INTERNATIONAL STANDARD

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2005-07

Multimedia home server systems – Interchangeable volume/file structure adaptation for broadcasting receivers –

Part 3: Broadcasting system specific recording structure – ISDB

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MULTIMEDIA HOME SERVER SYSTEMS – INTERCHANGEABLE VOLUME/FILE STRUCTURE ADAPTATION FOR BROADCASTING RECEIVERS –

Part 3: Broadcasting system specific recording structure – ISDB

FOREWORD

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International Standard IEC 62328-3 has been prepared by IEC technical committee 100: Audio, video and multimedia systems and equipment.

The text of this standard is based on the following documents:

FDIS	Report on voting
100/965/FDIS	100/989/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

IEC 62328 consists of the following parts, under the general title *Multimedia home server systems – Interchangeable volume/file structure adaptation for broadcasting receivers:*

Part 1: General description and architecture

Part 2: General recording structure

Part 3: Broadcasting system specific recording structure – ISDB

The committee has decided that the contents of this publication will remain unchanged until the maintenance result date indicated on the IEC web site under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this publication may be issued at a later date.

INTRODUCTION

Broadcast data in a transport stream can contain multiple associated objects. When that data is distributed on interchangeable storage media, for example, optical disks, the associated objects should be synchronized. Open distribution of the media requires that the data be adapted to a standardized volume and file structure, which should conform to the existing basic volume and file structure.

MULTIMEDIA HOME SERVER SYSTEMS – INTERCHANGEABLE VOLUME/FILE STRUCTURE ADAPTATION FOR BROADCASTING RECEIVERS –

Part 3: Broadcasting system specific recording structure – ISDB

1 Scope

This part of IEC 62328 defines the volume and file structure required for interchanging multimedia data of a home server/broadcasting receiver, which consists of an AV stream with multiple associated objects.

This part of IEC 62328 specifies the broadcasting system specific recording structure for ISDB.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62328-2, *Multimedia home server systems – Interchangeable volume/file structure adaptation for broadcasting receivers – Part 2: General recording structure*

ISO/IEC 646, *Information technology – ISO 7-bit coded character set for information interchange*

ISO/IEC 10646-1, *Information technology – Universal Multiple-Octet Coded Character Set (UCS) – Part 1: Architecture and Basic Multilingual Plane*

ISO/IEC 13818-1:2000, *Information technology – Generic coding of moving pictures and associated audio information: Systems*

ISO/IEC 13818-2:2000, *Information technology – Generic coding of moving pictures and associated audio information: Video*

ISO/IEC 13818-6:1998, *Information technology – Generic coding of moving pictures and associated audio information – Par t6: Extensions for DSM-CC*

ISO/IEC 13818-7:2003, *Information technology – Generic coding of moving pictures and associated audio information – Part 7: Advanced Audio Coding (AAC)*

ISO/IEC 11172-2:1993, *Information technology – Coding of moving pictures and associated audio for digital storage media at up to about 1,5 Mbit/s – Part 2: Video*

ISO 8859 (all parts), *Information technology – 8-bit single-byte coded graphic character sets*

3 Terms and definitions

For the purpose of this document, the following terms and definitions apply.

3.1
action
duration from start to end defined by a user or equipment

3.2
AV stream
recorded data in the MainTS stream file of PROGxxxx.PIF in this specification or the general meaning as multiplexed digital audio and video

3.3
component
elementary stream contained in a TV programme

3.4
event
set of video and/or audio stream data and/or related objects, which together form a broadcasting service in the duration defined by a broadcaster

3.5
partial TS
TS derived from broadcasting TS by modifying PSI/SI and/or removing one or more elementary streams

3.6
programme
recorded TV programme compliant with this specification

3.7
programme reference
PGR
pointer which references all or a part of AV stream in a programme

3.8
programme reference group
PGRG
set of programme references or a set of programme reference groups

3.9
transport stream
TS
system stream for broadcasting defined in ISO/IEC 13818-1

3.10
TV programme
logical unit of TV broadcasting (event in digital TV service)

3.11
TVRS partial TS
partial TS recording format, which complies with this specification

4 Abbreviations

For the purposes of this document, the following abbreviations apply.

ARIB	Association of radio industries and businesses
ATSC	Advanced television systems committee
BP	Byte position within a file, starting with zero
BAT	Bouquet association table
BIT	Broadcaster information table
CBC	Cipher block chaining
CCI	Copy control information
DSM-CC	Digital storage media command and control
DTCP	Digital transmission content protection
DVB	Digital video broadcasting
D-VHS	Data video home system
EIT	Event information table
ES	Elementary stream
IRV	International reference version
ISDB	Integrated services digital broadcasting
MPEG	Moving picture experts group
NIT	Network information table
PAT	Programme association table
PCR	Programme clock reference
PES	Packetized elementary stream
PGR	Programme reference
PGRG	Programme reference group
PID	Packet identifier
PMT	Program map table
PSI	Programme specific information
RBP	Relative byte position within a file, starting with zero
RP	Recording packet
LSB	Least significant bit
SDT	Service information table
SI	Service information
STB	Set top box
TS	Transport stream
TU	Time unit
TVRS	TV recording format specific

5 Notation

5.1 Numerical values

5.1.1 Decimal notation

A decimal number is represented as decimal digits 0 to 9.

5.1.2 Hexadecimal notation

A hexadecimal number is represented as hexadecimal digits 0 to 9 and A to F prefixed by the symbol “0x”.

5.1.3 Binary notation

A binary number is represented as binary digits 0 to 1 suffixed by the symbol “b”.

5.1.4 Bit string

A bslbf shall be recorded as a bit string, left bit first.

5.1.5 Unsigned numerical value

A uimsbf shall be an unsigned integer, most significant bit first.

5.1.6 Remainder polynomial coefficients

A rpchof shall be the remainder polynomial coefficients, highest order first.

6 General

6.1 Character set field in Dstring[n]

A Dstring[n] is a field where a string can be recorded. The character string field size shall be equal to n. The character set of the string is defined in the character set field. The structure of the Dstring[n] is described in Table 1.

Table 1 – Structure Dstring[n]

RBP	Length in bytes	Field name	Contents
0	1	Character set	uimsbf
1	3	Reserved	bslbf
4	2	Character string field size	uimsbf
6	2	Length of character string	uimsbf
8	n	Character strings	bslbf

6.1.1 Character set

The format of the character set is described in Table 2.

Table 2 – Interpretation of character set

Value	Character set
0x00	Reserved
0x01	ISO/IEC 10646-1 (Unicode)
0x02-0x0F	Reserved
0x10	ISO/IEC 646 IRV(ASCII)
0x11	ISO 8859-1
0x12	ISO 8859-2
0x13	ISO 8859-3
0x14	ISO 8859-4
0x15	ISO 8859-5
0x16	ISO 8859-6
0x17	ISO 8859-7
0x18	ISO 8859-8
0x19	ISO 8859-9
0x1A	ISO 8859-10
0x1B	ISO 8859-11
0x1C	Reserved
0x1D	ISO 8859-13
0x1E	ISO 8859-14
0x1F	ISO 8859-15
0x20	ISO 8859-16
0x21-0x7F	Reserved
0x80	Japanese character set defined in ARIB B24, Volume 1, Part 2, Chapter 7, Section 7.1
0x81	Japanese character set defined in JIS X0208 (shift JIS)
0x82	Japanese character set defined in ARIB B24, Volume 2, Chapter 4, Section 4.1.1 (EUC-JP)
0x83-0xFF	Reserved

7 File and directory

7.1 TYPE1 each PGR specific area in structure PGR

The structure of TYPE1 PGRSA is described in Table 3.

Table 3 – Structure of TYPE1 PGRSA

RBP	Length in bytes	Field name	Contents
0	1	PGR specific area TYPE	uimsbf
1	1	Flag	FL1
2	2	Reserved	bslbf
4	8	Event start time	GTS
12	4	Duration	Duration
16	2	Network ID	uimsbf
18	2	Service ID	uimsbf
20	12	Reserved	bslbf

7.1.1 Flag

The structure of FL1 is described in Table 4.

Table 4 – Structure of FL1

bit7	bit6	bit5	bit4	bit3	bit2	bit1	bit0
Reserved				E/A	CCI		ECRYT

7.1.1.1 CCI (bit2-1)[bslbf]

If the value of PI_TYPE field in the program general information is equal to 0x01, which means ISDB specific type, the value of DRCD bits in the copy control field in the TYPE1 component information shall be copied.

7.2 Structure MDE (meta data dntry) in MetaDataTable stream file

Table 5 – Structure of MDE

RBP	Length in bytes	Field name	Contents
0	1	MDE TYPE	uimsbf
1	1	Version	VER
2	2	Length of MDE structure (=n)	uimsbf
4	n	MDE TYPE specific area	

7.2.1 MDE TYPE

This field represents the MDE TYPE specific area. The interpretation of MDE TYPE is described in Table 6.

Table 6 – MDE TYPE interpretation

MDE TYPE	Interpretation
0x0	Shall mean that the following MDE TYPE specific field has no meaning
0x1	Shall mean that the MDE TYPE is a TYPE 1
0x2-0xFF	Reserved

7.2.2 TYPE 1 MDE TYPE specific area (Version1.0)

The TYPE 1 MDE TYPE specific area is defined in Table 7. TYPE 1 MDE is defined for storing metadata of the Japanese digital broadcast services.

Table 7 – Structure of TYPE 1 MDE

RBP	Length in bytes	Field name	Contents
0	1	MDE TYPE	uimsbf
1	1	Version	VER
2	2	Length of MDE structure	uimsbf
4	4	PGR ID	uimsbf
8	1	Flag	FLMDE
9	1	User ID type	uimsbf