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

This foreword is not part of AES-R6-2005 AES project report - Guidelines for AES standard for digital audio engineering - High resolution multi-channel audio interconnection (HRMAI), AES50-2005.

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Foreword to Edition 2

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 AES Standards working group on digital audio interfaces
2011-05-04
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.