

AV/C Disc Media Type Specification – MD audio

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Abstract: This specification defines the specification for MD-audio structures which are used by AV/C

Disc Subunit Model and Command set.

Keywords: Audio, Video, 1394, Digital, Interface, MD

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1. Normative References

1.1 Related Specifications

[1]IEEE Std 1394-1995, Standard for a High Performance Serial Bus

[2]ISO/IEC 13123:1994, Control and Status Register (CSR) Architecture for Microcomputer Buses

[3]IEC-61883, Digital Interface for Consumer Electronic Audio/Video Equipment

[4]AV/C Digital Interface Command Set General Specification, version 3.0 and Enhancement to the AV/C General Specification 3.0, version 1.0.

[5]AV/C Disc Subunit Model and Command Set, version 1.0

[6]MD control application specification version 1.0, Sony Corporation

1.2 Contact Information

1.2.1 1394 Trade Association (1394TA)

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2. Change History

There are no change notes for version $1.0\ \text{of}$ the document.



3. Definitions and abbreviations

3.1 Conformance glossary

Several keywords are used to differentiate between different levels of requirements and optionality, as follows:

expected: A keyword used to describe the behavior of the hardware or

software in the design models assumed by this specification. Other hardware and software design models may also be

implemented.

may: A keyword that indicates flexibility of choice with no implied

preference.

shall: A keyword indicating a mandatory requirement. Designers are

required to implement all such mandatory requirements to ensure

interoperability with other products conforming to this

specification.

should: A keyword indicating flexibility of choice with a strongly preferred

alternative. Equivalent to the phrase "is recommended."

3.2 Technical glossary

Frame: Frames per second = 86 for MD audio.

MD: Mini Disc.

MD-audio: Mini Disc audio format.

MD-clip: MD-clip is an extended specification of MD-audio. It contains the MD-audio specification with additional digital still image and text information.

DSI: Digital Still Image.



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4. Abstract

This document defines the MD-audio system specification for AV/C Disc subunit. This document is used in conjunction with the *AV/C Disc Subunit Model and Command Set version 1.0*.



5. Disc Subunit Identifier Descriptor

5.1 Size of list ID, object ID and object position

The size value of list ID, object ID, and object position shall be as follows.

field name	value
size of list ID	0216
size of object ID	0016
size of object position	0216

Table 5-1 The size value of list ID, object ID, and object position

5.2 Type dependent information

The *type_dependent_information* field contains information that is specific to each type of medium supported by the subunit.

Address Offset	msb							Isb
		ME	-Audio type	e-dependent	information	1		
00 ₁₆	MD-audio_version							
01 ₁₆	supports_ reserved MD-clip							

Table 5-2 MD-Audio type-dependent information

The *MD-audio_version* field indicates the version number of MD-audio specification that this disc subunit conforms to. The upper 4bits shows major version number, and lower 4bits shows minor version number.

MD-audio_version meaning		
	10_{16}	Version 1.0 of the MD-audio specification
	all others	Reserved for future specification

Table 5-3 MD-audio_version

The *supports_MD-clip* bit specifies whether this subunit has the ability to access MD-clip data with such specially formatted MD media. If the bit is set to 1, then the subunit has this ability.



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6. Disc Subunit Status Descriptor

6.1 Number of bytes for operation mode

The primary_fields of operating mode shall be 3 bytes. FF₁₆ pad bytes if necessary.



7. Object Entry

7.1 Object and List

The object name and its list is shown. The x indicates that the Subunit may contain this object. For example, a subunit without MD-clip access ability does not contain Digital Still Image object. Refer to the profile section for object and list implementation.

Object Name	List which contains the Object	without	with
		MD-clip	MD-clip
Audio Track Object	Contents List	Х	Х
Digital Still Image Object	Contents List		Х
Textual Object	Contents List		Х
Child Directory Object	All Lists	Х	Х
Performance Object	Performance List	Х	Х
Synchronized Performance	Synchronized Performance		Х
Object	List		
Text Database Object	Text Database List	Х	Х

Table 7-1 object name and its list

7.2 Audio Track Object entry_specific_information

The structure of the entry_specific_information in Audio Track Object is shown.

Audio Track Object entry_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆	1	
00 02 ₁₆	disc_subunit_object_attributes	
:		
:	audio_recording_parameters_info_block	
:		
:		
:	size_indicator_info_block	
:		
:		
:	name_info_block(UTOC1)	
:		
:		
:	name_info_block(UTOC4)	
:		
:		
:	other info blocks	
:		

Table 7-2 Audio Track Object entry_specific_information

The audio_recording_parameters_info_block, the size_indicator_info_block, and the name_info_block are mandatory and shall be described in this order.

The value of each field on the audio_recording_parameters_info_block is shown:



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Parameter	value
audio_recording_sample_rate	01 ₁₆ (44.1kHz)
audio_recording_sample_size	10 ₁₆ (16 bit)
audio_compression_mode	90 ₁₆ (ATRAC)
audio_recording_channel_mode	00 ₁₆ (stereo) or 01 ₁₆ (mono)

Table 7-3 audio_recording_parameters_info_block

The value of the size_indicator in the size_indicator_info_block shall be 00_{16} (HH_M_S_F).

The name_data_reference_type in the name_info_block shall be 01_{16} (Referenced) and descriptor type shall be 20_{16} (object specify by object position). The actual name_data is stored in Text Database Object.

7.3 Digital Still Image Objectentry_specific_information

The structure of the entry_specific_information in Digital Still Image (DSI) object is shown.

Digital Still Image Object entry_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_object_attributes	
:		
:	image_format_info_block	
:		
:		
:	size_indicator_info_block (raw_byte_count format)	
:		
:		
:	name_info_block	
:		
:		
:	other info blocks	
:		

Table 7-4 Digital Still Image Object entry_specific_information

The image_format_info_block, the size_indicator_info_block, and the name_info_block are mandatory, and shall be described in this order.

The value of each field on the image_format_info_block is shown.

Parameter	value
image_format	80 ₁₆ (MD1)
image_format_specific	00 ₁₆ (reserved)

Table 7-5 image_format_info_block

The value of the size_indicator in the size_indicator_info_block shall be 01_{16} (raw_byte_count).

The name_data_reference_type in the name_info_block shall be 01_{16} (Referenced) and descriptor type shall be 20_{16} (object by object position). The actual name_data is stored in Text Database Object.

Refer to the reference [6] for the image format in detail.

7.4 Textual Object entry_specific_information

The structure of the entry_specific_information in Textual Object is shown.



Textual Object entry_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_object_attributes	
:		
:	size_indicator_info_block	
:		
:	<u></u>	
:	character_code_info_block	
:		
:		
:	file_format_info_block	
:		
:	4	
:	text_content_type_info_block	
:		
:		
:	other info blocks	
:		

Table 7-6 Textual Object entry_specific_information

The size_indicator_info_block, the character_code_info_block, the file_format_info_block, and the text_content_type_info_block shall be described in this order.

The value of the size_indicator in the size_indicator_info_block shall be 01_{16} (raw_byte_count).

The character_code_type is defined in reference [6].

The value of the file_format field in the file_format_info_block shall be 80_{16} (MD1) or, 81_{16} (MD2).

The value of the text_content_type field in the text_content_type_info_block shall be 00_{16} (lyrics), 03_{16} (song information) or FF₁₆ (unspecified).

Refer to the reference [6] for the character code, file format and text content type in detail.

7.5 Child Directory Object entry_specific_information

The structure of the entry_specific_information in Child Directory Object is shown.

Child Directory Object entry_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_object_attributes	

Table 7-7 Child Directory Object entry_specific_information

7.6 Performance Object entry_specific_information

The structure of the entry_specific_information in Performance Object is shown.



Performance Object entry_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_object_attributes	
00 03 ₁₆		
:	descriptor_reference_info_block	
:		
:		
:	presentation_start_time_info_block	
:		
:		
:	presentation_end_time_info_block	
:		
:		
:	content_entry_point_info_block	
:		
:		
:	content_exit_point_info_block	
:	7	
:		
:	other info blocks	
:	1	

Table 7-8 Performance Object entry_specific_information

The descriptor_reference_info_block is mandatory and the descriptor type shall be 20_{16} (object by object position).

For the default performance list, the presentation_start_time, the presentation_end_time info block are mandatory, the content_entry_point and the content_exit_point are optional. The indicator type value of these info blocks shall be 02_{16} (absolute_HMSF_count).

The order of the information blocks shall be as above.

7.7 Synchronized Performance Object entry_specific_information

The structure of the entry_specific_information in Synchronized Performance Object is shown.

Synchronized Performance Object entry_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_object_attributes	
00 03 ₁₆		
00 04 ₁₆	performance specifier	
00 05 ₁₆		
:	other info blocks	
:		

Table 7-9 Synchronized Performance Object entry_specific_information

The performance specifier contains the number that specifies the position of a performance object in a list.



7.8 Text Database Object entry_specific_information

The structure of the entry_specific_information in Text Database Object is shown.

Text Database Object entry_specific_information		
Address Offset	Contents	
00 0016	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_object_attributes	
:		
:	text_database_content_attributes_info_block	
:		
:		
:	character_code_info_block	
:		
:		
:	raw_text_info_block	
:		
:		
÷	other info blocks	
:		

Table 7-10 Text Database Object entry_specific_information

The text_database_content_attributes_info_block, the character_code_info_block, and the raw_text_info_block are mandatory, and shall be described in this order.

The character_code_type is defined in reference [6].

Refer to the reference [6] for the character code in detail.



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8. Object List

8.1 List ID assignment

The list ID allocation for each list is shown. The x indicates that the Subunit may contain this object. For example, the subunit without MD-clip access ability does not contain Digital Still Image contents list. Refer to the profile section for object and list implementation.

list type		contents	list ID	without MD-clip	with MD-clip
Contents list	Root		100016	X	X
	Child	Audio	100116	Х	X
		DSI	100216		X
		Disc textual object	100316		X
		Disc DSI	100416		X
		Textual object	110016-		X
			11FF ₁₆		
		reserved	100516-		
			10FF ₁₆		
Temporary	Root		120016	X	X
Contents list	Child	Audio	120116	X	X
		DSI	120216		X
		Disc textual object	120316		X
		Disc DSI	120416		X
		Textual object	130016-		X
			13FF ₁₆		
Performance list	Root		140016	X	X
	main	Default performance for	140116		X
		Audio			
		Default performance for DSI	140216		X
		Default performance for text	140316		X
		User defined main	140416-	X	X
		performance list	14FF ₁₆		
	child	Default performance for DSI	150016-		X
			15FF ₁₆		
		Default performance for text	160016-		X
			16FF ₁₆		
		User defined child	190016-		X
g ,		performance list	1FFF ₁₆		
Synchro	Root		170016		X
performance list	child	Default synchro performance list	170116		Х
		User defined child	170216-		X
		synchro performance list	17FF ₁₆		

Table 8-1 List ID assignment



list type		contents	list ID	without	with
				MD-clip	MD-clip
Text Database	Root		1800_{16}	X	X
list	Child	Disc Title	180116	X	X
		(UTOC1,UTOC4,DSI)			
		Audio Entry Title UTOC1	180216	X	X
		Audio Entry Title UTOC4	180316	X	X
		DSI Entry Title	180416		X
		other text database list	180516-	X	X
			18FF ₁₆		
reserved		200016-			
			3FFF ₁₆		

8.2 MD-audio without MD-clip

8.2.1 Contents List

8.2.1.1 List Structure

The whole structure of the Contents List is shown:

"MD-audio track number" = "position number of the Audio child contents list" + 1 MD-audio track starts from 1.

Figure 8-1 The whole structure of the Contents List

8.2.1.2 Root Contents List list_specific_information

The structure of the list_specific_information in Root Contents List is shown.



Root Contents List list_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_list_attributes	
00 03 ₁₆	media_type	
00 04 ₁₆		
00 05 ₁₆	disc_recordable_information	
00 06 ₁₆		
:	time_stamp_info_block	
:	(descriptor_modification_date_and_time)	
:		
:	default_play_list_info_block	
:		
:		
:	AV_object_type_specific_capacity_info_block	
:	(Audio)	
:		
:	name_info_block	
:	(UTOC1)	
:		
:	name_info_block	
:	(UTOC4)	
:		
:	other info blocks	
:		

Table 8-2 Root Contents List list_specific_information

The time_stamp_info_block, the default_play_list_info_block, the AV_object_type_specific_capacity_info_block and the name_info_block(UTOC1,UTOC4), are mandatory, and shall be described in this order.

The media_type is defined in reference [6].

The value of the capacity_format_indicator field in the disc_capacity_info_block shall be 00_{16} (time).

The name_data_reference_type in the name_info_block shall be 01_{16} (Referenced) and the descriptor type shall be 20_{16} (object by object position). The actual name data is contained in Text Database Object.

8.2.2 Performance List

8.2.2.1 Total Structure

The whole structure of Performance List is shown.



Child Child Child Directory Directory Directory Object[0] Object[1] Object[2] Main Performance List (list ID=1405₁₆) Performance Performance Performance Object[0] Object[1] Object[2] Main Performance List (list ID=1404₁₆) Performance Performance Performance Object[0] Object[1] Object[2]

Root Performance List (list ID = 1400₁₆)

Figure 8-2 The whole structure of Performance List

The list ID of Root Performance List shall be 1400₁₆. Root Performance List contains only Child Directory Object as an object entry. That is, even if there is just one Main Performance List, Root Performance List will contains Child Directory Object.

The value of the list ID of Main Performance List which referred to by the object entry (n) of Root Performance List shall be $1404_{16} + n_{16}$.

8.2.2.2 Root Performance List list_specific_information

The structure of the list_specific_information in Root Performance List is shown.

F	Root Performance List list_specific_information		
Address Offset	Contents		
00 00 ₁₆	non_info_block_fields_length		
00 01 ₁₆			
00 02 ₁₆	disc_subunit_list_attributes		
00 03 ₁₆	AV_object_type		
00 04 ₁₆			
:	time_stamp_info_block		
:			
:			
:	number_of_items_info_block		
:			
:			
:	other info blocks		
:			

Table 8-3 Root Performance List list_specific_information

The time_stamp_info_block and the number_of_items_info_block are mandatory and shall be described in this order.



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AV_object_type is child directory object.

The number_of_items field in the number_of_items_info_block indicates the number of object of Root Performance List; that is the number of child performance list.

8.2.2.3 Main Performance List list_specific_information

The structure of the list_specific_information in Main Performance List is shown.

Main Performance List list_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_list_attributes	
00 03 ₁₆	AV_object_type	
00 04 ₁₆		
:	time_stamp_info_block	
:		
:		
:	size_indicator_info_block	
:		
:		
:	number_of_items_info_block	
:		
:		
:	other info blocks	
:		

Table 8-4 Main Performance List list_specific_information

The time_stamp_info_block, the size_indicator_info_block, and the number_of_items_info_block are mandatory, and shall be described in this order.

AV_object_type shall be Audio Track Object.

The size_indicator_info_block indicates the total time of all the Performance described in this list.

The number_of_items field of the number_of_items_info_block indicates the number of the object included in this main performance list.

8.2.3 Text Database List

8.2.3.1 Total Structure

The whole structure of Text Database List is shown.



Root Text Database List (list $ID = 1800_{16}$) Child Child Child Directory Directory Directory . . . Object[0] Object[2] Object[1] Audio UTOC4 list ID = 1803_{16} Text Text Text Database Database Database object [0] object [1] object [2] Audio UTOC1 list $ID = 1802_{16}$ Text Text Text Database Database Database object [0] object [1] object [2] Disc Title list $ID = 1801_{16}$ Disc Title Disc Title UTOC1 UTOC4

Figure 8-3 The whole structure of Text Database List

The value of the list ID in Root Text Database List shall be 1800_{16} . Root Text Database List contains 3 Child Directory Object as an object entry.

The value of the list ID of Child Text Database List --- referred to by the object entry [n] of Root text database List shall be $1801_{16} + n_{16}$.

The text database object is empty when there is no text information for it.

Text Database Object[0] of Child Text Database List of the list $ID = 1801_{16}$ contains the UTOC1 title of the Disc in the Root Contents list. (list $ID = 1000_{16}$)

Text Database Object[1] of Child Text Database List of the list ID = 1801_{16} contains the UTOC4 title of the Disc in the Root Contents list. (list ID = 1000_{16})

Text Database Object[n] in the Child Text Database List of the list ID = 1802_{16} contains the UTOC1 title of Audio Track Object[n] of the Audio contents list (list ID = $1001/1201_{16}$).

Text Database Object[n] in the Child Text Database List of the list ID = 1803_{16} contains the UTOC4 title of Audio Track Object[n] of the Audio contents list (list ID = $1001/1201_{16}$).

8.2.3.2 Root Text Database List list_specific_information

The structure of the list_specific_information in Root Text Database List is shown.



Root Text Database List list_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_list_attributes	
00 03 ₁₆		
:	time_stamp_info_block	
:		
:		
:	other info blocks	
:		

Table 8-5 Root Text Database List list_specific_information

The time_stamp_info_block is mandatory.

8.2.3.3 Child Text Database List list_specific_information

The list_specific_information in Child Text Database List is shown.

Child Text Database List list_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_list_attributes	
00 03 ₁₆		
:	time_stamp_info_block	
:		
:		
:	other info blocks	
:		

Table 8-6 Child Text Database List list_specific_information

The time_stamp_info_block is mandatory.

8.3 MD-Audio with MD-clip

8.3.1 Contents List

8.3.1.1 Total Structure

The whole structure of Contents List is shown.



oundary we, 1000, 1000011 III addit, me iiio

Root contents list (list ID = $1000 / 1200_{16}$

Child Child Child Child Directory Directory Directory Directory Object [0] Object [1] Object [2] Object [3] Child contents list (Disc DSI object) (list ID = $1004 / 1204_{16}$) DSI object of the disc Child contents list (Disc Textual object) (list ID = $1003 / 1203_{16}$) textual textual object of object of the disc[0] the disc[1] Child contents list (DSI) (list ID = $1002 / 1202_{16}$) Digital Still Digital Still Digital Still Image [0] Image [1] Image [2] Child contents list (Audio) (list ID = $1001 / 1201_{16}$) Audio Track Audio Track [0] [1] Child contents list (Textual object) (list ID = $1102 / 1302_{16}$) textual textual textual object object object Child contents list (Textual object) (list ID = $1101 / 1301_{16}$) textual textual textual object object object 1 - 0 1 - 1 1 - 2 Child contents list (Textual object) (list ID = $1100 / 1300_{16}$) textual textual textual object object object 0 - 00 - 10-2

Figure 8-4 The whole structure of Contents List

"MD-audio track number" = "position number of the Audio child contents list" + 1 MD-audio track starts from 1.



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Child Contents List of the list ID = $1001 / 1201_{16}$ contains only Audio Track Object as an object entry.

Child Contents List of the list $ID = 1002 / 1202_{16}$ contains only Digital Still Image Object as an object entry.

Child Contents List of the list ID = $1003 / 1203_{16}$ contains only Textual Object for Disc as an object entry. (Disc Title)

Child Contents List of the list ID = $1004 / 1204_{16}$ contains only Digital Still Image Object for Disc as an object entry. (Disc Cover picture)

Child Contents List of the list ID = 1100_{16} - $11FF_{16}$ / 1300_{16} - $13FF_{16}$ contains Textual Object as an object entry. The list ID of Child Contents List (textual object) which referred to by the object entry [n] of Audio Contents List shall be $1100_{16} + n_{16}$ / $1300_{16} + n_{16}$.

8.3.1.2 Root Contents List list_specific_information

The structure of the entry_specific_information in Root Contents List is shown.

Root Contents List list_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆	1	
00 02 ₁₆	disc_subunit_list_attributes	
00 03 ₁₆	media_type	
00 04 ₁₆		
00 05 ₁₆	disc_recordable_information	
00 06 ₁₆		
:	time_stamp_info_block	
:		
:		
:	default_play_list_info_block	
:		
:		
:	AV_object_type_specific_capacity_info_block(Audio)	
:		
<u> </u>	All abject type apositic consoity into block/DCI)	
<u> </u>	AV_object_type_specific_capacity_info_block(DSI)	
· · ·		
	/tv_object_type_specific_capacity_inio_block (Textual object)	
:		
:	name_info_block (UTOC1)	
:	, , , , ,	
:		
:	name_info_block (UTOC4)	
:	1	
:		
:	other info blocks	
:		

Table 8-7 Root Contents List list_specific_information

The time_stamp_info_block, the default_play_list_info_block, the AV_object_type_specific_capacity_info_block and the name_info_block are mandatory, and shall be described in this order.



The media_type shall be 0301₁₆ (MD-Audio).

The value of capacity_format_indicator field of the $AV_object_type_specific_capacity_info_block$ (Audio) shall be 00_{16} (time).

The value of capacity_format_indicator field of the AV_object_type_specific_capacity_info_block (DSI) shall be 01₁₆ (raw byte count).

The value of capacity_format_indicator field of the AV_object_type_specific_capacity_info_block (textual object) shall be 01₁₆ (raw byte count).

The name_data_reference_type in the name_info_block shall be 01_{16} (Referenced) and descriptor type shall be 20_{16} (object specified by position). The actual name_data is stored in Text Database Object.

8.3.1.3 Child Contents List list_specific_information

The structure of the entry_specific_information in Child Contents List is shown.

Child Contents List list_specific_information		
Address Offset	Contents	
00 00 ₁₆	non_info_block_fields_length	
00 01 ₁₆		
00 02 ₁₆	disc_subunit_list_attributes	
:		
:	time_stamp_info_block	
:		
:		
:	number_of_items_info_block	
:		
:		
:	other info blocks	
:		

Table 8-8 Child Contents List list_specific_information

The time_stamp_info_block and the number_of_items_info_block are mandatory, and shall be described in this order.

8.3.2 Performance List

8.3.2.1 Total Structure

The whole structure of Performance List on MD-clip is shown.



11110 Duo menu 1, pe openinamen ma umus, meris

Root Performance List (list ID = 1400_{16}) Child Child Child Child Child Child Directory Directory Directory Directory Directory Directory object[0] object[1] object[2] object[3] object[4] object[5] User defined main performance list (list ID = 1405_{16}) Child Directory Child Directory object[0] object[1] User defined main performance list (list ID = 1404_{16}) Performance Performance Performance object[0] object[1] object[2] Default main performance list for Textual Object (list ID = 1403_{16}) Child Directory Child Directory object[0] object[1] Default child performance list for Textual Object (list ID = 1501_{16}) Performance Performance Performance object[0] object[1] object[2] Default child performance list for Textual Object (list ID = 1500_{16}) Performance Performance Performance object[0] object[1] object[2] Default main performance list for DSI (list ID = 1402_{16}) **Child Directory** Child Directory object[0] object[1] Default child performance list for DSI (list ID = 1501_{16}) Performance Performance Performance object[0] object[1] object[2] Default child performance list for DSI (list ID = 1500_{16}) Performance Performance Performance object[0] object[1] object[2] Default main performance list for Audio (list ID = 1401_{16}) Performance Performance Performance object[0] object[1] object[2]

Figure 8-5 The whole structure of Performance List on MD-clip



8.3.2.2 Root Performance List list_specific_information

The structure of the list_specific_information in Root Performance List is shown.

Root Performance List list_specific_information					
Address Offset Contents					
00 00 ₁₆	non_info_block_fields_length				
00 01 ₁₆					
00 02 ₁₆	disc_subunit_list_attributes				
00 03 ₁₆	AV_object_type				
00 04 ₁₆					
:	time_stamp_info_block				
:					
:					
:	number_of_items_info_block				
:					
:					
:	other info blocks				
:					

Table 8-9 Root Performance List list_specific_information

The time_stamp_info_block and the number_of_items_info_block are mandatory, and shall be described in this order.

AV_object_type is Child directory object.

The number_of_items field of the number_of_items_info_block indicates the number of object in Root Performance List.

8.3.2.3 Main and Child Performance List list_specific_information

The following table specifies the structure of the list_specific_information in Main and Child Performance List.

Main and Child Performance List list_specific_information					
Address Offset	Address Offset Contents				
00 0016	non_info_block_fields_length				
00 01 ₁₆					
00 02 ₁₆	disc_subunit_list_attributes				
00 03 ₁₆	AV_object_type				
00 04 ₁₆					
:	time_stamp_info_block				
:					
:					
:	size_indicator_info_block				
:					
:					
:	number_of_items_info_block				
:					
:					
:	other info blocks				
:					

Table 8-10 Main and Child Performance List list_specific_information

The time_stamp_info_block, the size_indicator_info_block, and the number_of_items_info_block are mandatory, and shall be described in this order.



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AV_object_type is child directory object or performance object.

The size_indicator_info_block indicates the total time of all the Performance described in this list.

The number_of_items field in the number_of_items_info_block indicates the number of object of each child Performance List.

8.3.3 Synchronized Performance List

8.3.3.1 Total Structure

The whole structure of the Synchronized Performance List on MD-clip is shown.

Root Synchronized Performance List (list ID = 1700_{16}) Child Child Child Directory Directory Directory object[0] object[1] object[2] User Defined Synchro Performance List (list ID = 1702_{16}) Synchro Synchro Synchro Performance Performance Performance Object[0] Object[1] Object[2] Default Synchro Performance List (list ID = 1701₁₆) **Synchro Synchro Synchro** Performance Performance Performance Object[0] Object[1] Object[2]

Figure 8-6 The whole structure of the Synchronized Performance List on MD-clip

8.3.3.2 Root and child Synchronized Performance List list_specific_information

The structure of the list_specific_information in Root and Child Synchronized Performance List is shown.



Root and Child Synchronized Performance List list_specific_information						
Address Offset	ress Offset Contents					
00 00 ₁₆	non_info_block_fields_length					
00 01 ₁₆						
00 02 ₁₆	disc_subunit_list_attributes					
00 03 ₁₆						
:	synchro_performance_list_and_plug_pair_info_block					
:						
:						
:	time_stamp_info_block (descriptor modification time)					
:						
:						
:	number_of_items_info_block					
:						
:						
:	other info blocks					
:						

Table 8-11 Root and Child Synchronized Performance List list_specific_information

The synchro_performance_list_and_plug_pair_info_block, time_stamp_info_block, and the number_of_items_info_block are mandatory, and shall be described in this order.

8.3.4 Text Database List

8.3.4.1 Total Structure

The whole structure of Text Database List on MD-clip is shown.



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Root Text Database List (list ID = 1800_{16})

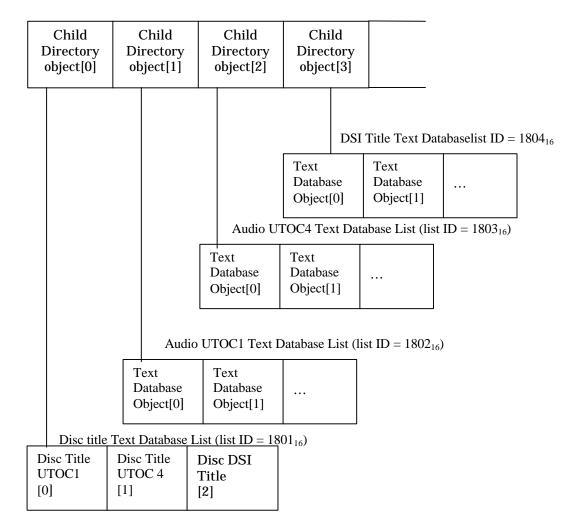


Figure 8-7 The whole structure of Text Database List on MD-clip

The value of the list ID in Root Text Database List shall be 1800₁₆. In addition, Root Text Database List contains Child Directory Object as an object entry. There are two levels in hierarchy. Root Text Database List and Child Text Database List.

The list ID of Child Text Database List referred to by object entry [n] of Root Text Database List shall be only three as $1801_{16} + n_{16}$.

Text Database Object[0] of Child Text Database List of the list $ID = 1801_{16}$ contains the UTOC1 title of the Disc in the Root Contents list. (list $ID = 1000_{16}$)

Text Database Object[1] of Child Text Database List of the list $ID = 1801_{16}$ contains the UTOC4 title of the Disc in the Root Contents list. (list $ID = 1000_{16}$)

Text Database Object[2] of Child Text Database List of the list ID = 1801_{16} contains the title of the Disc DSI (cover picture) in the Disc DSI list (list ID = $1004/1204_{16}$)
Text Database Object[n] in the Child Text Database List of the list ID = 1802_{16} contains the UTOC1 title of Audio Track Object[n] of the Audio contents list (list ID = $1001/1201_{16}$).



Text Database Object[n] in the Child Text Database List of the list ID = 1803_{16} contains the UTOC4 title of Audio Track Object[n] of the Audio contents list (list ID = $1001/1201_{16}$).

Text Database Object[n] in the Child Text Database List of the list ID = 1804_{16} contains the title of DSI Object[n] of the DSI contents list(list ID = $1002/1202_{16}$)

8.3.4.2 Root Text Database List list_specific_information

The structure of the list_specific_information in Root Text Database List is shown.

Root Text Database List list_specific_information				
Address Offset	Contents			
00 0016	non_info_block_fields_length			
00 01 ₁₆				
00 02 ₁₆	disc_subunit_list_attributes			
00 03 ₁₆				
:	time_stamp_info_block			
:				
:				
:	other info blocks			
:				

Table 8-12 Root Text Database List list_specific_information

The time_stamp_info_block is mandatory.

8.3.4.3 Child Text Database List list_specific_information

The structure of the list_specific_information in Child Text Database List is shown.

Child Text Database List list_specific_information				
Address Offset	Contents			
00 00 ₁₆	non_info_block_fields_length			
00 01 ₁₆				
00 02 ₁₆	disc_subunit_list_attributes			
00 03 ₁₆				
:	time_stamp_info_block			
:				
:				
:	other info blocks			
:				

Table 8-13 Child Text Database List list_specific_information

The time_stamp_info_block is mandatory.



9. Profile

implementation_	meaning					
profile_ID	incaning					
20 ₁₆	Network MD - it implements at least the follows: 1) Subunit identifier descriptor 2) Disc subunit status descriptor operating_mode_info_block, position_info_block, plug_configuration_info_block 3) Contents list 4) Command support PLAY(forward, forward pause), STOP, SEARCH(relative unit, unit=track) If it is Recorder: RECORD(new)),ERASE					
50 ₁₆	Program play MD - it implements at least the follows: 1) Subunit identifier descriptor 2) Disc subunit status descriptor operating_mode_info_block, position_info_block, plug_configuration_info_block 3) Contents list 4) Performance list 5) Command support PLAY(forward, forward pause), STOP, SEARCH(relative unit, unit=track) CONFIGURE If it is Recorder: RECORD(new)), ERASE					
70 ₁₆	Editing MD - it implements at least the follows: 1) Subunit identifier descriptor 2) subunit status descriptor operating_mode_info_block, position_info_block plug_configuration_info_block, 3) Contents list 4) Text database list 5) Performance list If it has MD-clip ability: Default Synchro Performance list 6) command support PLAY(forward, forward pause) STOP SEARCH(relative unit, unit=track) CONFIGURE COMBINE, DIVIDE, MOVE, REHEASAL If it is Recorder: RECORD(new)), ERASE If it has MD-clip ability: OBJECT NUMBER SELECT If it is Recorder and has MD-clip ability: RECORD OBJECT					
all others	If it is Recorder and has MD-enp ability. RECORD OBJECT					
an onicis	<u> </u>					

 Table 9-1 implementation_profile_ID



A. APPENDIX Structure of the Descriptors Defined in the Disc Model (INFORMATIVE)

This is written to help the reader to understand the Disc specification.

This does not restrict any implementation.

This shows one example of the structure of the descriptors which are defined in the AV/C Disc Subunit Model and Command Set.



A.1. Whole structure

Disc Subunit Identifier Descriptor	Root Contents List	Child Contents List
descriptor_ length	descriptor_length	descriptor length
generation_ ID	list type	list type
size_ of_ list_ ID	attributes	attributes
size_ of_ object_ ID	list_specific_info	list_specific_info
size_ of_ object_ position	#_ of_ entries (n)	#_ of_ entries (n)
#_ of_ root_ object_ lists (n)	Audio Track Object[0]	Audio Track Object[0]
root_object_list_id_0		¥
	Audio Track Object[n-1]	Audio Track Object[n-1]
root_object_list_id_n-1	Audio Track Object[n-1]	Audio Track Object[II-1]
disc_subunit_dependent_length	—	
disc_subunit_dependent_info	Temporary Root Contents List	Temporary Child Contents List
manufacturer_ dependent_ length	descriptor_ length	descriptor_ length
manufacturer dependent info	list_ type	list_type
manuracturer_ dependent_ info	attributes	attributes
	list_ specific_ info	list_ specific_ info
Directorist Control	#_ of_ entries (n)	#_ of_ entries (n)
Disc Subunit Status Descriptor	Audio Track Object[0]	Audio Track Object[0]
descriptor_ length		
general_ disc_ status_ info_ block	Audio Track Object[n-1]	Audio Track Object[n-1]
destination_ plug_ status_ area_	<u> </u>	<u> </u>
info_block		
source_ plug_ status_ area_ info_	Root Performance List	Main Performance List
block	descriptor_ length	descriptor_length
performance_ status_ area_ info_	list_type	list_ type
block	attributes	attributes
	list_ specific_ info	list_ specific_ info
	#_ of_ entries (n)	#_ of_ entries (n)
	Child Directory Object[0]	Child Directory Object[0]
	or AV Object Reference[0]	or AV Object Reference[0]
		;
	Child Directory Object[n-1]	Child Directory Object[n-1]
	or AV Object Reference[n-1]	or AV Object Reference[n-1]
		į
	_	i
_		
	Root Synchronized Performance	Child Performance List
	List	descriptor_ length
	descriptor_ length	list_type
	list_type	attributes
	attributes	list_ specific_ info
	list_ specific_ info	#_ of_ entries (n)
	#_ of_ entries (n)	AV Object Reference[0]
	Child Directory Object[0]	or AV Object Reference[0]
	or Multi Plug AV Object	
	Reference[0]	AV Object Reference[n-1]
		or AV Object Reference[n-1]
	Child Directory Object[n-1]	<u> </u>
	or Multi Plug AV Object	
	Reference[n-1]	
	_	_
—	Root Text Database List	Child Text Database List
	descriptor_length	descriptor_length
	list_type	list_type
	attributes	attributes
	list_specific_info	list_ specific_ info
	#_ of_ entries (n)	#_ of_ entries (n) AV Object Reference[0]
	Child Directory Object[0]	
	or Text Database Object[0]	or Text Database Object[0]
	CULTURE A COLL OF ALL	AV OL : 4 D 6
	Child Directory Object[n-1]	AV Object Reference[n-1] or Text Database Object[n-1]
	or Text Database Object[0]	



A.2. Disc Subunit Identifier Descriptor

A.Z. DISC GUDUIII IC	401	itilici Descriptor				
descriptor_ length	2					
generation_ ID	1					
size_ of_ list_ ID	1					
size_ of_ object_ id	1					
size_ of_ object_ position	1					
#_ of_ root_ object_ lists(n)	2					
root_object_list_id_0	X					
•••						
root_object_list_id_n-1	X					
disc_subunit_dependent_length	2					
disc_subunit_dependent_info		disc_ subunit_ dependent_ info_	2			
		fields_ length				_
		attributes	1	has_more_attributes		
				/ supports_ copyright]
		disc_subunit_version	1			
		#_ of_ supported_ media_ types(n)	1			
		supported_ media_ type	e_	supported_ media_ type	2	CD/MD
		specification[0]	_	implementation_profile_ID	1	
				media_type_attributes	1	has_more_attributes /can_record /supports_hierarchical_storage /supports_two_sided_media
				type_ dependent_ length	2	, , , , , , , , , , , , , , , , , , ,
		supportedmediatype	ee_	type_dependent_info	х	supported_ media_ type = CD-DA CD-DA_ version
		specification[n-1]				
		optional info blocks for futu expansion	ıre			
manufacturer_dependent_length	2			•		
manufacturer_ dependent_ info	X					



A.3. Disc Subunit Status Descriptor

1 1 1 1 1 2	
general_ disc_ subunit_ compound_length 2	
status_area_info_block info_block_type 2	
primary_fields_length 2	
media_ and_ edit_ status_ compound_length 2 info_ block type 2	
primary_fields_length 2	
disc_ in_ drive / error_ 1	
condition / reserved	
undo_ status 1	
difference / auto_ update 1	
/ reserved	
destinationplug status_ areainfoblock	
primary_fields_length 2	
#_ of_ destination_ 2	
plugs	
plug_status_info_block compound_length 2	
(destination_plug[0]) info_block_type 2	
primary_fields_length 2 plug_number 1	
operating mode info compound length 2	
block info_block_type 2	
primary_fields_length 2	
operating_mode 1	STOP / RECORD /
	OBJECT RECORD /
operation_ mode_ x	SUSPENDED
specific_info	
current_ position_ info_ compound_length 2	
block info_block_type 2	
primary_fields_length 2	
list_ descriptor_ x	
reference nested_ position_	compound_length 2
	info_block_type 2
	primary_fields_length 2
	indicator_ type 1
	indicator_ type_ x
	specific
plug_ configuration_ info_ compound_length 2	
block block compand rength 2	
primary_fields_length 2	
AV_object_type 1	
	AV_ object_ type = Audio
	Object audio_ synchro_ rec 1
	/ increment_ position_
	number
	/ level_ sync_ on_ off
	/ reserved
	audio_ recording_ 1 sample_rate
	audio_ recording_ 1
	sample_ size
	audio_ compression_ 1
	mode
	audio_ recording_ 1 channel_ mode
	audio_ recording_ 2
	volume
	AV_ object_ type = Digital
	Still Image
	(No Information) 0 $AV_object_type = Textual$
	Object type = Textual
	(No Information) 0



source_ plug_ status_ area_	compound_length 2				
info_ block	info_block_type 2				
	primary_ fields_ length 2				
	#_ of_ source_ plugs 2		-		
	plug_ status_ info_ block	compound_length 2			
	(source_ plug[0])	info_block_type 2			
		primary_fields_length 2			
		plug_number 1		2	
		operating_ mode_ info_ block		2	
		DIOCK		2	
			 	1	STOP / PLAY / OBJECT
			operating_ mode	1	NUMBER SELECT /
					REHEASAL / SEARCH /
					SUSPENDED
				X	
			specific_info	_	
		current_ position_ info_		2	
		block		2	
			<u> </u>	2	
				X	
			reference	,	compound longth 2
			nested_ position indicator_info_blocks	' -	compound_length 2 info_block_type 2
			maicator_mio_blocks	ŀ	primary_ fields_ length 2
				ŀ	indicator_type 1
				ŀ	indicator_ type_ x
					specific type_ x
				ŀ	
		plug_ configuration_ info_	compound_length	2	
		block		2	
				2	
				1	
			object_ and_ plug_ type	e_	AV_{-} object_ type = Audio
			specific_info		Object
					audio_ mute / internal_ 1
					mute_ off / reserved
				ļ	variable_pitch_value 1
					reserved / variable_ 2
				ŀ	speed_ value AV_ object_ type = Digital
					Still Image
				ŀ	mute / reserved 1
				ŀ	$AV_object_type = Textual$
					Object Testina.
				Ī	mute / reserved 1
		playback_ order_	compound_length	2	
		configuration_ info_ block		2	
			primary_ fields_ length	2	
			1 7 =	1	
			1 —	1	
			reserved	1	
			track_ boundary_ operation / reserved	1	
		audio_ level_ meter_ status_		2	
		info_ block	<u> </u>	2	
		IIIO_ DIOCK		2	
				1	
			reserved	1	
				1	
				4	
				4	
		monitor_ status_ info_ block	compound_length	2	
				2	
				2	
				1	
				1	
			number		
synchro_ plug_ group_	compound_length 2				
status_ area_ info_ block					



i .	<u> </u>	Ī			
	info_block_type 2				
	primary_ fields_ length 2				
	#_ of_ synchro_ plug_ 2				
	groups		_		
	plug_ status_ info_ block	compound_length 2			
	(synchro_ plug_ group[0])	info_block_type 2			
		primary_fields_length 2			
		plug_ number 1			
		operating_ mode_ info_	compound_length	2	
		block	info_block_type	2	
			primary_ fields_ length	2	
			operating_ mode	1	STOP / REHEARSAL /
			1 0 0 1		SEARCH / SUSPENDED
			operation_ mode_	Х	
			specific_info		
		current_ position_ info_	compound_length	2	
		block	info_block_type	2	
			primary_ fields_ length	2	
			list_ descriptor_	х	
			reference		
			nested_ positio	n	
			indicator_ info_ blocks	_	
		synchro_ plug_ group_	compound_length	2	
		configuration_ info_ block	info_block_type	2	
		<u> </u>	primary_ fields_ length	2	
			all_ mute / reserved	1	
			reserved / variable_	2	
			speed_ value		
		playback_ order_	compound_length	2	
		configuration_ info_ block	info_block_type	2	
			primary_ fields_ length	2	
			playback_ order	1	
			repeat_ mode /	1	
			reserved	•	
			track_ boundary_	1	
			operation / reserved	•	
			-psaon/reserved		1



A.4. Audio Track Object

A.4. Audio II							
descriptor_ length	2	A 1: . T 1 . 0	11:	1			
entry_ type attributes	1	Audio Track O					
aturoutes	1		tributes / skip / ID / has_				
		object_ID/up					
child_list_ID	Х	· - ·					
object_ ID	X						
size_ of_ entry_	2						
specific_info				1			
entry_ specific_ info		non_ info_	block_ 2				
		fields_length	11 . 1	1		1	
		disc_ subunit	_ object_ 1	has_more_attributes/			
		attributes		contents_locked/ descriptor_locked			
		audio_	recording_	compound_length	2		
		parameters_ in		info_ block_ type	2		
				primary_ fields_ length	2		
				audio_ recording_	1		
				sampling_ frequency			
				audio_ recording_ bit_	1		
				width	Ļ		
				audio_ compression_	1		
				mode audio_ recording_	1		
				channel_ mode	1		
		optional info	time_	compound_ length	2		
		blocks	stamp_	info_ block_ type	2		
			info_ block	primary_ fields_ length	2		
			(content	time_ stamp_ type	1		
			creation	time_ stamp_ data	X		
			time)		2		
			time_ stamp_	compound_length info_block_type	2		
			info_ block	primary_ fields_ length	2		
			(content	time_stamp_type	1		
			modification	time_ stamp_ data	X		
			time)				
			size_	compound_length	2		
			indicator_ info_ block	info_ block_ type primary_ fields_ length	2		
			mio_ block	size_indicator_type	1		
				size_ indicator_ type_	X		
				specific			
			name_ info_	compound_ length	2		
			block	info_block_type	2		
				primary_fields_length	2		
				name_ data_ reference_	1		
				type name_ data		name_ data_ reference_	1
				name_ data		type =	
						Referenced	
						descriptor_ identifier x	
						name_ data_ reference_	
						type =	
						Immediate	
						name_data_attributes 1 maximum_ number_ 2	
						of_ characters	
						character_ code_ info_	compound_length 2
						block	info_block_type 2
							primary_fields_length 2
							character_code_type 1
							character_ code_ type_ x
						languaga ands inf-	specific compound length 2
						language_ code_ info_ block	compound_length 2 info_block_type 2
						STOCK	primary_ fields_ length 2
							language_code_type 1
							language_ code_ type_ x
							specific
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_				
		raw_text_info_block	compound_length	2
			info_block_type	2
			primary_ fields_ length	2
			raw_ text_ data	X
artist_ info_	compound_length 2			
block	info_block_type 2			
	primary_fields_length 2]		
	name_info_block]		
	description_ info_ block]		
	image_ info_ block			
genre_ info_	same format as name_ info_	1		
block	block except compound_			
	length field			
image_	compound_length 2			
info_ block	info_block_type 2			
	primary_fields_length 2			
	image_ reference x			
		-		



A.5. Digital Still Image Object

A.S. Digital St	Ш	ımage Oı	oject			
descriptor_ length	2				_	
entry_ type	1	Digital Still In	nage Object			
attributes	1	has_more_a				
		has_ child_	ID / ha	ıs_		
		object_ID/u	p_ to_ date			
child_ list_ ID	X					
object_ ID	X					
size_ of_ entry_	2					
specific_info					-	
entry_ specific_ info		non_ info_	_ block_	2		
		fields_length				
		disc_ subuni	t_ object_	1	has_more_attributes/	
		attributes			contents_locked/	
					descriptor_locked	
		image_ forma	t_ info_ bloc	k	compound_ length	2
					info_ block_ type	2
					primary_ fields_ length	2
					image_ format_	1
					specifier	
					image_ format	1
					image_ format_ specific	X
		size_indicato			compound_length	2
		(raw_ byte_ c	ount format)		info_ block_ type	2
					primary_ fields_ length	2
					size_ indicator_ type	1
					size indicator type	X
					specific	
		optional	time_ stam			
		info blocks	info_ blo	ock		
			(content			
			creation			
			time)			
			time_ stam	10	1	
			info_ blo			
			(content	JCK		
			modification	n		
			time)			
			name_ inf	fo	1	
			block	_		
			image_ inf	fo		
			block	-		
					1	



A.6. Textual Object

A.O. TEXTUAL C	נטי	COL			
descriptor_ length	2				
entry_ type	1	Textual Object			
attributes	1	has_more_attributes/ski			
		has_ child_ ID / ha	ıs_		
		object_ID/up_to_date			
child_list_ID	X				
object_ ID	X				
size_ of_ entry_	2				
specific_info				<u>.</u>	
entry_specific_info		non_ info_ block_ fields_length	2		
		disc_ subunit_ object_	1	has_more_attributes/	
		attributes		contents_locked/	
				descriptor_locked	
		size_indicator_info_bloc	k	compound_length	2
				info_ block_ type	2
				primary_ fields_ length	2
				size_ indicator_ type	1
				size_indicator_type_	X
				specific	
		character_code_info_blo	ck	compound_ length	2
				info_block_type	2
				primary_ fields_ length	2
				character_ code_ type	1
				character_ code_ type_ specific	X
		language_ code_ info_ blo	ck	compound_length	2
				info_block_type	2
				primary_ fields_ length	2
				language_ code_ type	1
				language_ code_ type_ specific	Х
		file_format_info_block		compound_ length	2
				info_ block_ type	2
				primary_fields_length	2
				image_ format_	1
				specifier	
				image_ format	1
				image_ format_ specific	X
		text_ content_ type_ inf	o_	compound_ length	2
		block		info_block_type	2
				primary_ fields_ length	2
				text_ content_ type	1
		optional info blocks			



A.7. Child Directory Object

descriptor_ length	2					
entry_ type	1	Child Director	y Object			
attributes	1	has_more_at. has_ child_ object_ID/up	ID / ha			
child_list_ID	X	•			•	
object_ ID	X					
size_ of_ entry_ specific_info	2					
entry_ specific_ info		non_ info_ fields_ length	_	2		
		disc_ subunit_ object_ 1 attributes		has_more_attributes/ contents_locked/ descriptor_locked		
		optional info	time_		compound_ length	2
		blocks	stamp_		info_block_type	2
			info_ blo		primary_fields_length	2
			(descriptor	ſ	time_ stamp_ type	1
			creation time)		time_ stamp_ data	Х
			time_		compound_length	2
			stamp_		info_block_type	2
			info_ blo		primary_fields_length	2
			(descriptor		time_ stamp_ type	1
			modificati time)	on	time_ stamp_ data	X
1		I	ı			



A.8. Performance Object

descriptor_ length	2	c Object			
entry_ type	1	Performance Object			
attributes	1	has_more_attributes/skip	p/		
		has_ child_ ID / ha.	s_		
		object_ID/up_to_date			
child_list_ID	X				
object_ ID	X				
size_ of_ entry_	2				
specific_info				_	
entry_specific_info		non_ info_ block_ fields_length	2		
		disc_ subunit_ object_	1	has_more_attributes/	
		attributes		contents_locked/	
				descriptor_locked	
		descriptor_ reference_ info	0_	compound_ length	2
		block (AV content obje	ect	info_block_type	2
		reference)		primary_ fields_ length	2
				AV_content_object_	X
				reference	
		output_start_time_info_blo	c	compound_ length	2
		k -Ol		info_block_type	2
		presentation_start_time_inf	o	primary_fields_length	2
		block		indicator type	1
				indicator_type_specific	X
		presentation_ end_ tin	ne	compound_ length	2
		info_block		info_ block_ type	2
				primary_ fields_ length	2
				indicator_ type	1
				indicator_ type_ specific	X
		content_ entry_ point info	0_	compound_ length	2
		block		info_ block_ type	2
				primary_ fields_ length	2
				indicator_ type	1
				indicator_ type_ specific	X
		content_ exit_ point info	o	compound_ length	2
		block		info_block_type	2
				primary_fields_length	2
				indicator_ type	1
				indicator_ type_ specific	X
		optional info blocks			



A.9. Synchronized Performance Object

descriptor_ length	2			
entry_ type	1	Synchronized Performan	ісе	
		Object		
attributes	1	has_more_attributes/ski	ip/	
		has_ child_ ID / ha	ıs_	
		object_ID/up_to_date		
child_list_ID	X			
object_ ID	X			
size_ of_ entry_	2			
specific_info				
entry_ specific_ info		non_ info_ block_	2	
		fields_length		
		disc_ subunit_ object_	1	has_more_attributes/
		attributes		contents_locked/
				descriptor_locked
		performance_ specifier	X	
		optional info blocks		



A.10. Text Database Object

descriptor_ length	2			_		
entry_ type	1	Text Database Object				
attributes	1	has_more_attributes/ski	p/			
		has_ child_ ID / ha	ıs_			
		object_ID/up_to_date				
child_ list_ ID	X					
object_ ID	x					
size_ of_ entry_	2					
specific_info				_		
entry_ specific_ info		primary_ fields_ length	2			_
		disc_ subunit_ object_	1	has_more_attributes/		
		attributes		contents_locked/		
				descriptor_locked		
		text_ database_ conter	nt_	text_ database_ object_	1	user_ modifiable / stored_
		attributes_ info_ block		attributes		on_ media
				maximum_ number_ of_	2	
				characters		
		character_code_info_blo	ck	compound_ length	2	
				info_block_type	2	
				primary_ fields_ length	2	
				character_ code_ type	1	
				character_ code_ type_	X	
				specific		
		language_code_info_blo	ck	compound_ length	2	
				info_block_type	2	
				primary_ fields_ length	2	
				language_ code_ type	1	
				language_ code_ type_	X	
				specific		
		raw_text_info_block		compound_ length	2	
				info_block_type	2	
				primary_fields_length	2	
				raw_text_data	X	
		optional info blocks				



A.11. Root Contents List, Root Temporary Contents List

		 	i, RUUI	16	emporary Conte	IIIS
descriptor_ length list_ type	1	Root Conten	ts List / Ro	ot]	
nst_type	•	Temporary Co		0.		
attributes	1	has_more_a		p/		
		has_ child_				
		object_ID/u				
size_ of_ list_ specific_	2					
info list_ specific_ info		non_ info_	block_	2	1	
nst_ specific_ fino		fields_length		_		
		disc_ subu		1	content_locked/descripte	or_
		attributes			locked	_
		media_ type		2		
		disc_	recordable	e_	protected / recordable /	1
		information			reserved	_
		time_ stamp			compound_length	2
		(descriptor time)	modificatio	on	info_ block_ type primary_ fields_ length	2
		time)			time_ stamp_ type	1
					time_ stamp_ type	X
		default_ play	y list info	0	compound_ length	2
		block		_	info_block_type	2
					primary_ fields_ length	2
			T		default_play_list_ID	X
		optional	disc_	-	compound_length	2
		info blocks	capacity_		info_ block_ type	2
			info_block		primary_fields_length	2
					capacity_ format_ indicator	1
					disc_ total_ playback_	2
					capacity_length	_
					disc_ total_ playback_	Х
					capacity	
					disc_ maximum_	2
					recording_ capacity_	
					length disc_ maximum_	X
					recording_capacity	Λ.
					disc_ remaining_	2
					recording_ capacity_	
					length	
					disc_ remaining_	X
			A37 1:		recording_capacity	2
			AV_ object	t_	compound_length info_block_type	2
			type_ specific_		primary_ fields_ length	2
			capacity_		object_ type	1
			info_block		capacity_ format_	1
					indicator	
					object_ type_ specific_	2
					total_ playback_	
					capacity_ length	H
					object_ type_ specific_ total_ playback_	X
					capacity	
					object_ type_ specific_	2
					maximum_ recording_	
					capacity_length	
					object_ type_ specific_	X
					maximum_ recording_	
					capacity	2
					object_ type_ specific_ remaining_ recording_	2
					capacity_length	
					object_ type_ specific_	Х
					remaining_ recording_	
					capacity	
			time_ stamp		compound_length	2
			info_block		info_block_type	2
			(content		primary_fields_length	2
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	1 1	time_ stamp_ type	1	
		time_ stamp_ data	X	
	time_ sta info_ blc (content modifica time_ sta info_ blc (descript creation) disc_ catalog_ code_ block	amp_ ock ation) amp_ ock tor or info_ info_ block_ type primary_ fields_ length disc_ catalog_ code_ length disc_ catalog_ code	x	name_data_reference_type = Immediate name data
	artist_	info		raw_text_info_block
	block	IIIIO_		
	genre_	info_		
	block			
	image_ block	info_		
# of entries 2				
#_ of_ entries 2 object_ entry[0]	Disc Subunit Object			
, <u> </u>				
object_ entry[n-1]	•••			
object_entry[n-1]	•••			



A.12. Child Contents List, Child Temporary Contents List

descriptor_ length	2]	,		, , , , , , , , , , , , , , , , , , ,		
list_type	1	Child Conten	ts List / Chi	ld			
not_type	•	Temporary Co					
attributes	1	has_more_a)/			
		has_ child_					
		object_ID/u	p_ to_ date				
size_ of_ list_ specific_	2				•		
info					1		
list_ specific_ info		non_ info_		2			
		fields_length					
		disc_ subu	nit_ list_	1	content_locked/descript	or_	
		attributes	:f- 1-1-	-1-	locked	1 2	
		time_ stamp_ (descriptor	_ inio_ bioc modificatio		compound_ length	2	
		time)	modificatio)11	info_ block_ type primary_ fields_ length	2	
		time)			time_ stamp_ type	1	
					time_ stamp_ data	X	
		optional	time_ stamp	1	compound_ length	2	
		info blocks	info_block		info_ block_ type	2	
			(content		primary_ fields_ length	2	
			creation)		time_ stamp_ type	1	
					time_ stamp_ data	х	
			time_ stamp	o_	- •		•
			info_block				
			(content				
			modification	_			
			time_ stamp	P_			
			info_block (descriptor				
			creation)				
			disc_		compound_ length	2	
			catalog_		info_block_type	2	
			code_ info	0_	primary_ fields_ length	2	
			block		disc_ catalog_ code_	2	
					length		
					disc_catalog_code	X	
			name_ info	O_	compound_ length	2	
			block		info_block_type	2	
					primary_ fields_ length	2	
					name_ data_ reference_	1	
					type name_ data		name_ data_ reference_ type
					name_ data		= Immediate
							name data x
							name_ data_ reference_ type
							= Referenced
							name_data_attributes 1
							maximum_ number_ of_ 2
							characters
							character_code_info_block
							language_ code_ info_ block raw_ text_ info_ block
			artist_ info	,			TUW_ UAL_ IIIIO_ DIOCK
			block	´-			
			genre_ info	o			
			block				
			image_ info	0_			
			block				
	-						
#_ of_ entries	2	D: C ! :	01: .		İ		
object_ entry[0]		Disc Subunit	Object				
object_ entry[n-1]							

A.13. Performance List

descriptor_length 2



list_ type	1	Performance List			
attributes	1	has_more_attributes/ski	p/		
		has_ child_ ID / ha	ıs_		
		object_ID/up_to_date			
size_ of_ list_ specific_	2				
info					
list_ specific_ info		non_ info_ block_	2		
		fields_ length			
		disc_ subunit_ list_	1	content_locked/descript	or_
		attributes		locked	
		AV_ object_ type	1		
		time_ stamp_ info_ block		compound_ length	2
		(descriptor modification)		info_ block_ type	2
				primary_ fields_ length	2
				time_ stamp_ type	1
				time_ stamp_ data	X
		size_indicator_info_bloc	k	compound_ length	2
		(total duration of	all	info_block_type	2
		performances in list)		primary_fields_length	2
				size_ indicator_ type	1
				size_indicator_type_	X
				specific	
		optional info blocks			
#_ of_ entries	2			•	
object_ entry[0]		Performance Object			
object_ entry[n-1]					



A.14. Synchronized Performance List

71.141 Oylioni		04 : 0::0:::::4::0	J =:5t
descriptor_ length	2		
list_ type	1	Synchronized Performance	
		List	
attributes	1	has_more_attributes/skip/	
		has_ child_ ID / has_	
		object_ID/up_to_date	
size_ of_ list_ specific_	2		
info			
list_ specific_ info		non_ info_ block_ 2	
_		fields_length	
		disc_ subunit_ list_ 1	content_locked/descriptor_
		attributes	locked
		synchro_ performance_ list_	compound_length
		and_ plug_ pairs_ info_	info_block_type
		block	primary_ fields_ length
			#_ of_ performance_
			list_ plug_ pairs (n)
			performance_list_ID[0]
			source_plug[0]
			performance_list_ID[n-
			source_ plug[n-1]
		time_ stamp_ info_ block	compound_length
		(descriptor modification)	info_block_type
		(descriptor modification)	primary_ fields_ length
			1
			1-71
			time_ stamp_ data
			size_indicator_type_
			specific
		optional info blocks	
#_ of_ entries	2		
object_ entry[0]		Synchronized Performance	
		Object	
•••			
object_ entry[n-1]			



A.15. Text Database List

descriptor_ length	2		
list_ type	1	Text Database List	
attributes	1	has_more_attributes/skip/	
		has_ child_ ID / has_	
		object_ID/up_to_date	
size_ of_ list_ specific_ info	2		_
list_ specific_ info		non_ info_ block_ 2 fields_length	
		disc_ subunit_ list_ 1	content_locked/descriptor_
		attributes	locked
		time_stamp_info_block	compound_length 2
		(descriptor modification)	info_block_type 2
			primary_fields_length 2
			time_ stamp_ type 1
			time_ stamp_ data x
			size_indicator_type_ x
			specific
		optional info blocks	
#_ of_ entries	2	·	_
object_ entry[0]		Text Database Object	
		•••	_
object_ entry[n-1]]



B. APPENDIX Application Note (INFORMATIVE)

This is written to help the reader to understand the Disc specification. This does not restrict any implementation.

In this appendix, an MD-Audio (without MD-clip) control example with AV/C Disc Model is introduced.

B.1. Hardware Configuration and Initial Setting

In the following MD-Audio (without MD-clip) control example, a model shown in Fig. B-1 is used. The MD has one destination plug and one source plug. These plugs are connected to the input plug and output plug of the unit respectively. In this example, it is assumed that the MD has one main performance list, while a device may have actually more than one main performance list.

The controller is also assumed to have read the descriptor in the MD in advance and obtained information on the contents of the disc presently inserted in the MD by reading the descriptor.

The controller must still perform the other tasks such as CONNECT, setting PCR's, bandwidth allocation, etc. In the example of recording from CD to MD described in B.3., it is assumed that the same treatment as above-mentioned MD has been conducted.

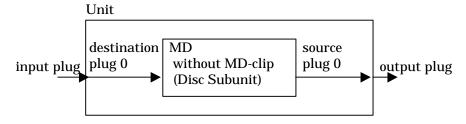


Fig. B-1



B.2. Playback

B.2.1. Normal Playback

Scenario: The controller wants to cause a disc subunit to playback an audio-track (for example $Track\ 2$) on the disc subunit.

1) Configures the source plug 0.

Configure object_ and_ plug_ type_ specific_ information.

	cont	ents	parameter	byte
common	opcode		0xD1 (CONFIGURE)	1
command	result		0xFF	1
header part	subfunction		0x01 (configuration_ state = set a specified configuration)	1
	reserved		0x00	1
plug_	config_ plug	plug_ type	0x00 (source plug)	1
identifier	0-1 0	plug_ id	0x00 (plug 0)	1
_ part				
original	info_ block_ typ	pe e	0x8807 (plug configuration info block)	2
	configuration	AV_ object_ type	0x01 (Audio Track)	1
	_ information	audio_ mute	0b0 (external audio muting is not in	1
			effect)	
		internal_ mute_ off	0b0 (internal muting is on)	
		variable_ pitch_ value	0x00 (0 cent)	1
		variable_speed_value	0x0000 (0%)	2

Configure playback order.

	cont	ents	parameter	byte
common	opcode		0xD1 (CONFIGURE)	1
command	result		0xFF	1
header part	subfunction1		0x01 (configuration_ state = set a specified configuration)	1
	reserved		0x00	1
plug_	config_ plug	plug_ type	0x00 (source plug)	1
identifier	0-1 0	plug_ id	0x00 (plug 0)	1
_ part				
original	info_ block_ typ	oe e	0x8808 (playback order configuration info block)	2
	configuration	playback order	0x00 (in order)	1
	_ information	repeat mode	0b00 (play the list specified in the	1
			configuration then stop)	
		track boundary operation	Ob00 (no special operation at the track boundary)	1



Associates Audio child contents list to source plug 0.

	cont	ents	parameter	byte
common command	opcode		0xD3 (ASSOCIATE LIST WITH PLUG)	1
header	result		0xFF	1
part	subfunction1		0x01	1
			(association_ state = set a specified list/plug association)	
	reserved		0x00	1
plug_	associated_	plug_ type	0x00 (source plug)	1
identifier_	plug	plug_ id	0x00 (plug 0)	1
part				
descriptor	associated_	descriptor_ type	0x10 (object list descriptor -	1
_	list_id		specified by list ID)	
identifier_		list_ ID	0x1001 (list ID = Audio child	2
part			contents list)	

2) Searches desired object_ position. A track on the MD (without MD-clip) is specified.

	cont	ents	parameter	byte
common	opcode		0x50 (SEARCH)	1
command	result		0xFF	1
header	subfunction1		0x01 (search_ type = absolute_	1
part			unit)	
	reserved		0x00	1
plug_	source_ plug	plug_ type	0x00 (source plug)	1
identifier	_1 0	plug_ id	0x00 (plug 0)	1
_ part				
control	measurement_	unit	0x00 (track)	1
position_	count		0x0001 (example; search for track	2
indicator			2)	
_ part				
/original				

3) Playbacks specified source plug.

	cont	ents	parameter	byte
common	opcode		0xC3 (PLAY)	1
command	result		0xFF	1
header	subfunction1		0x75 (FORWARD: Playback at	1
part			normal speed)	
	reserved		0x00	1
plug_	source_ plug	plug_ type	0x00 (source plug)	1
identifier	_1 0	plug_ id	0x00 (plug 0)	1
_ part				



B.2.2. Special Playbacks Using Configuration (Shuffle Playback and Random Playback)

Scenario: The controller wants to cause a disc subunit to playback the audio-track on the disc subunit with the special playback mode.

1) Configures the source plug in the same manner as described in B.2.1. Sets a playback_ order in accordance with the special playback mode.

Configure playback order.

	cont	ents	parameter	byte
common	opcode		0xD1 (CONFIGURE)	1
command	result		0xFF	1
header part	subfunction1		0x01 (configuration_ state = set a specified configurations)	1
	reserved		0x00	1
plug_	config_ plug	plug_ type	0x00 (source plug)	1
identifier	0-1 0	plug_ id	0x00 (plug 0)	1
_ part				
original	info_ block_ typ	pe	0x8808 (playback order configuration info block)	2
	configuration	playback order	0x01 (shuffle) or 0x02 (Random)	1
	_ information	repeat mode	0b00 (play the list specified in the configuration then stop)	1
		track boundary operation	0b00 (no special operation at the track boundary)	1

2) Playbacks the specified source plug in the same manner as described in B.2.1.

B.2.3. Program Playback Using Performance list

Scenario: The controller wants to cause a disc subunit to playback the audio-track on the disc subunit according to the main performance list.

1) Disc subunit (MD) already has a root performance list and main performance lists, which are child lists of root performance list. The number of main performance lists depends on implementation.

At first, a main performance list has no performance object. The controller creates some performance objects into the main performance list using CREATE DESCRIPTOR command. The structure of the performance object depends on the subunit. For example, some subunits have performance objects only with descriptor_ reference_ info_ block, but others have performance objects with descriptor_ reference_ info_ block and content_ entry_ point_ info_ block.

Open the main performance list for write access.

\mathbf{Q}	pen the mam	performance list for write access.		
		contents	parameter	byte
	opcode		0x08 (OPEN DESCRIPTOR)	1
	descriptor_ identifier	descriptor_ type	0x10 (object list descriptor - specified by list ID)	1



list_ II	Ox1404 (ID of main performance list)	2
sub function	0x03 (WRITE OPEN)	1
reserved	0x00	1

Create a performance object.

	cont	ents	parameter	byte
common	opcode		0x0C (CREATE DESCRIPTOR)	1
command	result		0xFF	1
header part	subfunction	1	0x00 (create new descriptor)	1
	reserved		0x00	1
descriptor_ identifier	descriptor_ identifier	descriptor_ type	0x20 (object entry descriptor - specified by object position)	1
where	lucitanci	list_ ID	0x1404 (ID of main performance list)	2
		object_ position	0x0000	2
descriptor_ identifier	descriptor_ identifier	descriptor_ type	0x22 (object - specified by object type)	1
what	identifier	object_ type	0xB1 (performance object)	1

Write performance_list AV_content_object_reference

contents		parameter	byte	
opcode			0x07 (WRITE INFO BLOCK)	1
info_	number_ of_ le	evels	0x02	1
block_ reference	descriptor_ ty	ре	0x20 (object list descriptor - specified by list ID)	1
path	list_ ID		0x1404 (main performance list)	2
patri	object_ positio	n	0x0000 (object_ entry[0])	2
	descriptor_ ty	pe	0x30 (info block - specified by type and instance position)	1
	info_ block _ty	pe	0x000F (descriptor_ reference_ info_ block)	
	instance_ cour	nt	0x00	1
subfunction	"partial replac	e"	0x50 (partial_ replace)	1
group_ tag			0x00 (immediate)	1
replacement	t_data_ length		0x05	1
address	• •		0x00	1
original_dat	a_length		0x05	1
replacement_info_ block_ data (AV content object		descriptor_ type	0x20 (object entry descriptor - specified by object position)	1
reference)	oncent object	list_ ID	0x1001 (Audio child contents list)	2
		object_ position	0x0002 (ex; track 3)	2

Write performance_list presentation start time (H:M:S:x10ms = 0:00:00:00)

	contents	parameter	byte
opcode		0x07 (WRITE INFO BLOCK)	1
info_	number_ of_ levels	0x02	1
block_ reference_	descriptor_ type	0x20 (object list descriptor - specified by list ID)	1
nath			



list_ ID			0x1404 (main performance list)	2
object_ positio	n		0x0000 (object_ entry[0])	2
descriptor_ ide	entifier		0x30 (info block - specified by type	1
			and instance position)	
info_ block _ty	/pe		0x800E (presentation_ start_ time_	2
			info_ block)	
instance_ cour	nt		0x00	1
subfunction "partial replace	e"		0x50 (partial_replace)	1
group_ tag			0x00 (immediate)	1
replacement_data_ length			0x06	1
address			0x00	1
original_data_length			0x06	1
replacement_info_ block_	indicator_ typ	e	0x09 (absolute_ clock_ time)	1
data (presentation_	absolute	hours	0x0000	2
start_time_info_block)	clock time	minutes	0x00	1
	position	seconds	0x00	1
	specification	x10ms	0x00	1

Write performance_list_presentation end time (all FF means that the presentation_ end_ time is the same as the performance end time)

	cont	ents		parameter	byte
opcode	opcode			0x07 (WRITE INFO BLOCK)	1
info_	number_ of_ le	evels		0x02	1
block_ reference_	descriptor_ ty	pe		0x20 (object list descriptor - specified by list ID)	1
path	list_ ID			0x1404 (main performance list)	2
patri	object_ positio	n		0x0000 (object_ entry[0])	2
	descriptor_ide	entifier		0x30 (info block - specified by type and instance position)	1
	info_ block _ty	pe		0x800F (presentation_ end_ time_ info_ block)	2
	instance_ cour	nt		0x00	1
subfunction	"partial replace	e"		0x50 (partial_replace)	1
group_ tag				0x00 (immediate)	1
replacemen	t_data_ length			0x06	1
address				0x00	1
original_dat	ta_length			0x06	1
replacemen	t_info_ block_	indicator_ typ	e	0x09 (absolute_ clock_ time)	1
data (presentation_ end_ absolute		~ .	hours	0xFFFF	2
time_info_	time_ info_ block)		minutes	0xFF	1
		position	seconds	0xFF	1
		specification	x10ms	0xFF	1

Write performance_ list content entry point (H:M:S:x10ms = 0:00:00:00)

	contents	parameter	byte
opcode		0x07 (WRITE INFO BLOCK)	1
info_	number_ of_ levels	0x02	1
block_			
reference_			



descriptor_ ty	pe		0x20 (object list descriptor - specified by list ID)	1
list_ ID			0x1404 (main performance list)	2
object_ position	n		0x0000 (object_ entry[0])	2
descriptor_ id	entifier		0x30 (info block - specified by type and instance position)	1
info_ block _ty	ype		0x8010 (content_ entry_ point_ info_ block)	2
instance_ cou	nt		0x01	1
subfunction "partial replac	e"		0x50 (partial_ replace)	1
group_ tag			0x00 (immediate)	1
replacement_data_ length			0x06	1
address			0x00	1
original_data_length			0x06	1
replacement_info_ block_	indicator_ typ	e	0x09 (absolute_ clock_ time)	1
data (content entry point) absolute hou		hours	0x0000	2
	clock time	minutes	0x00	1
	position	seconds	0x00	1
	specification	x10ms	0x00	1

Write performance_list_content exit point (H:M:S:x10ms = FFFF:FF:FF:FF = at the end)

	cont	•		parameter	byte
opcode	opcode			0x07 (WRITE INFO BLOCK)	1
info_	number_ of_ levels		0x02	1	
block_ referenc	descriptor_ type			0x20 (object list descriptor - specified by list ID)	1
e_ path	list_ ID			0x1404 (main performance list)	2
o_ patri	object_ position			0x0000 (object_ entry[0])	2
	descriptor_ iden	tifier		0x30 (info block - specified by type and instance position)	1
	info_ block _type	9		0x8011 (content_ exit_ point_ info_ block)	2
	instance_ count			0x02	1
subfunction	on "partial replace	e"		0x50 (partial_replace)	1
group_ ta	g			0x00 (immediate)	1
replaceme	ent_data_ length			0x06	1
address				0x00	1
original_d	lata_length			0x06	1
info_ bloc	k_ data (content	indicator_ typ	e	0x09 (absolute_ clock_ time)	1
exit point)	absolute	hours	0xFFFF	2
		clock time	minutes	0xFF	1
		position	seconds	0xFF	1
		specification	x10ms	0xFF	1

Above-mentioned operations, once CREATE DESCRIPTOR and four times WRITE INFO BLOCK, makes one performance object. Controller repeats the operations according to the necessity.

CLOSE (Relinquish use of the descriptor)



	contents	parameter	byte
opcode		0x08 (OPEN DESCRIPTOR)	1
descriptor_ identifier	descriptor_ type	0x10 (object list descriptor - specified by list ID)	1
Identifier	list_ ID	0x1404 (ID of main performance list)	2
sub function		0x00 (CLOSE)	1
reserved		0x00	1

- 2) Configures the source plug and playback order in the same manner as described in B.2.1.
- 3) Associate the main performance list with plug 0.

	cont	ents	parameter	byte
common command	opcode		0xD3 (ASSOCIATE LIST WITH PLUG)	1
header	result		0xFF	1
part	subfunction1		0x01	1
			(association_ state = set specified list/plug association)	
	reserved		0x00	1
plug_	associated	plug_ type	0x00 (source plug)	1
identifier _part	plug	plug_ id	0x00 (plug 0)	1
descripto r_	associated_ list_id	descriptor_ type	0x10 (object list descriptor - specified by list ID)	1
identifier _ part	1100_10	list_ ID	0x1404 (ID of main performance list)	1

4) Playbacks specified source plug.

	cont	ents	parameter	byte
common	opcode		0xC3 (PLAY)	1
command	result		0xFF	1
header part	subfunction1		0x75 (FORWARD: Playback at	1
part	part		normal speed)	
	reserved		0x00	1
plug_	source_ plug	plug_ type	0x00 (source plug)	1
identifier		plug_ id	0x00 (plug 0)	1
_ part				



B.3. Record

B.3.1. New Record

Scenario: The controller copies a track from CD to MD (without MD-clip).

- 1) Executes CONFIGURE source plug and SEARCH to the source (CD) in the same manner as described in B.2.1.
- 2) Executes CONFIGURE destination plug the Destination (MD), such as setting of monaural /stereo.

Configure destination plug 0.

	cont	ents		parameter	byte
common	opcode			0xD1 (CONFIGURE)	1
command	result			0xFF	1
header part	subfunction			0x01 (configuration_ state = set a specified configurations)	1
	reserved			0x00	1
plug_	config_ plug	plug_typ	e	0x01 (destination plug)	1
identifier _ part		plug_ id		0x00 (plug 0)	1
original	info_ block_ typ	ре		0x8807 (plug configuration info block)	2
	configuration	AV_ object	t_ type	0x80 (Audio Track)	1
	$_{-}$ information	object_	audio_	0b0 (Not configured for audio_	1
		and_	synchro_ rec	synchro_ rec feature.)	
		plug_	increment	0b0 (increment position number)	
		type_	position		
		specific_	number		
		info	level_ sync_ on_off	0b0	
		audio_ re		0x01 (44.1kHz)	1
			_ frequency		
		audio_ re		0x10 (16bit)	1
		sample_s	_		
		audio_ co	mpression_	0x90 (ATRAC)	1
		mode			
		audio_ re	cording_	0x00 (stereo)	1
		channel_	_		
		audio_ re	cording_ volume	0x0400 (gain:+0dB)	2

3) Issues a RECORD command to the destination

	contents	parameter	byte
common	opcode	0xC2 (RECORD)	1
command	•	•	



	result		0xFF	1
	subfunction1		0x75 (rec_ state = Forward)	1
	subfunction2		0x00 (rec_ mode = New)	1
plug_	destination	plug_ type	0x01 (destination plug)	1
identifier	plug	plug_ id	0x00 (plug 0)	1
_ part				
original	new_ object_ po	osition_ number	0xFFFF	2

4) Issues a PLAY command to the source (CD), as described B.2.1

B.3.2. Overwrite Record

Scenario: The controller overwrites a specific truck of CD in a specific place of MD (without MD-clip).

- 1) CONFIGURE and SEARCH are executed to source equipment (CD) in the same manner as described in B.2.1.
- 2) CONFIGURE is executed to MD in the same manner as described in B3.1.
- 3) The recording place is confirmed by using PLAY, SEARCH, and REHEARSAL, etc. with MD, if it is necessary.
- 4) RECORD (overwrite) is executed.

	contents		parameter	byte
common	opcode		0xC2 (RECORD)	1
command	result		0xFF	1
header	subfunction1		0x75 (rec_ state = Forward)	1
part	subfunction2		0x01 (rec_ mode = Overwrite)	1
plug_	destination_	plug_ type	0x01 (destination plug)	1
identifier	plug	plug_ id	0x00 (plug 0)	1
_ part				
original	new_ object_ position_ number		0xFFFF	2
control_	indicator_ type		0x00 (relative_ HMSF_ count)	1
position_	indicator_	object_ position_ number	0x0002 (ex; Track 3)	2
indicator _ part	type_	+/-	0b0 (plus)	1
_ par t	specification	hours	0b000 0000 (0)	
		minutes	0x00 (0)	1
		seconds	0x00 (0)	1
		frames	0x00 (0)	1

5) PLAY is executed to source equipment (CD) in the same manner as described in B.2.1.

B.4. Write Track Title Using Descriptor

Scenario: Soon after recording, the controller accesses text_database_list and write track title.

Subunit already has text database list structures, but no title data. The text database list has the same number of empty text database objects as the number of audio tracks on MD. In the case of



MD-Audio, text database list id for UTOC1 is 0x1802, for UTOC4 is 0x1803. The character code of the character_code_info_block of text database objects is defined in reference [6].

1) Open the text database list of MD.

	contents	parameter	byte
opcode		0x08 (OPEN DESCRIPTOR)	1
descriptor_ identifier	descriptor_ type	0x10 (object list descriptor - specified by list ID)	1
racitaties	list_ ID	0x1803 (ID of text database list)	2
sub function		0x03 (WRITE OPEN)	1
reserved		0x00	1

2) Write title into the text database list.

	contents	parameter	byte
opcode		0x07 (WRITE INFO BLOCK)	1
info_	number_ of_ levels	0x02	1
block_ reference	descriptor_ type	0x20 (object list descriptor - specified by list ID)	1
_ path	list_ ID	0x1803 (ID of text database list)	2
_ patri	object_ position	0x0000 (object_ entry[0])	2
	descriptor_ identifier	0x30 (info block - specified by type and instance position)	1
	info_ block _type	0x000A (raw_text_info_block)	2
	instance_ count	0x00	1
subfunctio	n "partial replace"	0x50 (partial_replace)	1
group_ tag		0x00 (immediate)	1
replaceme	nt_data_ length	0xn	1
address		0x00	1
original_da	ata_length	0x00	1
replaceme	nt_info_ block_ data (raw_ text data)	(Track 0 title in MD-specific character code)	n

3) Close the text database list.

	contents	parameter	byte
opcode		0x08 (OPEN DESCRIPTOR)	1
descriptor_ identifier	descriptor_ type	0x10 (object list descriptor - specified by list ID)	1
lucitation	list_ ID	0x1803 (ID of text database list)	2
sub function		0x00 (CLOSE)	1
reserved		0x00	1

B.5. Edit MD (without MD-clip)

B.5.1. Combine



Scenario: The controller replays two tracks of MD (without MD-clip) continuously with REHEARSAL command, then connects the two tracks into one with COMBINE command.

- 1) Executes CONFIGURE in the same manner as described in B.2.1.
- 2) Replays two tracks continuously with REHEARSAL command and confirms the result of combination.

Tesult		С	ontents		parameter	byte	
Neader part Subfunction		opcode			0xC7 (REHEARSAL)	1	
Date Subfunction Feserved Display Di		result			0xFF	1	
Number of parts 0b01 (2parts) 1 (in repetition) 1		subfunction	n1 reserved		0b00000	1	
Plug_ identifier	part		number of	parts	0b01 (2parts)		
Plug_ identifier			repeat		1 (in repetition)		
Identifier		reserved			0x00	1	
Identifier	plug_	source_ plug				1	
Control_range_indicator_part (part_1_1 info) Figure (part_1_2 info) Position_indicator_part (part_1_2 info) Position_point) Position_point) Position_point) Position_point) Position_part (out-point) Position_part (out-point) Position_part (out-point) Position_part (inpoint) Position_part (out-point) Position_part (inpoint) Posi			plug_ id		0x00 (plug 0)	1	
Part	_ part						
Indicator	control_	position_	indicator_ typ	e	0x00 (relative_ HMSF_ count)	1	
Part (inpoint)		•				2	
Point Poin		part (in-	type_	•			
Figure F	•	point)		-			
Position Indicator Indic				+/-	0b0 (plus)	1	
Position indicator type object	,			hours	0b000 0000 (0)		
Position indicator type ox00 (relative HMSF count) 1				minutes	0x00 (0)	1	
position				seconds		1	
indicator_part (out-point) Indicator_position_position_position_point) Indicator_type_seconds Indicator_part (in-point) Indicator_part				frames	0x00 (0)	1	
Indicator part (out point) Indicator type position number Part (out point) Specification Part (out point) Specification Part (out point) Part (out po		position indicator type		e	0x00 (relative HMSF count)	1	
part (out-point)		-				2	
point specification number				•	,		
+/- 0b0 (plus) 1		-	· -	-			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			•		0b0 (plus)	1	
Seconds Seco					-		
Seconds OxFF 1				minutes	0xFF	1	
control_ range_ indicator _ part (part_ 2_ info) position_ indicator_ point) indicator_ type _ position_ number 0x000 (relative_ HMSF_ count) 1 hours _ part (part_ 2_ info) 2				seconds	0xFF	1	
range indicator					frames	0xFF	1
Indicator	control_	position	indicator typ	e	0x00 (relative HMSF count)	1	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		-			· · · · · · · · · · · · · · · · · · ·	2	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		part (in-	_	•	,		
+/- 0b0 (plus) 1	(part_ 2_			_			
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$			•		0b0 (plus)	1	
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$				_	-		
seconds 0x00 (0) 1 frames 0x00 (0) 1 position_ indicator_type 0x00 (relative_HMSF_count) 1					, ,	1	
						1	
position_ indicator_ type					· ·	1	
position_ maleutor_type		position	indicator typ			1	
indicator_		•	i marcacor_ cyp	-		ı	
part (out-		_					



ir	ndicator_	object_	0x0002 (ex; Track 3)	2
ty	ype_	position_		
S]	pecification	number		
		+/-	0b0 (plus)	1
		hours	0b111 1111	
		minutes	0xFF	1
		seconds	0xFF	1
		frames	0xFF	1

3) Connects two tracks into one with a COMBINE command.

	contents		parameter	byte
common	opcode		0x41 (COMBINE)	1
command	result		0xFF	1
header part	reserved		0x00	1
	reserved		0x00	1
descriptor_ identifier_	anchor_object	descriptor_ type	0x20 (object entry descriptor - specified by object position)	1
part		list_ ID	0x1001 (Audio child contents list)	2
		object_ position	0x0001 (ex; Track 2)	2
descriptor_ identifier_	relocated_object	descriptor_ type	0x20 (object entry descriptor - specified by object position)	1
part		list_ ID	0x1001 (Audio child contents list)	2
		object_ position	0x0002 (ex; Track 3)	2

B.5.2. Divide

Scenario: The controller playbacks one track on the MD (without MD-clip) with a REHEARSAL command before or after the dividing point, then divide the track into two tracks at the dividing point with a DIVIDE command.

- 1) Executes CONFIGURE in the same manner as described in B.2.1.
- 2) Replays the track before or after the dividing point and confirms the result.
- 3) Divides one track into two with a DIVIDE command.

B.5.3. Erase (partial)

Scenario: The controller replays the track continuously before and after the dividing point and erases a part of the track with an ERASE command.

- 1) Executes CONFIGURE in the same manner as described in B.2.1.
- 2) Replays the track continuously before and after the erasing point and confirms the result of Partial Erase.
- 3) Executes an ERASE command.



B.5.4. Undo

Scenario: After confirming undo status in the status descriptor of MD (without MD-clip), the controller executes undo.

	contents	parameter	byte
opcode		0x08 (OPEN DESCRIPTOR)	1
descriptor_ identifier	descriptor_ type	0x11 (object list descriptor - specified by list type)	1
identifier	list_type	0x80 (disc subunit status descriptor)	1
sub function		0x03 (WRITE OPEN)	1
reserved		0x00	1

Read status descriptor undo status

	contents	parameter	byte
opcode		0x06 (READ INFO BLOCK)	1
info_	number_ of_ levels	0x02	1
block_ reference	descriptor_ type	0x11 (object list descriptor - specified by list type)	1
_ path	list_ type	0x80 (disc subunit status descriptor)	1
	descriptor_ identifier	0x30 (info block - specified by type and instance position)	1
	info_ block _type	0x8800 (general_ disc_ subunit_ status_ area_ info_ block)	2
	instance_ count	0x00	1
	descriptor_ identifier	0x30 (info block - specified by type and instance position)	1
	info_ block _type	0x8804 (media_ and_ edit_ status_ info_ block)	2
	instance_ count	0x00	1
read_ resu	lt_ status	0xFF	1
reserved		0x00	1
data_ length		0x01	1
offset (offs header)	set form the beginning of the info block	0x07	1

CLOSE (Relinquish use of the INFO BLOCK)

	contents	parameter	byte
opcode		0x08 (OPEN DESCRIPTOR)	1
descriptor_ identifier	descriptor_ type	0x11 (object list descriptor - specified by list type)	1
	list_ type	0x80 (disc subunit status descriptor)	1
sub function		0x00 (CLOSE)	1
reserved		0x00	1



contents		parameter	byte
common command header part	opcode	0x44 (UNDO)	1
	result	0xFF	1
	reserved	0x00	1
	reserved	0x00	1

B.6. Get Subunit Status

Scenario: The controller normally playbacks the MD (without MD-clip) and requests an ending message when the playback finishes to proceed to the next control.

contents		parameter	byte
common command header part	opcode	0xD0 (DISC STATUS)	1
	result	0xFF	1
	subfunction 1	0x01 (status type : specified info block	1
	reserved	0x00	1
info_ block_ reference _ path	number_ of_ levels	0x04	1
	descriptor_ type	0x11 (object list descriptor - specified by list type)	1
	list_ type	0x80 (disc subunit status descriptor)	1
	descriptor_ identifier	0x30 (info block - specified by type and instance position)	1
	info_ block _type	0x8802 (source_ plug_ status_ area_info_block)	2
	instance_ count	0x00	1
	descriptor_ identifier	0x30 (info block - specified by type and instance position)	1
	info_ block _type	0x8805 (plug_status_info_block)	2
	instance_ count	0x00	1
	descriptor_ identifier	0x30 (info block - specified by type and instance position)	1
	info_ block _type	0x8806 (operating_ mode_ info_ block)	2
	instance_ count	0x00	1

B.7. Other Commands

B.7.1. Increment Track Count

Scenario: increment a track count during recording operation.

- 1) The controller makes the MD record in the procedures shown in B.3.1.
- 2) Increments the track count by a INCREMENT OBJECT POSITION NUMBER command.

contents	parameter	byte



common command header part	opcode		0x51 (INCREMENT OBJECT POSITION NUMBER)	1
	result		0xFF	1
	reserved		0x00	1
	reserved		0x00	1
plug_ identifier	destination	plug_ type	0x01 (destination plug)	1
	plug	plug_ id	0x00 (plug 0)	1
_ part				

