

HDMI next generation audio data

VT-8500-0006

VT-8500-0008

Instruction Manual

Ver 1.10



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Instruction Manual

2009.11

Ver.1.10

ASTRODESIGN,Inc

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Revision History

Ver.	Date	page	Section No.	Detail
1.00	2008/08/26			First edition
1.10	2009/11/12	23	4.2	Dolby TrueHD Data are added.
		23-27	4.2	CTS Group is added.

Before Using this Option

Introduction

Thank you very much for purchasing VT-8500-0006/0008, High Bit Rate Audio Option.

This manual interprets the Audio data and program data which is stored on CD-ROM. Please read before using this option.

After reading through the manual, keep it in a safe place for future reference.

SAFETY PRECAUTIONS

Inappropriate handling will cause damage. Please read below and handle properly.

For safety usage

Please do not drop any liquid, inflammable objects or metal parts. It may cause a malfunction.

Please do not subject to impact. It may cause a malfunction.

In the unlikely event that trouble or malfunction occurs, please contact your dealer or Astrodesign sales representative.

Configuration of this manual

This manual is instruction of VT-8500-0006/ 0008. This manual will explain the data and matter require attention by following configuration. Please read carefully and handle by proper operation.

Introduction

Mentioning about Safety Precautions, Configuration of this manual and accessories

1 Concerning VT-8500-0006/VT-8500-0008

Mentioning the outline of VT-8500-0006/0008

2 Specification

Mentioning about specification of VT-8500-0006/0008

3 Data storage procedure

Mentioning about the operation of VT-8500-0006/0008

4 Outline of the data provided by CD-ROM

Mentioning about the data which is contained in VT-8500-0006/0008

What is contained in the packing box

The following items are contained in the packing box. Please use the contained item to avoid the malfunction.

Standard accessories

- VT-8500-0006 (or VT-8500-0008) CD-ROM

Concerning the license for use

The terms and conditions of the license governing the right to use the VT-8500-0006/008, which is granted to the user by Astrodesign, are set forth below.

1. Definitions

- 1) The term "programs" denotes all the computer programs and data contained in the VT-8500-0006/0008.
- 2) "The product" is a blanket term which refers to both the programs and the manual of the VT-8500-0006/0008.

2. License for use

The user may use the product on only one computer. One copy may be made for backup purposes only.

3. Copyrights

The copyrights of the product belong to Astrodesign, Inc. which is the developer of the product.

4. Prohibited activities

- 1) The user shall not rent, lease, assign or sublicense the product (hereafter, the term "the product" includes the backup copy) either in whole or in part to any third party.
- 2) The user shall not modify the product in any way.

5. Cancellation of license

Astrodesign may terminate the license to use the product if the user has contravened any of the terms and conditions of this agreement.

6. Diminished responsibility and exemption from responsibility

- 1) The responsibility for the selection, introduction and use of the product for achieving the results which the user expects to obtain and also for the results of the use of the product lies solely with the user.
- 2) The developer and the sales representatives of the product will not be liable under any circumstances either directly or indirectly for any effects of the results obtained through the use of the product.

7. Other

This product may be modified without prior notice.

1

Concerning VT-8500-0006/VT-8500-0008

1.1. General description

VT-8500-0006/VT-8500-0008 is CD-ROM contains next generation audio that is supported by HDMI 1.3 such as One bit Audio, HBR Audio and etc.

VT-8500-006 is supporting all audio option and VT-8500-0008 is supporting Dolby Digital (AC3) and MPEG2-AAC

***Please refer to the VG-870/871 instruction manual with this document. This document does not explain the standard function of VG-870/871.**

1.2. Supporting Audio formats

VG-870 supports the following audio formats as Next generation audio.

Figure 1-1 Next Generation Audio Specs

Audio Formats	Sampling freq : Maximum CH	Formats	Remarks
One Bit Audio(DSD)	2.8224MHz : 7.1ch	Un-compressed Audio	It is able to set mute by each channel. it is able to change settings of audio such as speaker placement and other setting by Audio InforFrame setting of VG-870.
Dolby Digital	48kHz : 5.1ch	Lossy (Un-reversible compression)	Speaker placement depends on the audio data. Regarding L-PCM and DSD, they are changed the speaker placement by Audio InfoFrame setting.
Dolby Digital +	48kHz : 7.1ch	Lossy (Un-reversible compression)	
Dolby TrueHD	48/96kHz : 7.1ch 192kHz : 5.1ch	Lossless (Reversible compression)	
MPEG2-AAC	48kHz : 5.1ch	Lossy (Un-reversible compression)	
DTS Digital Surround	48/192kHz : 5.1ch	Lossy (Un-reversible compression)	
DTS HD High Resolution Audio	48/96kHz : 7.1ch	Lossy (Un-reversible compression)	
DTS HD Master Audio	48/96kHz : 7.1ch 192kHz : 5.1ch	Lossless (Reversible compression)	
DTS_Express	48kHz : 5.1ch	Lossy (Un-reversible compression)	

• Dolby Digital +, Dolby True HD are trade mark of Dolby Laboratories, Inc.

• DTS, DTS-HD High Resolution and DTS-HD Master Audio and DTS_Express are trade mark of Digital Theater Systems, Inc.

1.3. Difference between VT-8500-0006 and VT-8500-0008

Difference of supporting audio formats between VT-8500-0006 and VT-8500-0008 is as below.

Figure1-2 Difference of VT-8500-0006 and VT-8500-0008

Format	VT-8500-0008 (AAC/AC3 option)	VT-8500-0006 (HBR Audio option)	
			I2S output
One Bit Audio(DSD)	--		--
Dolby Digital(AC3)			
Dolby Digital +	--		
Dolby TrueHD	--		
MPEG2-AAC			
DTS Digital Surround	--		
DTS HD High Resolution Audio	--		
DTS HD Master Audio	--		
DTS_Express	--		

1.4. License key

This option will be available with the inputting the license key to the VG-870/871.
With out the license key, this option will not work properly.

2

Specification

Audio function of VG-870/871 (standard and option) is shown as figure 2-1.

Figure 2-1 VG-870 audio specification

Clause		Details			
		Data format	HDMI Transfer Rate	Maximum CH	Remarks
Internal generation	Internal PCM	L-PCM	32 ~ 192kHz	8ch	Sine wave Sweep
	(*1,4) DSD	One Bit Audio	44.1kHz	8ch	Sine wave (depends on the stored data)
	(*1) IEC61937 Format	Dolby Digital	48kHz(*3)	6ch	
		DTS Digital Surround (*4)	48/192kHz(*3)	6ch	
		MPEG2-AAC	48kHz(*3)	6ch	
		Dolby Digital + (*4)	192kHz(*3)	8ch	
		DTS HD High Resolution Audio (*4)	192kHz(*3)	8ch	
		Dolby TrueHD(*4)	768kHz (192kHz × 4) (*3)	8ch	
		DTS HD Master Audio(*4)	768kHz (192kHz × 4) (*3)	8ch	
External input	ANALOG Input	L-PCM(LR 2ch)	32 ~ 192kHz	2ch	Depends on the input data
		DSD(LR 2ch)	44.1kHz	2ch	
	COAXIAL (SPDIF)	L-PCM,AC3,etc...	32 ~ 192kHz	8ch	
	TOSLINK (SPDIF)	L-PCM,AC3,etc...	32 ~ 192kHz	8ch	
	(*1,4) I2S input L-PCM	L-PCM	32 ~ 192kHz	8ch	
	(*1,4) I2S input Non L-PCM	Dolby Digital	48kHz(*3)	6ch	
		DTS Digital Surround	48/192kHz(*3)	6ch	
		MPEG2-AAC	48kHz(*3)	6ch	
		Dolby Digital +	192kHz(*3)	8ch	
		DTS HD High Resolution Audio	192kHz(*3)	8ch	
		Dolby TrueHD	768kHz (192kHz × 4) (*3)	8ch	
		DTS HD Master Audio	768kHz (192kHz × 4) (*3)	8ch	

*1 These formats will be supported by both VT-8500-0006 and VT-8500-0008.

*2 The formats shown by white (except *1) is supported by the VG-870 standard function. Please refer the instruction manual of the VG-870.

*3 The frequency is transfer rate of HDMI. The sampling frequency is up to the audio data.

*4 These formats are supported only by VT-8500-0006. (VT8500-0008 will not support these formats)

2.1. Internal Audio Option

VG-870/871 supports the next generation audio by storing the audio data into VG-870/871.
Audio data of the next generation audio is stored in the CD-ROM VT-8500-0006/VT-8500-0008.
The limitation of the storage of the audio data to VG-870/ 871 is shown in figure 2-2 below.

Figure 2-2 Data Storage

Item	Details	Remarks
Maximum number of audio format data	99 format data each for DSD and IEC61937	Data volume also have limitation
Maximum data volume (Total file size)	64MB	

- The next generation audio that can be generated from VG-870/871 is only the data provided by CD-ROM (VT-8500-0006/0008). For the detail information of the data in the CD-ROM, please refer to "4. Outline of the data provided by CD-ROM"
- If the audio data except attached data is required, please contact ASTRODESIGN or local agent.

2.2. I2S option (Only supported by VT-8500-0006)

• VG-870/871 is able to input next generation audio data by I2S format and store it to the VG-870/871 with specified connector.

Figure 2-3 I2S option

Item		Details	Remarks
MCLK frequency	Fs = 48kHz	24.576MHz	
	Fs = 44.1kHz	22.5792MHz	
Input format		I2S	

- Regarding the specified connector's pin assignment and input procedure, please refer the instruction manual of VG-870 "HDMI Setting Connectors and pin assignments".

3

Data storage procedure

3.1. Internal audio option

3.1.1. How to use program stored in VT-8500-0006/0008

- The procedure of audio data storage and output is shown below.

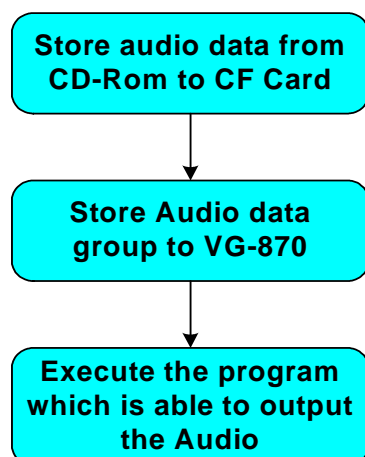


Figure 3-1 Audio data storage procedure

3.1.1.1. Store CD-ROM's data top CF card

Store the data which is stored in CD-ROM of VT-8500-0006/0008 to CF card as figure below. Copy and paste the "Audio" and "Prg4" folder to root directory of CF card. For the detail of the folders and files, please refer "3.1.2.1. Store Audio data from CD-ROM to CF card".

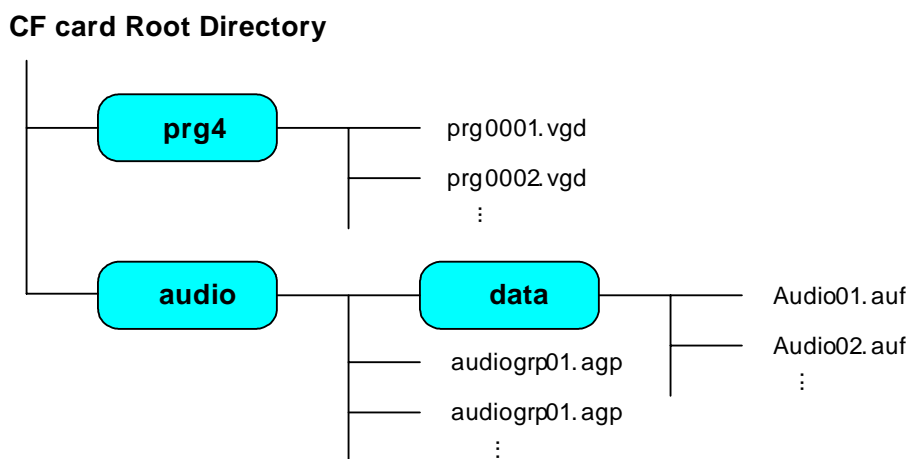


Figure 3-1-2 Configuration of CF card

3.1.1.2. Store the audio data group to the VG-870

• The procedure for storing the audio data to VG-870 is as below.

1. Insert the CF card which stored the data of CD-ROM by 3.1.1.1. to VG-870/871.
2. Press "MENU" key and select "Audio Flash Data Entry" by rotary key and press "SET" key.



Figure 3-1-3 MENU

3. Select the audio data group which user would like to store VG-870/871 by rotary key or "INC", "DEC" key and press "SET" key. (6 audio group is stored in the CD-ROM. Please refer "4.2. Audio Data")



Figure 3-1-4 Audio Flash Data Entry

4. Select "Execute" by rotary key or "INC", "DEC" key and press "SET" key.
5. If the message "Complete" is displayed, data entry to VG-870 is finished. *VT-8500-0006 group1 (approx 27MB) will take approx 15 minutes and group 6 (approx 80kB) will take approx 20 seconds for storing the data to VG-870/871.



Figure 3-1-5 Audio Flash Data Completed

3.1.1.3. Execute the program which is able to output the Audio

• Check the LED of the "SAMPLE" key is not lighting, "PAT" and "TIM" key is lighting on the VG-870's front panel (or remote controller) execute the program number of "4.1. Default Program" .

3.1.2. How to make new program

- The procedure to make new audio output program is as below.

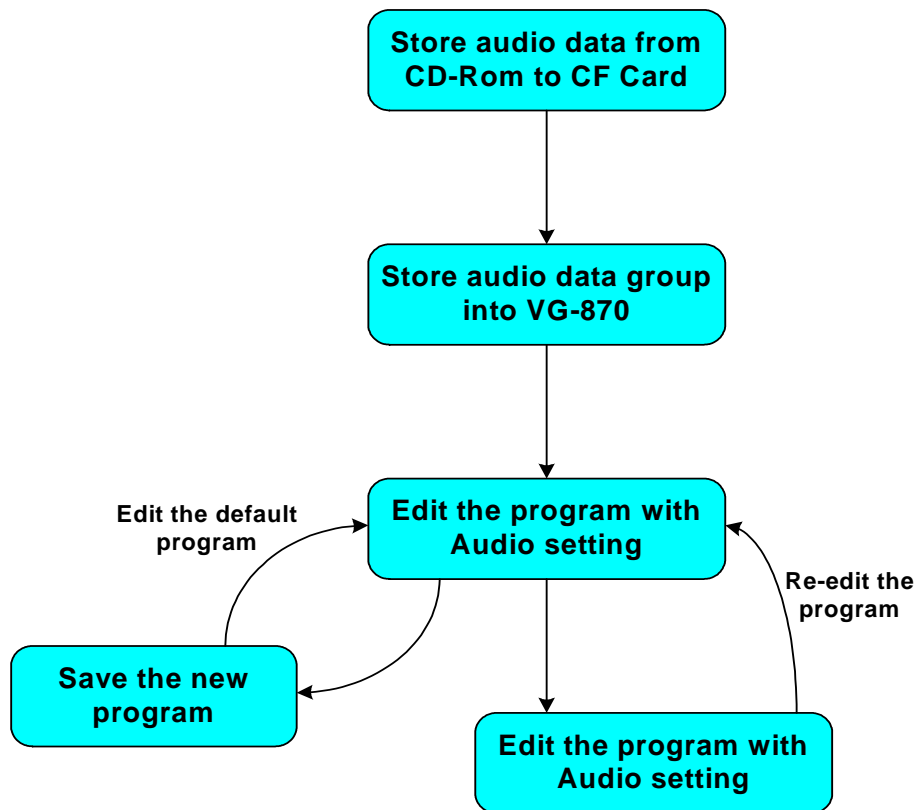


Figure 3-1-6 Audio data storage procedure

*The provided Audio data is Astro design's original format. So it is not able to make new audio data by the user.

3.1.2.1. Store Audio data from CD-ROM to CF card

Copy the “audio” folder from VT-8500-0006/0008 to root directory of CF card.

*If you would like to use default program stored in CD-ROM, also copy “pr4” to root directory of CF card.

CF Root Directory

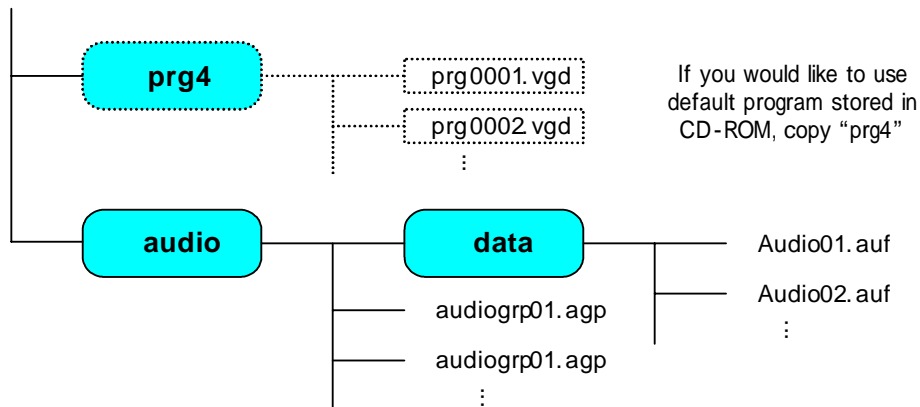


Figure 3-1-7 Configuration of CF card

The data is stored in CD-ROM (VT-8500-0006/0008) as below.

CD Root Directroy

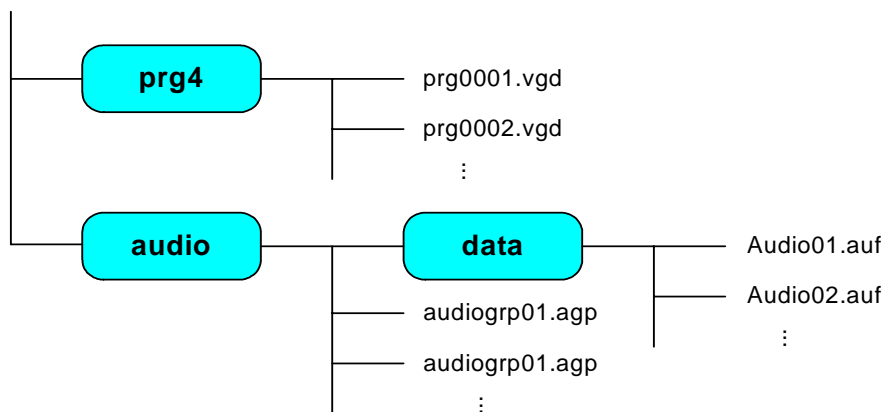


Figure 3-1-8 CD-ROM data configuration

Folder

Folder	Details
prg4	Program data which execute the next generation audio is stored.
Audio	Audio data folder (data folder) and audio grope file is stored.
Data	Audio data is stored.

File

File extension	Details
.vgd	Program data
.agp	Audio group settings are stored. Audio data is read form data folder by each grope
.auf	Audio data

- It is able to make new group by SP-8870. Please refer HELP of SP-8870.
- Several audio data can be stored in one group, (For the maximum number of data which is able to be saved, please refer "2.1. Internal Audio Option") the maximum data size will be 64MB.

* Due to the configuration of the FLASH memory, there is possibility that you can not use all 64MB. Data are saved into the sector of the flash memory and each sector may have empty space due to the file size.

*** Audio data for VG-870/871 is ASTRO original format. It will be easy to edit the default program which is provided by the CD-ROM to make new program with HBR Audio.**

3.1.2.2. Store the audio data group to VG-870/871

*Please refer "3.1.1.2. Store the audio data group to the VG-870".

- Stored Audio data will remain in VG-870/871 even if the power is turn off, it will be stored until the overwriting the data.
- Several audio data can be stored in one group, (For the maximum number of data which is able to be saved, please refer "2.1. Internal Audio Option") the maximum data size will be 64MB.

* Due to the configuration of the FLASH memory, there is possibility that you can not use all 64MB. Data are saved into the sector of the flash memory and each sector may have empty space due to the file size.

3.1.2.3. Edit the program with Audio settings

* It will be easier to edit the default program which is provided by ASTRO in the CD-ROM when making new program with Audio output.

If you use the default program stored in CD-ROM, you do not need to set the Audio settings mentioned in this chapter.

- The setting item will be changed by what kind of HBR audio which are going to generate.
- Please refer VG-870 instruction manual for the normal audio setting.

3.1.2.3.1. DSD data (Only supported by VT-8500-0006)

(1) Setting items

- For DSD data, following setting will be required.

Figure 3-1 DSD data setting item

Setting menu	Setting item	Remarks
Digital Audio	Source	VG-870 option setting Need license option to enter the menu
	Output Channel ON/OFF	
	Flash Data No.	
Audio InfoFrame	Channel count	VG-870 standard setting
	Sample Frequency	
	Speaker Placement	

- Other item will be automatically changed when audio data is selected

(2) Audio data

- The audio data No. for DSD format is from No.91 toNo.95. For the details of the Audio data, please refer "Outline of the data provided by CD-ROM" (The number "xx" of file name "Audioxx.auf" is corresponding to audio data number.)

(3) Detail setting

- Set the each setting as following

Figure 3-2 DSD data setting

Setting Menu		Setting item	Settings
Digital Audio	[MENU]	Source	Set as "Int.DSD"
	"Program Edit"	Output Channel	Set" ON" to the channel which output audio and set "OFF" to the others.
	"Audio"	Flash Data No.	Set the audio data No. to the channel which output the audio. (For DSD, set No.91-95)
InfoFrame	"Digital Audio"		
	[MENU]	Channel Count	Set the number of the channel which output the audio
	"Program Edit"	Sampling Frequency	Set the sampling frequency of DSD (For DSD set 44.1kHz)
	"Output"	Speaker Placement	Set the speaker placement
	"Digital Output"		
	"HDMI"		
	"InfoFrame/Package"		
	"Audio InfoFrame"		

* To enter the setting menu, press [MENU] key and select the menu by rotary key following the [→] above

- For the detail setting of "Digital Audio" and "Audio InfoFrame", please refer the VG-870/871 instruction manual" Embedded audio, high bit rate audio (option)" and "InfoFrame/Package".

3.1.2.3.2. IEC61937 format data (Dolby, AAC and DTS)

(1)Settings

- For Dolby, AAC and DTS data, following settings are required.

Figure 3-3 IEC61937 format data setting clause

Setting Menu	Setting item	Remarks
Digital Audio	Source	VG-870 option setting
	Flash Data No.	Need license to enter the menu

- Other clause will be automatically change when audio data is selected

(2) Audio data

- The audio data No. for Dolby and DTS format is No.1, 2, 11, 12, 14, 24, 41, 42, 51, 52, 53, 56, 57, 58, 61, 62, 63, 64, 65, 66, 67, 68, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 86 and 87. (The number “xx” of file name “Audioxx.auf” is corresponding to audio data number.)

(3) Detail setting

- Set the each setting as following

Figure 3-4 IEC61937 format data setting

Setting Menu		Setting item	Settings
Digital Audio	[MENU]	Source	Set as “Int.Non L-PCM”
	“Program Edit” “Audio” “Digital Audio”	Flash Data No.	Set the audio data No. to the channel which output the audio. (For Dolby and DTS, set No.1, 2, 11, 12, 14, 22, 23, 24, 26, 27, 28, 30, 41, 42, 51, 52, 53, 56, 57, 58, 61, 62, 63, 64, 65, 66, 67, 68, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 86 and 87)

- * To enter the setting menu, press [MENU] key and select the menu by rotary key following the [→] above

- For the detail setting of “Digital Audio”, please refer the VG-870/871 instruction manual” Embedded audio, high bit rate audio (option)”.

3.1.2.4. How to generate HBR Audio (Execute Program)

- By executing the program which is set to output HBR audio, the audio is generated.

- Check the LED of the “SAMPLE” key is not lighting, “PAT” and “TIM” key is lighting on the VG-870's front panel (or remote controller) and execute the program number which you made.

Default program data with each HBR audio data settings are provided by CD-ROM (VT-8500-0006/0008). By copying that program data to the CF card, it will be able to output the HBR Audio. For the detail information about the default program, please refer “3.1.1. How to use program stored in VT-8500-0006/0008”.

- * **In case audio data that is specified by program and audio data that is registered in VG-870/871 does not match, it will not be output correctly.**

3.1.2.5. To use user's arbitrary audio data

- Next generation audio generated from VG-870/871 is only the data which is provided by ASTRO in the CD-ROM (VT-8500-0006/0008). For the detail information of the data in the CD-ROM, please refer "Outline of the data provided by CD-ROM".
- If you need other audio data, please contact ASTRODEIGN or your local agent.
- By inputting the audio by I2S format interface, it is able to output customer's own audio data by HDMI. For the detail information, please refer "3.2. I2S".

3.2. I2S option (Only available by VT-8500-0006)

3.2.1. Out line

- By inputting the audio by I2S format to VG-870's I2S input connector, and set the "Source" to "I2S option", it is able to output the audio.
- The setting of I2S option is different when you use either Linear-PCM or Non Linear-PCM.

3.2.2. Audio output program editing

3.2.2.1. Linear-PCM audio

(1) Settings

- For the Linear-PCM from I2S input data, the following settings are required.

Figure 3-5 I2S option (L-PCM) setting clause

Setting Menu	Setting item	Remarks
Digital Audio	Source	VG-870 option setting Need license option to enter the menu
	Sampling Freq	
	Width	
	Output Channel	
	SCLK Edge	
AVI InfoFrame	Channel Count	VG-870 standard setting
	Speaker	
	Placement	

- Other setting will be automatically change when audio data is selected

(2)Detail settings

- Set the each setting as following

Figure 3-6 I2S option (L-PCM) settings

Setting Menu		Setting item	Setting
Digital Audio	[MENU] "Program Edit" "Audio" "Digital Audio"	Source	Set as "Ext.I2S L-PCM"
		Sampling Freq	Set the Sampling Frequency of the Audio which is inputted to I2S connector
		Width	Set the sample size of the Audio which is inputted to the I2S connector
		Output Channel	Set " ON" to the channel which output audio and " OFF" to the others
		SCLK Edge	Set the edge of the SCLK which VG-870 latch the I2S audio data
InfoFrame	[MENU] "Program Edit" "Output" "Digital Output" "HDMI" "InfoFrame/Packet" "Audio InfoFrame"	Channel Count	Set the number of the channel which output the audio
		Speaker Placement	Set the speaker placement

To enter the setting menu, press **[MENU]** key and select the menu by rotary key following the [→] above.

- For the detail setting of "Digital Audio" and "Audio InfoFrame", please refer to the VG-870/871 instruction manual" Embedded audio, high bit rate audio (option)" and "InfoFrame/Packet".

3.2.2.2. Non Linear-PCM audio

(1)Settings

- For the Non Linear-PCM from I2S input data, the following settings are required.

Figure 3-7 I2S option (Non L-PCM) setting clause

Setting Menu	Setting item	Remarks
Digital Audio	Source	VG-870 option setting
	Sampling Frequency	Need license option to enter the menu
	SCLK Edge	

- Other setting is automatically changed when audio data is selected.

(2)Detail settings

- Set the each setting as following

Figure 3-8 I2S option (Non L-PCM) settings

Setting Menu		Setting item	Settings
Digital Audio	[MENU]	Source	Set as "Ext.I2S L-PCM"
	"Program Edit"	Sampling Freq	Set the Sampling Frequency of the Audio which is input to I2S connector
	"Audio"	SCLK Edge	Set the edge of the SCLK which VG-870 latch the I2S audio data
	"Digital Audio"		

*To enter the setting menu, press [MENU] key and select the menu by rotary key following the [→] above

- For the detail setting of "Digital Audio" and "Audio InfoFrame", please refer the VG-870/871 instruction manual" Embedded audio, high bit rate audio (option)" and "InfoFrame/Package".

4

Outline of the data provided by CD-ROM

- CD-ROM (VT8500-0006/0008) contains the program data and the audio data. Detail information is mentioned hereunder. Please copy the data to the CF card and use them.

4.1. Default Program

(1)2880x480p@59.94

Figure 4-1 Sample program (2880x480p@59.94)

Prg No.	Program Name	Video Format	Repetition	Audio Format		Fs	Channel	Audio File No.
101	480p Dolby THD	2880x480p@59.94	4x	Dolby True HD	HBR	48kHz	7.1ch	24
102	480p Dolby D+	2880x480p@59.94	4x	Dolby Digital Plus	-	48kHz	5.1ch	14
103	480p Dolby AC3	2880x480p@59.94	4x	Dolby Digital	-	48kHz	5.1ch	2
106	480p Dolby AAC	2880x480p@59.94	4x	MPEG2-AAC	-	48kHz	5.1ch	42
111	480p DTS HD MA	2880x480p@59.94	4x	DTS HD Master Audio	HBR	96kHz	7.1ch	78
112	480p DTS HD MA	2880x480p@59.94	4x	DTS HD Master Audio	HBR	192kHz	2ch	79
113	480p DTS HD MA	2880x480p@59.94	4x	DTS HD Master Audio	HBR	192kHz	5.1ch	80
114	480p DTS HD HRA	2880x480p@59.94	4x	DTS HD High Resolution Audio	-	96kHz	5.1ch	65
115	480p DTS HD HRA	2880x480p@59.94	4x	DTS HD High Resolution Audio	-	96kHz	7.1ch	68
116	480p DTS	2880x480p@59.94	4x	DTS Digital Surround	-	48kHz	5.1ch	51
121	480p DSD	1440x480p@59.94	4x	One Bit Audio	DSD	44.1kHz	5.1ch	94,95
131	480p L-PCM	2880x480p@59.94	4x	L-PCM	-	48kHz	5.1ch	-
132	480p L-PCM	2880x480p@59.94	4x	L-PCM	-	192kHz	7.1ch	-

(2)2880x576p@50**Figure 4-2 Sample program (2880x576p@50)**

Prg No.	Program Name	Video Format	Repetition	Audio Format		Fs	Channel	Audio File No.
201	576p Dolby THD	2880x576p@50	4x	Dolby True HD	HBR	48kHz	7.1ch	24
202	576p Dolby D+	2880x576p@50	4x	Dolby Digital Plus	-	48kHz	5.1ch	14
203	576p Dolby AC3	2880x576p@50	4x	Dolby Digital	-	48kHz	5.1ch	2
206	576p Dolby AAC	2880x576p@50	4x	MPEG2-AAC	-	48kHz	5.1ch	42
211	576p DTS HD MA	2880x576p@50	4x	DTS HD Master Audio	HBR	96kHz	7.1ch	78
212	576p DTS HD MA	2880x576p@50	4x	DTS HD Master Audio	HBR	192kHz	2ch	79
213	576p DTS HD MA	2880x576p@50	4x	DTS HD Master Audio	HBR	192kHz	5.1ch	80
214	576p DTS HD HRA	2880x576p@50	4x	DTS HD High Resolution Audio	-	96kHz	5.1ch	65
215	576p DTS HD HRA	2880x576p@50	4x	DTS HD High Resolution Audio	-	96kHz	7.1ch	68
216	576p DTS	2880x576p@50	4x	DTS Digital Surround	-	48kHz	5.1ch	51
221	576p DSD	1440x576p@50	4x	One Bit Audio	DSD	44.1kHz	5.1ch	94,95
231	576p L-PCM	2880x576p@50	4x	L-PCM	-	48kHz	5.1ch	-
232	576p L-PCM	2880x576p@50	4x	L-PCM	-	192kHz	7.1ch	-

(3)1920x1080i@59.94

Figure 4-3 Sample program (1920x1080i@59.94)

Prg No.	Program Name	Video Format	Repetition	Audio Format		Fs	Channel	Audio File No.
301	1080i Dolby THD	1920x1080i@59.94	1x	Dolby True HD	HBR	48kHz	7.1ch	24
302	1080i Dolby DP	1920x1080i@59.94	1x	Dolby Digital Plus	-	48kHz	5.1ch	14
303	1080i Dolby AC3	1920x1080i@59.94	1x	Dolby Digital	-	48kHz	5.1ch	2
306	1080p Dolby AAC	1920x1080i@59.94	1x	MPEG2-AAC	-	48kHz	5.1ch	42
311	1080i DTS HD MA	1920x1080i@59.94	1x	DTS HD Master Audio	HBR	96kHz	7.1ch	78
312	1080i DTS HD MA	1920x1080i@59.94	1x	DTS HD Master Audio	HBR	192kHz	2ch	79
313	1080i DTS HD MA	1920x1080i@59.94	1x	DTS HD Master Audio	HBR	192kHz	5.1ch	80
314	1080i DTS HD HRA	1920x1080i@59.94	1x	DTS HD High Resolution Audio	-	96kHz	5.1ch	65
315	1080i DTS HD HRA	1920x1080i@59.94	1x	DTS HD High Resolution Audio	-	96kHz	7.1ch	68
316	1080i DTS	1920x1080i@59.94	1x	DTS Digital Surround	-	48kHz	5.1ch	51
321	1080i DSD	1920x1080i@59.94	1x	One Bit Audio	DSD	44.1kHz	5.1ch	94,95
331	1080i L-PCM	1920x1080i@59.94	1x	L-PCM	-	48kHz	5.1ch	-
332	1080i L-PCM	1920x1080i@59.94	1x	L-PCM	-	192kHz	7.1ch	-

(4)1920x1080p@59.94**Figure 4-4 Sample program (1920x1080p@59.94)**

Prg No.	Program Name	Video Format	Repetition	Audio Format		Fs	Channel	Audio File No.
351	1080p Dolby THD	1920x1080p@59.94	1x	Dolby True HD	HBR	48kHz	7.1ch	24
352	1080p Dolby DP	1920x1080p@59.94	1x	Dolby Digital Plus	-	48kHz	5.1ch	14
353	1080p Dolby AC3	1920x1080p@59.94	1x	Dolby Digital	-	48kHz	5.1ch	2
356	1080p Dolby AAC	1920x1080p@59.94	1x	MPEG2-AAC	-	48kHz	5.1ch	42
361	1080p DTS HD MA	1920x1080p@59.94	1x	DTS HD Master Audio	HBR	96kHz	7.1ch	78
362	1080p DTS HD MA	1920x1080p@59.94	1x	DTS HD Master Audio	HBR	192kHz	2ch	79
363	1080p DTS HD MA	1920x1080p@59.94	1x	DTS HD Master Audio	HBR	192kHz	5.1ch	80
364	1080p DTS HD HRA	1920x1080p@59.94	1x	DTS HD High Resolution Audio	-	96kHz	5.1ch	65
365	1080p DTS HD HRA	1920x1080p@59.94	1x	DTS HD High Resolution Audio	-	96kHz	7.1ch	68
366	1080p DTS	1920x1080p@59.94	1x	DTS Digital Surround	-	48kHz	5.1ch	51
371	1080p DSD	1920x1080p@59.94	1x	One Bit Audio	DSD	44.1kHz	5.1ch	94,95
381	1080p L-PCM	1920x1080p@59.94	1x	L-PCM	-	48kHz	5.1ch	-
382	1080p L-PCM	1920x1080p@59.94	1x	L-PCM	-	192kHz	7.1ch	-

(5)1280x720p@59.94

Figure 4-5 Sample program (1280x720p@59.94)

Prg No.	Program Name	Video Format	Repetition	Audio Format		Fs	Channel	Audio File No.
401	720p Dolby THD	1280x720p@59.94	1x	Dolby True HD	HBR	48kHz	7.1ch	24
402	720p Dolby DP	1280x720p@59.94	1x	Dolby Digital Plus	-	48kHz	5.1ch	14
403	720p Dolby AC3	1280x720p@59.94	1x	Dolby Digital	-	48kHz	5.1ch	2
406	720p Dolby AAC	1280x720p@59.94	1x	MPEG2-AAC	-	48kHz	5.1ch	42
411	720p DTS HD MA	1280x720p@59.94	1x	DTS HD Master Audio	HBR	96kHz	7.1ch	78
412	720p DTS HD MA	1280x720p@59.94	1x	DTS HD Master Audio	HBR	192kHz	2ch	79
413	720p DTS HD MA	1280x720p@59.94	1x	DTS HD Master Audio	HBR	192kHz	5.1ch	80
414	720p DTS HD HRA	1280x720p@59.94	1x	DTS HD High Resolution Audio	-	96kHz	5.1ch	65
415	720p DTS HD HRA	1280x720p@59.94	1x	DTS HD High Resolution Audio	-	96kHz	7.1ch	68
416	720p DTS	1280x720p@59.94	1x	DTS Digital Surround	-	48kHz	5.1ch	51
421	720p DSD	1280x720p@59.94	1x	One Bit Audio	DSD	44.1kHz	5.1ch	94,95
431	720p L-PCM	1280x720p@59.94	1x	L-PCM	-	48kHz	5.1ch	-
432	720p L-PCM	1280x720p@59.94	1x	L-PCM	-	192kHz	7.1ch	-

4.2. Audio Data

(1)Dolby data

Figure 4-6 Sample data (Dolby)

Format	Fs	Chan nel	Speaker	Audio Detail	HDMI Fs	I2S	Audio No	Group							VT- 8500- 0006	VT- 8500- 0008
	1	2	3		4			5	6	7						
	[kHz]	[ch]			[kHz]			ALL	Dolby	DTS	DSD	Defau lt	AAC	CTS		
Dolby Digital	48	2	L R	1kHz -20dB	48	x1	1	*	*							
		5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	48	x1	2	*	*							
Dolby Digital Plus	48	2	L R	1kHz -20dB	192	x1	11	*	*							-
		5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	192	x1	12	*	*							-
		7.1	L R C LFE Ls Rs Lsr Rsr	1kHz(LFE 100Hz) -20dB	192	x1	14	*	*							-
Dolby TrueHD	48	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	768	x4	22		*					*		-
		6.1	L R C LFE Ls Rs Cs	1kHz(LFE 100Hz) -20dB	768	x4	23		*					*		-
		7.1	L R C LFE Ls Rs Lsr Rsr	1kHz(LFE 100Hz) -20dB	768	x4	24	*	*					*		-
		5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	768	x4	26		*							-
		6.1	L R C LFE Ls Rs Cs	1kHz(LFE 100Hz) -20dB	768	x4	27		*							-
		7.1	L R C LFE Ls Rs Lsr Rsr	1kHz(LFE 100Hz) -20dB	768	x4	28		*							-
		5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	768	x4	30		*							-

(2)AAC data

Figure 4-7 Sample data (AAC)

Format	Fs	Chan nel	Speaker	Audio Detail	HDMI Fs	I2S	Audio No	Group							VT- 8500- 0006	VT- 8500- 0008
	[kHz]	[ch]			[kHz]			1	2	3	4	5	6	7		
								ALL	Dolby	DTS	DSD	Defau lt	AAC	CTS		
MPEG2-AAC	48	2	L R	1kHz -20dB	48	x1	41	*		*			*			
MPEG2-AAC	48	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	48	x1	42	*		*			*			

(3)DTS data

Figure 4-8 Sample data (DTS1)

Format	Fs	Chan nel	Speaker	Audio Detail	HDMI Fs	I2S	Audio No	Group							VT- 8500- 0006	VT- 8500- 0008	
					1			2	3	4	5	6	7				
	[kHz]	[ch]			ALL			Dolby	DTS	DSD	Defau lt	AAC	CTS				
DTS Digital Surround (Type1)	48	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB 1509kbps	48	x1	51	*		*						-	
DTS Digital Surround ES (Type1)	48	6.1	L R C LFE Ls Rs Cs	1kHz(LFE 100Hz) -20dB 1509kbps	48	x1	52	*		*						-	
DTS Digital Surround 96/24 (Type1)	96	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB 1509kbps	48	x1	53	*		*						-	
DTS Digital Surround (Type4)	48	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB 1509kbps	192	x1	56	*		*						-	
DTS Digital Surround ES (Type4)	48	6.1	L R C LFE Ls Rs Cs	1kHz(LFE 100Hz) -20dB 1509kbps	192	x1	57	*		*						-	
DTS Digital Surround 96/24 (Type4)	96	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB 1509kbps	192	x1	58	*		*						-	
DTS-HD High Resolution Audio	48	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB 3018kbps	192	x1	61	*		*						-	
		6.1	L R C LFE Ls Rs Cs	1kHz(LFE 100Hz) -20dB 4608kbps	192	x1	62	*		*						-	
		7.1	L R C LFE Ls Rs Lsr Rsr	1kHz(LFE 100Hz) -20dB 5376kbps	192	x1	63	*		*						-	
		7.1	L R C LFE Lss Rss Lsr Rsr	1kHz(LFE 100Hz) -20dB 5376kbps	192	x1	64	*		*						-	
	96	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB 3018kbps	192	x1	65	*		*							-
		6.1	L R C LFE Ls Rs Cs	1kHz(LFE 100Hz) -20dB 4224kbps	192	x1	66	*		*							-
		7.1	L R C LFE Ls Rs Lsr Rsr	1kHz(LFE 100Hz) -20dB 5760kbps	192	x1	67	*		*							-
		7.1	L R C LFE Lss Rss Lsr Rsr	1kHz(LFE 100Hz) -20dB 5760kbps	192	x1	68	*		*							-

Figure 4-9 Sample data (DTS2)

Format	Fs	Chan nel	Speaker	Audio Detail	HDMI Fs	I2S	Audio No	Group							VT- 8500- 0006	VT- 8500- 0008
	[kHz]	[ch]			[kHz]			1	2	3	4	5	6	7		
								ALL	Dolby	DTS	DSD	Defau lt	AAC	CTS		
DTS-HD Master Audio	48	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	768	x4	71	*		*				*		-
		6.1	L R C LFE Ls Rs Cs	1kHz(LFE 100Hz) -20dB	768	x4	72	*		*				*		-
		7.1	L R C LFE Ls Rs Lsr Rsr	1kHz(LFE 100Hz) -20dB	768	x4	73	*		*		*		*		-
		7.1	L R C LFE Lss Rss Lsr Rsr	1kHz(LFE 100Hz) -20dB	768	x4	74	*		*						-
	96	5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	768	x4	75	*		*						-
		6.1	L R C LFE Ls Rs Cs	1kHz(LFE 100Hz) -20dB	768	x4	76	*		*						-
		7.1	L R C LFE Ls Rs Lsr Rsr	1kHz(LFE 100Hz) -20dB	768	x4	77	*		*						-
		7.1	L R C LFE Lss Rss Lsr Rsr	1kHz(LFE 100Hz) -20dB	768	x4	78	*		*						-
	192	2	L R	1kHz -20dB	768	x4	79	*		*						-
		5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	768	x4	80	*		*						-
DTS_Express	48	2	L R	1kHz -20dB	48	x1	86	*		*						-
		5.1	L R C LFE Ls Rs	1kHz(LFE 100Hz) -20dB	48	x1	87	*		*						-

(4)DSD data

Figure 4-10 Sample data (DSD)

Format	Fs	Chan nel	Speaker	Audio Detail	HDMI Fs	I2S	Audio No	Group							VT- 8500- 0006	VT- 8500- 0008
	[kHz]	[ch]			[kHz]			1	2	3	4	5	6	7		
								ALL	Dolby	DTS	DSD	Defau lt	AAC	CTS		
One Bit Audio (DSD)	2.8224	-	-	1kHz -0dB	44.1	-	91	*			*	*				-
	2.8224	-	-	Mute	44.1	-	92	*			*					-
	2.8224	-	-	150Hz -3dB	44.1	-	93	*			*	*				-
	2.8224	-	-	1kHz -20dB	44.1	-	94	*			*			*		-
	2.8224	-	-	100Hz -20dB	44.1	-	95	*			*			*		-



VT-8500-0006, VT-8500-0008

Instruction Manual

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ASTRODESIGN, Inc.

URL <http://www.astrodsgn.co.jp>

● For more information, please contact us :

Business Unit 2

TEL.+81-(0)3-5734-6302 FAX.+81-(0)3-5734-6104

1-5-2 Minami-yukigaya, Ota-ku, Tokyo, 145-066 Japan