Melody™ Fixed-Point Audio Encoders/Decoders

MULTICHANNEL FIXED-POINT AUDIO ENCODER/DECODER REFERENCE DESIGNS

OVERVIEW

Analog Devices' Melody reference design family includes multichannel audio decoders and encoders for digital audio designs using DSPs (Digital Signal Processors) for portable audio receivers and automotive audio.

Melody reference designs autodetect and decode up to 5.1-channel digital audio formats in real-time with 16-bit audio quality, enabling end users to enjoy a theater-quality audio experience in their cars and with their portable audio devices, using popularly-priced consumer products.

Using a fixed-point DSP processor, Melody reference designs support multiple algorithm combinations. This enables OEMs to produce high-quality, low-cost designs featuring decoder algorithms including MPEG1 Audio Layers 1, 2, and 3 (Layer 3 also known as MP3).

The Melody product line also includes audio encoders for MPEG1. The full-function encoder reference design supports MPEG1 Audio Layers 1 and 2, and fully complies with the IEEE 11172-3 audio standard.

Design platforms are available based on the ADSST-2185L and ADSST-2185M DSP processors.

The decoders support all of the bit rates (32–4,096 kbps) and sampling frequencies (16, 22.1, 24, 32, 44.1, and 48 kHz per channel) specified by the encoding standards.

HIGHLIGHTS

- Decoders for MPEG1 Audio Layers 1, 2, and 3 (MP3)
- Decoders operate in real-time and process all combinations of these digital audio encoded algorithms
- Ability to autodetect and display bitstream information
- Encoders for MPEG1 Audio Layers 1 and 2, which fully comply with the IEEE 11172-3 standard
- Requires no external RAM—runs completely within the internal RAM of the DSP
- Reprogrammable DSP enables MPEG1 Layers 1, 2, and 3 (MP3) Audio Decoder to use the same DSP as other audio decoders
- Supports half-sampling frequencies of 16, 22.1 and 24 kHz, as well as 16, 24, 32, 44.1 and 48 kHz
- Evaluation boards, sample applications and all necessary software support (drivers, etc.) available

ANALOG DEVICES

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Development Platform

A standalone PIPER board includes an ADSST-2185M KS-300 DSP, AD1881 Codec, FLASH memory, and an IDMA interface to a PC parallel port.

A standalone FEB board adds USB and RS-232 interfaces and a microcontroller. It includes an ADSST-2185M KS-300 DSP, AD1881 Codec, FLASH memory, IDMA interface to a PC parallel port, USB and RS-232 interfaces, and a microcontroller.

Ordering Information

The Analog Devices multichannel Melody Decoder Reference Designs must be ordered under the part number ADSST-MELODY-EVAL01 for the PIPER standalone reference design, or ADSST-FEB-SDK for the FEB standalone reference design. Both include the evaluation board with an evaluation copy of the software, schematics, etc.

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Audio Decoders—Specifications Summary

	MP3 (MPEG1 Layer 3)	MPEG1 Layers 1 and 2
Bit Rate Ranges	32–448 kbps	32–448 kbps
Sampling Rate	16, 22.1, 24, 32, 44.1, and 48 kHz	16, 22.1, 24, 32, 44.1, and 48 kHz
Word Length	16 bits	16 bits
Number of Discrete Channels	5.1	5.1

Audio Encoders—Specifications Summary

	MPEG1 Layers 1 and 2
Bit Rate Ranges	32–448 kbps
Typical Data Rate for 5.1 Channels	N/A
Data Reduction	24:16
Sampling Rate	44.1, 88.2, 96, 176.4, and 192 kHz
Word Length	16 bits
Number of Discrete Channels	5.1

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EUROPE HEADQUARTERS
Am Westpark 1–3
D-81373 München, Germany
Tel: 089/76 903-0; Fax: 089/76 903-157

JAPAN HEADQUARTERS
New Pier Takeshiba, South Tower Building
1-16-1 Kaigan, Minato-ku, Tokyo 105-6891, Japan
Tel: (3) 5402-8200; Fax: (3) 5402-1063

SOUTHEAST ASIA HEADQUARTERS
4501 Nat West Tower, Times Square
Causeway Bay, Hong Kong, PRC
Tel: (2) 2506-9336; Fax: 2506-4755
Tel: (2) 506-9336; Fax: 506-4755

WORLDWIDE HEADQUARTERS
One Technology Way, P.O. Box 9106
Norwood, MA 02062-9106, U.S.A.
Tel: 781-461-3732; Fax: 781-461-4360
email: systems.solutions@analog.com
Worldwide Website:
http://www.analog.com/solutions

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