

STANDARDS AND INFORMATION DOCUMENTS

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**AES standards project report -
Guidelines for
AES standard for digital audio engineering -
High-resolution multi-channel
audio interconnection (HRMAI)**

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AES project report - Guidelines for AES standard for digital audio engineering - High resolution multi-channel audio interconnection (HRMAI), AES50

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Abstract

This report is intended to accompany AES50 “*High-resolution multi-channel audio interconnection (HRMAI)*”. It provides additional background, rationale and implementation advice. It should be read in conjunction with AES50-2011. In particular, the first section of this document provides an overview of the technology, which may aid understanding of the context of the standard.

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Foreword

These forewords are not part of AES-R6 *AES project report - Guidelines for AES standard for digital audio engineering - High resolution multi-channel audio interconnection (HRMAI)*, AES50.

The draft of this report was written by M. Page for task group SC-02-02-H.

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R. A. Finger, Vice-Chair
SC-02-02 Working Group on Digital Input/Output Interfacing
2005-03-08

Foreword to the second edition, 2011

This new edition contains amendments and expansions resulting from a real-world implementation of the AES50-2005 standard and complements the AES50-2011 revision.

J. Grant, Chair
SC-02-02 Working Group on Digital Input/Output Interfacing
2011-05-04

Foreword to the third edition, 2020

This revision includes minor changes to remove insensitive terms.

J. Grant, Chair
SC-02-02 Working Group on Digital Input/Output Interfacing
2020-11-27

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”.

AES project report - Guidelines for AES standard for digital audio engineering - High resolution multi-channel audio interconnection (HRMAI), AES50

0 Introduction

This report is intended to accompany AES50, “High-resolution multi-channel audio interconnection”. It provides additional background, rationale and implementation advice and should be read in conjunction with AES50-2011 which revises the earlier AES50-2005. In particular, the first clause of this document provides an overview of the technology, which may aid understanding of the context of the standard.

The High Resolution Multi-channel Audio Interconnection provides a bi-directional, point-to-point connection for up to 48 channels of digital audio in a variety of formats. The link uses a single Category 5 (or better) structured-wiring data cable, and is designed for operation in a studio environment.

The system uses the 100Base-TX physical layer of Fast Ethernet (ISO/IEC 8802.3:2000(E) Sections 22/23, together with ANSI X3.263-1995) to transfer framed digital audio data. Audio synchronization is maintained by transmitting a $64f_s$ (for example, 2,8224 MHz, if $f_s = 44,1$ kHz) audio clock signal in parallel with the audio data, utilising the extra signal pairs on a structured wiring data cable.

Throughout this document, the term “ f_s ” is used to denote a base audio sampling frequency. This may be 44,1 kHz or 48 kHz, irrespective of sampling frequency multipliers typically used for high-resolution digital audio (e.g. 2, 4, 8). If variable sample rate operation (“varispeed”) is required, f_s may range from 44,1 kHz -12,5 % to 48 kHz +12,5 % (38,5875 kHz to 54 kHz). Varispeed capability is optional.

Unless otherwise stated, references to figures, tables, etc. are internal to this report; references to “the standard” are to AES50-2011, and all other references are as written. Definitions and abbreviations are also set out in the standard.