

Encoder Settings for The Pioneer HD-V9000

Pioneer Corp.
March 2010

Introduction

The set values as defined on this page are divided into "Broadcast System (NTSC/PAL), CODEC (MPEG-2, H.264/AVC), and each of its usage."

Usage is defined to mean "Normal HD video, High quality HD video, Long time HD video, Standard Definition (SD) video." The purpose of this data is to offer support for the various encoding parameters required for use with the player. Its purpose is to use the data as a reference/check sheet of your encoded content.

These set values were tested and confirmed by Pioneer Corp.. Changes in the set values are possible based on customer's requirements. If the set values are changed, please confirm the decipherment by using the HD-V9000 before the actual application operation is scheduled to start.

The video bitrates noted in this list show the value as it pertains to the video. The set values that exist in this list can change without notice.

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Confirmed operation encoders

The encoding software used for playback testing and use with the HD-V9000 and its associated programming were as follows:

MPEG2

Soft Vender	Application	Revision	Note
MainConcept	MPEGPro HD V3	3.1 3.3	Plug-in of Adobe Premiere Pro
MainConcept	MPEGPro HD 4	4.02	Plug-in of Adobe Premiere Pro
MainConcept	Reference	1.6	
Canopus	ProCoder 3	3.03	

H.264/AVC

Soft Vender	Application	Revision	Note
MainConcept	MPEGPro HD V3	3.1 3.3	Plug-in of Adobe Premiere Pro
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MainConcept	Reference	1.6	
Canopus	ProCoder 3	3.03	

Please refer to the set value(s) in the attached table for a detailed parameter listing. This list might be updated by the information addition.

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Confirmed Encoder Setting Parameters

Tested encoder

MainConcept MPEGPro HD V3
 MainConcept MPEGPro HD 4
 MainConcept Reference
 Canopus ProCoder 3

Date: February 2010

Tested parameter

MPEG-2

		Application name				
		Items	: Parameter set	MainConcept MPEGPro HD V3	MainConcept Reference	Canopus ProCoder 3
<For Japan and North America>	Normal HD parameter	Multiplex Type	:MPEG2 Transport Stream	Good	No Good (Because the application cannot select LPCM. The MPEG1-Layer 2 is Good when changed to Dolby Digital)	Good
		Profile@Level	:MP@HL			
		Frame Size	:1920*1080i			
		Frame Rate	:29.97fps			
	High quality HD parameter	Multiplex Type	:MPEG2 Transport Stream	Good	Good	Good
	Profile@Level	:422P@HL				
	Frame Size	:1920*1080i				
	Frame Rate	:29.97fps				
	Long time HD parameter	Multiplex Type	:MPEG2 Transport Stream	Good	Good	Good
	Profile@Level	:MP@HL				
	Frame Size	:1920*1080i				
	Frame Rate	:29.97fps				
	SD parameter	Multiplex Type	:MPEG2 Transport Stream	Good	Good	Good
	Profile@Level	:MP@ML				
	Frame Size	:720*480i				
	Frame Rate	:29.97fps				
<For Europe>	Normal HD parameter	Multiplex Type	:MPEG2 Transport Stream	Good	No Good (Because the application cannot select LPCM. The MPEG1-Layer 2 is Good when changed to Dolby Digital)	Good
		Profile@Level	:MP@HL			
		Frame Size	:1920*1080i			
		Frame Rate	:25fps			
		High quality HD parameter	Multiplex Type	:MPEG2 Transport Stream	Good	Good
	Profile@Level	:422P@HL				
	Frame Size	:1920*1080i				
	Frame Rate	:25fps				
	Long time HD parameter	Multiplex Type	:MPEG2 Transport Stream	Good	Good	Good
	Profile@Level	:MP@HL				
	Frame Size	:1280*720p				
	Frame Rate	:50fps				
	SD parameter	Multiplex Type	:MPEG2 Transport Stream	Good	Good	Good
	Profile@Level	:MP@ML				
	Frame Size	:720*576i				
	Frame Rate	:25fps				

Note: Please check with encoding manufacturer regarding their requirements for setting up the encoding parameters

Confirmed Encoder Setting Parameters

Tested encoder

MainConcept MPEGPro HD V3
 MainConcept MPEGPro HD 4
 MainConcept Reference
 Canopus ProCoder 3

Date: February 2010

Tested parameter

H.264/AVC

Tested parameter		Application name			
		MainConcept MPEGPro HD V3	MainConcept Reference	Canopus ProCoder 3	
<For Japan and North America>	Normal HD parameter	Multiplex Type :MPEG2 Transport Stream Profile@Level :HP@L4.1 Frame Size :1920*1080i Frame Rate :29.97fps Field Order :Top Field First Video Bitrate :30Mbps CBR/VBR :CBR entropy coding :CABAC (If the bitrate exceeds 30Mbps, it is necessary to make it to CAVLC) IDR Frequency :1 I Frame Distance :15 Sequence Parameter Set :Per IDR	Good	Good	Good
	High quality HD parameter	Multiplex Type :MPEG2 Transport Stream Profile@Level :HP@L4.1 Frame Size :1920*1080i Frame Rate :29.97fps Field Order :Top Field First Video Bitrate :45Mbps CBR/VBR :CBR entropy coding :CAVLC IDR Frequency :1 I Frame Distance :15 Sequence Parameter Set :Per IDR Audio :LPCM SMPTE302M Quantization 16bit Sampling rate 48KHz	Good	Good	No Good (Because the application cannot select LPCM. The MPEG1-Layer 2 is Good when changed to Dolby Digital)
	Long time HD parameter	Multiplex Type :MPEG2 Transport Stream Profile@Level :MP@L4.1 Frame Size :1920*1080i Frame Rate :29.97fps Field Order :Top Field First Video Bitrate :10Mbps CBR/VBR :CBR entropy coding :CABAC (If the bitrate exceeds 30Mbps, it is necessary to make it to CAVLC) IDR Frequency :1 I Frame Distance :33 Sequence Parameter Set :Per IDR Audio :MPEG1-Layer2 224kbps	Good	Good	Good
<For Europe>	Normal HD parameter	Multiplex Type :MPEG2 Transport Stream Profile@Level :HP@L4.1 Frame Size :1920*1080i Frame Rate :25fps Field Order :Top Field First Video Bitrate :30Mbps CBR/VBR :CBR entropy coding :CABAC (If the bitrate exceeds 30Mbps, it is necessary to make it to CAVLC) IDR Frequency :1 I Frame Distance :13 Sequence Parameter Set :Per IDR Audio :MPEG1-Layer2 224kbps	Good	Good	Good
	High quality HD parameter	Multiplex Type :MPEG2 Transport Stream Profile@Level :HP@L4.1 Frame Size :1920*1080i Frame Rate :25fps Field Order :Top Field First Video Bitrate :45Mbps CBR/VBR :CBR entropy coding :CAVLC IDR Frequency :1 I Frame Distance :13 Sequence Parameter Set :Per IDR Audio :LPCM SMPTE302M Quantization 16bit Sampling rate 48KHz	Good	Good	No Good (Because the application cannot select LPCM. The MPEG1-Layer 2 is Good when changed to Dolby Digital)
	Long time HD parameter	Multiplex Type :MPEG2 Transport Stream Profile@Level :MP@L4.1 Frame Size :1280*720p Frame Rate :50fps Video Bitrate :10Mbps CBR/VBR :CBR entropy coding :CABAC (If the bitrate exceeds 30Mbps, it is necessary to make it to CAVLC) IDR Frequency :1 I Frame Distance :33 Sequence Parameter Set :Per IDR Audio :MPEG1-Layer2 224kbps Sampling rate 48KHz	Good	Good	Not Good (The application doesn't correspond to 720p/50fps.)

Note: Please check with encoding manufacturer regarding their requirements for setting up the encoding parameters

Content Production Notes For Playback With The Pioneer HD-V9000

1. Production of the video file must be produced using MPEG-TS, (Transport Stream).
HD-V9000 cannot playback ES (Elementary Stream) file(s).
 2. MPEG2-TS, (Transport Stream) should follow the Codec, Profile, Bitrate, and Parameter settings noted in the below "Video Format Lists" and the "Audio Format Lists"
 3. Multiplexing of the audio stream with the video stream is required.
In case(s) where the video does not include audio, it is necessary to multiplex a silent audio stream.
 4. Create the video with "TOP FIELD FAST" for interlace video.
 5. Include SH (Sequence Header) in the head of "GOP" of MPEG 2 video encoded file.
 6. Include SPS, (Sequence Parameter Set) of H.264 video encoded file.
 7. The interval for I (IDR) and P frames is three. (example: I B B P B B P)
 8. Encode must use the parameter value noted on associated page.
- If the user sets using original parameter(s), problems could occur with playback of content
User should test the video playback with HD-V9000 before starting the applications operation.

Encode case list

TV SYSTEM	Codec	Usage		Detail Parameter
NTSC Frame Rate 29.97fps (for Japan and North America)	H.264/AVC	Normal HD	==>	Click!
		High Quality HD	==>	Click!
		Long Time HD	==>	Click!
	MPEG2	Normal HD	==>	Click!
		High Quality HD	==>	Click!
		Long Time HD	==>	Click!
PAL Frame Rate 25fps (for Europe)	H.264/AVC	Normal HD	==>	Click!
		High Quality HD	==>	Click!
		Long Time HD	==>	Click!
	MPEG2	Normal HD	==>	Click!
		High Quality HD	==>	Click!
		Long Time HD	==>	Click!
		SD (Standard Definition)	==>	Click!

Video formats Lists

Container	Video				Audio Codec	
	Codec	Profile@Level	Bitrate (max)	Format		
MPEG2-TS (ISO/IEC 13818-1)	MPEG-2 (ISO/IEC 13818-2)	MP@ML	15Mbps	720x480/59.94i	LPCM MPEG-1 Audio Layer II (MP2) Dolby Digital	
		422P@ML	50Mbps	720x576/50i		
		MP@HL	60Mbps	1280x720/50p,59.94p		
		422P@HL	60Mbps	1440x1080/50i,59.94i		
	H.264/AVC (ISO/IEC 14496-10)	MP@L3.1	14Mbps	720x480/59.94i	LPCM MPEG-1 Audio Layer II (MP2) Dolby Digital AAC (MPEG-4 AAC LC)	
		MP@L4.1	50Mbps(CAVLC)	1280x720/50p,59.94p		
			30Mbps(CABAC)			
		HP@L4.1	50Mbps(CAVLC)			1440x1080/50i,59.94i
			30Mbps(CABAC)			1920x1080/50i,59.94i
		H422@L4.0	50Mbps(CAVLC)			
20Mbps(CABAC)						

- Manufactured under license from Dolby Laboratories. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories.
- Use files with the extensions ".m2t" and ".mpg".
- Only file names in ASCII format can be recognized.
- When menu operations, network connections or other such operations are performed while playing video files with a high bit rate, the picture or sound may sometimes stop or be disturbed.
- Regardless of the video file's bit rate, the picture or sound may stop or be disturbed if the SD memory card operation(s) (copying, deleting, etc.) are performed during playback.

Audio Formats Lists

Codec	No. channels	Sampling Frequency	Quantize bit no./ Bit rate	Remarks
LPCM	2CH	48kHz	16bit	Conforms to SMPTE 302M-2002
MPEG-1 Audio Layer-2	2CH	48kHz	384kbps	ISO/IEC 11172-3
Dolby Digital	2CH	48kHz	448kbps	Dolby Digital Decoder Implementation kit
AAC(MPEG-4 AAC LC)	2CH	48kHz	288kbps	ISO/IEC 14496-3

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