in the AESSC News column of the *Journal of the Audio Engineering Society*. Unlike this document, those clauses had been for discussion only, having only the status of committee drafts, subject to extensive change. They did not have the status of consensus approval and are not AES standards or information documents. Those clauses have been revised and are included in this document together with additional clauses.

The information in 7.4 was drawn mainly from the paper (preprint 3705) Towards Common Specifications for Digital Audio Interface Jitter, by J. Dunn, B. A. McKibben, R. Taylor, and C. Travis, presented at the 95th Convention of the Audio Engineering Society, 1993-10

Robert A. Finger,
Chair, SC-02-02 Working Group on Digital Input/Output Interfacing
1995-10

Foreword to 2006 edition

[This foreword is not a part of *AES information document for digital audio engineering — Guidelines for the use of the AES3 interface*, AES-2id-2006.]

This document was written by C. R. Caine with contributions from J. Brown, R. Bristow-Johnson, H. Nakashima, and others. The work of the late Julian Dunn on jitter in section 7.4 is particularly acknowledged and is reproduced verbatim. The document integrates all that information relating to standards AES3, AES5, AES11 and information document AES-3id that is important to implementation of AES3 but which is itself not part of the standard in any normative sense.

Many changes have occurred to AES3 since this document was partially revised in 1996. The next revision of AES3 may involve a complete restructuring to split physical, transport and essence into separate parts which may be more conveniently revised thereafter. This text has therefore been set out so that references to the current AES3 can easily be revised when AES3 is revised. It is expected that AES-3id will be incorporated in AES3 at that time.

J. Grant,
Chair, SC-02-02 Working Group on Digital audio input/output interfacing.

Foreword to 2012 edition

This revision was made to harmonize with the multi-part revision of AES3 published in 2009. It contains updated references plus previous corrigenda and addenda. Operational modes no longer supported in AES3, such as "Minimum" implementation of channel status" have been identified. References to new operational features, such as those specified in AES41, AES52, AES55, and AES62, have been added.

J. Grant,
Chair, SC-02-02 Working Group on Digital audio input/output interfacing.

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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AES information document for digital audio engineering - Guidelines for the use of the AES3 interface

1 Scope

The information presented in this guideline is not a part of the AES3 standard. It is intended to assist a user to understand and use the digital audio interface. The examples provided are not intended to be restrictive, but to clarify. The AESSC hopes these guidelines will further the design of mutually compatible interfaces and encourage consistent operational practices. This revision includes details on the implementation of the coaxial interface first described in AES-3id-2001 *AES information document for Digital audio engineering -- Transmission of AES3 formatted data by unbalanced coaxial cable* and now incorporated into AES3-4-2009.

The document covers several topics, some relating to interpretation of AES3-2009 and some providing general guidance derived from experience with the interface.

The clauses relating to interpretation of the standard are divided into 'Essence', that is the audio content which is the *raison d'être* of the interface; 'Metadata', or the data relating to that audio content; 'Transport', being the organisation of these into a bitstream; and 'Physical', the mechanical and electrical properties which are the reality of making a connection which will work and where in practice most difficulties have occurred.

Other clauses deal with typical problems, and issues of passing AES3 through other transports.

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2 References

This document is not a standard, and therefore all references are for information only. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this document are encouraged to investigate the possibility of applying the most recent editions of the indicated standards. References in text shown in square brackets, for example, [1].

1 **AES3-1-2009**: *AES standard for digital audio - Digital input-output interfacing - Serial transmission format for two-channel linearly-represented digital audio data - Part 1: Audio Content*. Audio Engineering Society, New York, NY, US.

2 **AES3-2-2009**: *AES standard for digital audio - Digital input-output interfacing - Serial transmission format for two-channel linearly-represented digital audio data - Part 2: Metadata and Subcode*. Audio Engineering Society, New York, NY, US.

3 **AES3-3-2009**: *AES standard for digital audio - Digital input-output interfacing - Serial transmission format for two-channel linearly-represented digital audio data - Part 3: Transport*. Audio Engineering Society, New York, NY, US.

4 **AES3-4-2009**: *AES standard for digital audio - Digital input-output interfacing - Serial transmission format for two-channel linearly-represented digital audio data - Part 4: Physical and electrical*. Audio Engineering Society, New York, NY, US.

5 **AES-3id-2001**, *AES information document for Digital audio engineering - Transmission of AES3 formatted data by unbalanced coaxial cable*, (withdrawn 2010). Audio Engineering Society, New York, NY, US. *[NOTE The content of this document was incorporated into AES3-2009, part 4]*

6 **AES5-2008**: *AES recommended practice for professional digital audio - Preferred sampling frequencies for applications employing pulse-code modulation*, (Revision of AES5-1997). Audio Engineering Society, New York, NY, US.

7 **AES10-2008**: *AES Recommended Practice for Digital Audio Engineering - Serial Multichannel Audio Digital Interface (MADI)* (Revision of AES10-1991). Audio Engineering Society, New York, NY, US.

8 **AES11-2009**: *AES recommended practice for digital audio engineering - Synchronization of digital audio equipment in studio operations*. (Revision of AES11-2003) Audio Engineering Society, New York, NY, US.

9 **AES18-1996**: *AES Recommended practice for digital audio engineering - Format for the user data channel of the AES digital audio interface*. (Revision of AES18-1992). Audio Engineering Society, New York, NY, US.

10 **AES31 Parts 1 to 3** (multi-part), *AES standard for network and file transfer of audio - Audio-file transfer and exchange.* Audio Engineering Society, New York, NY, US.

11 **AES41-2009**: *AES standard for digital audio - Recoding data set for audio bit-rate reduction*, (Revision of AES41-2000). Audio Engineering Society, New York, NY, US.

12 **AES42-2010**: *AES standard for acoustics - Digital interface for microphones*, (Revision of AES42-2006). Audio Engineering Society, New York, NY, US.

13 **AES47-2006**, *AES standard for digital audio - Transmission of digital audio over asynchronous transfer mode (ATM) networks*, (revision of AES47-2006). Audio Engineering Society, New York, NY, US.

14 **AES52-2006**: *AES Standard for digital audio engineering - Insertion of unique identifiers into the AES3 transport stream*. Audio Engineering Society, New York, NY, US.

15 **AES55-2007**: *AES standard for digital audio engineering - Carriage of MPEG Surround in an AES3 bitstream*. Audio Engineering Society, New York, NY, US.

16 **AES59-2012:** *AES standard for professional audio - Audio application of 25-way D-type connectors in balanced circuits.* Audio Engineering Society, New York, NY, US.

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