

Universal Serial Bus Device Class Definition for Audio Data Formats

Release 1.0

March 18, 1998

Scope of This Release

This document is the 1.0 release of this device class definition.

Contributors

Gal Ashour	IBM Corporation
Billy Brackenridge	Microsoft Corporation
Oren Tirosh	Altec Lansing
Craig Todd	Dolby Laboratories
Remy Zimmermann	Logitech
Geert Knapen	Philips ITCL Interleuvenlaan 74-76 B-3001 Leuven-Heverlee BELGIUM Phone: +32 16 390 734 Fax: +32 16 390 600 E-mail: Geert.Knapen@innet.be

Revision History

Revision	Date	Filename	Author	Description
0.1	Dec. 1, 96	Frmmts01.doc	Geert Knapen	Initial version
0.2	Jan. 1, 97	Frmmts02.doc	Geert Knapen	Corrected typos.
0.3	Mar. 1, 97	Frmmts03.doc	Geert Knapen	Adapted template and contents to correspond with core document.
0.9rc	Apr. 1, 97	Frmmts09rc.doc	Geert Knapen	Brought in line with core document. Added Type II descriptors and requests.
0.9	May 1, 97	Frmmts09.doc	Geert Knapen	Added details for MPEG and AC-3. Added format-specific requests.
0.9CE	Sep 1, 97	Frmmts09CE.doc	Geert Knapen	Copy-edited for publication on the web.
0.9a	Oct 1, 97	Frmmts09a.doc	Geert Knapen	Incorporated RRs
1.0RC	Mar 1, 98	Frmmts10RC.doc	Geert Knapen	Added the Transfer Delimiter concept. Cleaned up the formatting.
1.0	Mar 18, 98	Frmmts10.doc	Geert Knapen	Changed all references to 1.0

Copyright © 1997, USB Implementers Forum
All rights reserved.

INTELLECTUAL PROPERTY DISCLAIMER

THIS SPECIFICATION IS PROVIDED “AS IS” WITH NO WARRANTIES WHATSOEVER INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY WARRANTY OTHERWISE ARISING OUT OF ANY PROPOSAL, SPECIFICATION, OR SAMPLE.

A LICENSE IS HEREBY GRANTED TO REPRODUCE AND DISTRIBUTE THIS SPECIFICATION FOR INTERNAL USE ONLY. NO OTHER LICENSE, EXPRESS OR IMPLIED, BY ESTOPPEL OR OTHERWISE, TO ANY OTHER INTELLECTUAL PROPERTY RIGHTS IS GRANTED OR INTENDED HEREBY.

AUTHORS OF THIS SPECIFICATION DISCLAIM ALL LIABILITY, INCLUDING LIABILITY FOR INFRINGEMENT OF PROPRIETARY RIGHTS, RELATING TO IMPLEMENTATION OF INFORMATION IN THIS SPECIFICATION. AUTHORS OF THIS SPECIFICATION ALSO DO NOT WARRANT OR REPRESENT THAT SUCH IMPLEMENTATION(S) WILL NOT INFRINGE SUCH RIGHTS.

Dolby™, AC-3™, Pro Logic™ and Dolby Surround™ are trademarks of Dolby Laboratories, Inc.
All other product names are trademarks, registered trademarks, or service marks of their respective owners.

Please send comments via electronic mail to techsup@usb.org

Table of Contents

Scope of This Release	ii
Contributors	ii
Revision History	ii
Table of Contents	iv
List of Tables	v
1 Introduction	6
1.1 Related Documents	6
1.2 Terms and Abbreviations	6
2 Audio Data Formats	8
2.1 Transfer Delimiter	8
2.2 Type I Formats	8
2.2.1 USB Packets	8
2.2.2 Audio Subframe.....	9
2.2.3 Audio Frame.....	9
2.2.4 Audio Streams	9
2.2.5 Type I Format Type Descriptor	10
2.2.6 Supported Formats	11
2.3 Type II Formats	12
2.3.1 Encoded Audio Frames.....	12
2.3.2 Audio Bitstreams.....	12
2.3.3 USB Packets	13
2.3.4 Bandwidth Allocation.....	13
2.3.5 Timing	13
2.3.6 Type II Format Type Descriptor	13
2.3.7 Rate feedback	15
2.3.8 Supported Formats	15
2.4 Type III Formats	26
2.4.1 Type III Format Type Descriptor	26
3 Adding New Audio Data Formats	28
Appendix A. Additional Audio Device Class Codes	29
A.1 Audio Data Format Codes.....	29
A.1.1 Audio Data Format Type I Codes.....	29
A.1.2 Audio Data Format Type II Codes.....	29
A.1.3 Audio Data Format Type III Codes.....	29
A.2 Format Type Codes	30
A.1 Format-Specific Control Selectors	30
A.3.....	30
A.3.1 MPEG Control Selectors.....	30
A.3.2 AC-3 Control Selectors	30

List of Tables

Table 2-1: Type I Format Type Descriptor.....	10
Table 2-2: Continuous Sampling Frequency	10
Table 2-3: Discrete Number of Sampling Frequencies.....	11
Table 2-4: Type II Format Type Descriptor.....	13
Table 2-5: Continuous Sampling Frequency	14
Table 2-6: Discrete Number of Sampling Frequencies.....	14
Table 2-7: MPEG Format-Specific Descriptor	16
Table 2-8: Set MPEG Control Request Values	18
Table 2-9: Get MPEG Control Request Values.....	18
Table 2-10: Dual Channel Control Parameter Block	19
Table 2-11: Second Stereo Control Parameter Block	19
Table 2-12: Multilingual Control Parameter Block.....	20
Table 2-13: Dynamic Range Control Parameter Block	20
Table 2-14: Scaling Control Parameter Block	21
Table 2-15: High/Low Scaling Control Parameter Block	21
Table 2-16: AC-3 Format-Specific Descriptor.....	22
Table 2-17: Set AC-3 Control Request Values.....	23
Table 2-18: Get AC-3 Control Request Values	23
Table 2-19: Mode Control Parameter Block	24
Table 2-20: Dynamic Range Control Parameter Block	24
Table 2-21: Scaling Control Parameter Block	25
Table 2-22: High/Low Scaling Control Parameter Block	25
Table 2-23: Type III Format Type Descriptor.....	26
Table 2-24: Continuous Sampling Frequency	27
Table 2-25: Discrete Number of Sampling Frequencies	27
Table A-1: Audio Data Format Type I Codes.....	29
Table A-2: Audio Data Format Type II Codes.....	29
Table A-3: Audio Data Format Type III Codes.....	29
Table A-4: Format Type Codes	30
Table A-5: MPEG Control Selectors	30
Table A-6: AC-3 Control Selectors.....	30

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.