User's Manual

OMX Media Component

User's Manual AAC-LC Encoder Part

Renesas Electronics
www.renesas.com

Rev.1.00 Oct. 10, 2014

Notice

1. Descriptions of circuits, software and other related information in this document are provided only to illustrate the operation of semiconductor products and application examples. You are fully responsible for the incorporation of these circuits, software, and information in the design of your equipment. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from the use of these circuits, software, or information.

2. Renesas Electronics has used reasonable care in preparing the information included in this document, but Renesas Electronics does not warrant that such information is error free. Renesas Electronics assumes no liability whatsoever for any damages incurred by you resulting from errors in or omissions from the information included herein.

3. Renesas Electronics does not assume any liability for infringement of patents, copyrights, or other intellectual property rights of third parties by or arising from the use of Renesas Electronics products or technical information described in this document. No license, express, implied or otherwise, is granted hereby under any patents, copyrights or other intellectual property rights of Renesas Electronics or others.

4. You should not alter, modify, copy, or otherwise misappropriate any Renesas Electronics product, whether in whole or in part. Renesas Electronics assumes no responsibility for any losses incurred by you or third parties arising from such alteration, modification, copy or otherwise misappropriation of Renesas Electronics product.

5. Renesas Electronics products are classified according to the following two quality grades: “Standard” and “High Quality”. The recommended applications for each Renesas Electronics product depends on the product’s quality grade, as indicated below.

“Standard”: Computers; office equipment; communications equipment; test and measurement equipment; audio and visual equipment; home electronic appliances; machine tools; personal electronic equipment; and industrial robots etc.

“High Quality”: Transportation equipment (automobiles, trains, ships, etc.); traffic control systems; anti-disaster systems; anti-crime systems; and safety equipment etc.

Renesas Electronics products are neither intended nor authorized for use in products or systems that may pose a direct threat to human life or bodily injury (artificial life support devices or systems, surgical implantations etc.), or may cause serious property damages (nuclear reactor control systems, military equipment etc.). You must check the quality grade of each Renesas Electronics product before using it in a particular application. You may not use any Renesas Electronics product for any application for which it is not intended. Renesas Electronics shall not be in any way liable for any damages or losses incurred by you or third parties arising from the use of any Renesas Electronics product for which the product is not intended by Renesas Electronics.

6. You should use the Renesas Electronics products described in this document within the range specified by Renesas Electronics, especially with respect to the maximum rating, operating supply voltage range, movement power voltage range, heat radiation characteristics, installation and other product characteristics. Renesas Electronics shall have no liability for malfunctions or damages arising out of the use of Renesas Electronics products beyond such specified ranges.

7. Although Renesas Electronics endeavors to improve the quality and reliability of its products, semiconductor products have specific characteristics such as the occurrence of failure at a certain rate and malfunctions under certain use conditions. Further, Renesas Electronics products are not subject to radiation resistance design. Please be sure to implement safety measures to guard them against the possibility of physical injury, and injury or damage caused by fire in the event of the failure of a Renesas Electronics product, such as safety design for hardware and software including but not limited to redundancy, fire control and malfunction prevention, appropriate treatment for aging degradation or any other appropriate measures. Because the evaluation of microcomputer software alone is very difficult, please evaluate the safety of the final products or systems manufactured by you .

8. Please contact a Renesas Electronics sales office for details as to environmental matters such as the environmental compatibility of each Renesas Electronics product. Please use Renesas Electronics products in compliance with all applicable laws and regulations that regulate the inclusion or use of controlled substances, including without limitation, the EU RoHS Directive. Renesas Electronics assumes no liability for damages or losses occurring as a result of your noncompliance with applicable laws and regulations.

9. Renesas Electronics products and technology may not be used for or incorporated into any products or systems whose manufacture, use, or sale is prohibited under any applicable domestic or foreign laws or regulations. You should not use Renesas Electronics products or technology described in this document for any purpose relating to military applications or use by the military, including but not limited to the development of weapons of mass destruction. When exporting the Renesas Electronics products or technology described in this document, you should comply with the applicable export control laws and regulations and follow the procedures required by such laws and regulations.

10. It is the responsibility of the buyer or distributor of Renesas Electronics products, who distributes, disposes of, or otherwise places the product with a third party, to notify such third party in advance of the contents and conditions set forth in this document, Renesas Electronics assumes no responsibility for any losses incurred by you or third parties as a result of unauthorized use of Renesas Electronics products.

12. Please contact a Renesas Electronics sales office if you have any questions regarding the information contained in this document or Renesas Electronics products, or if you have any other inquiries.

(Note 1) “Renesas Electronics” as used in this document means Renesas Electronics Corporation and also includes its majority-owned subsidiaries.

(Note 2) “Renesas Electronics product(s)” means any product developed or manufactured by or for Renesas Electronics.

Trademarks

- Linux® is the registered trademark of Linus Torvalds in the United States and other countries.
- ARM® is a registered trademark or trademark of ARM Ltd. in the United States and other countries.
- Windows and Windows Media are registered trademarks of Microsoft Corporation in the United States and other countries.
- Android is a trademark of Google Inc. Use of this trademark is subject to Google permissions.
- All other company names and product names mentioned in this manual are registered trademarks or trademarks of their respective companies.
- The registered trademark symbol (®) and trademark symbol (™) are omitted in this manual.

- Table of Contents -

- Figures -

- Tables -

1. Overview

1.1. Overview of This Document

This document is the User's Manual for the OMX Media Component and specifications of the AAC-LC Encoder Media Component are described.
Please read this document with related document [1] and [2].

1.2. Overview of AAC-LC Encoder Media Component and Scope of This Document

Figure 1-1 shows the software configuration of the AAC-LC Encoder Media Component and scope. The AAC-LC Encoder Media Component consists of the OMX Media Component Common Library which provides common functions of OpenMAX IL, the OMX Media Component Audio Common Library which provides common functions of audio processing, and the OMX Media Component AAC-LC Encoder Library which realizes functions of AAC-LC Encoder. The OMX Media Component AAC-LC Encoder Library controls AAC Encode Middleware and realizes codec processing.

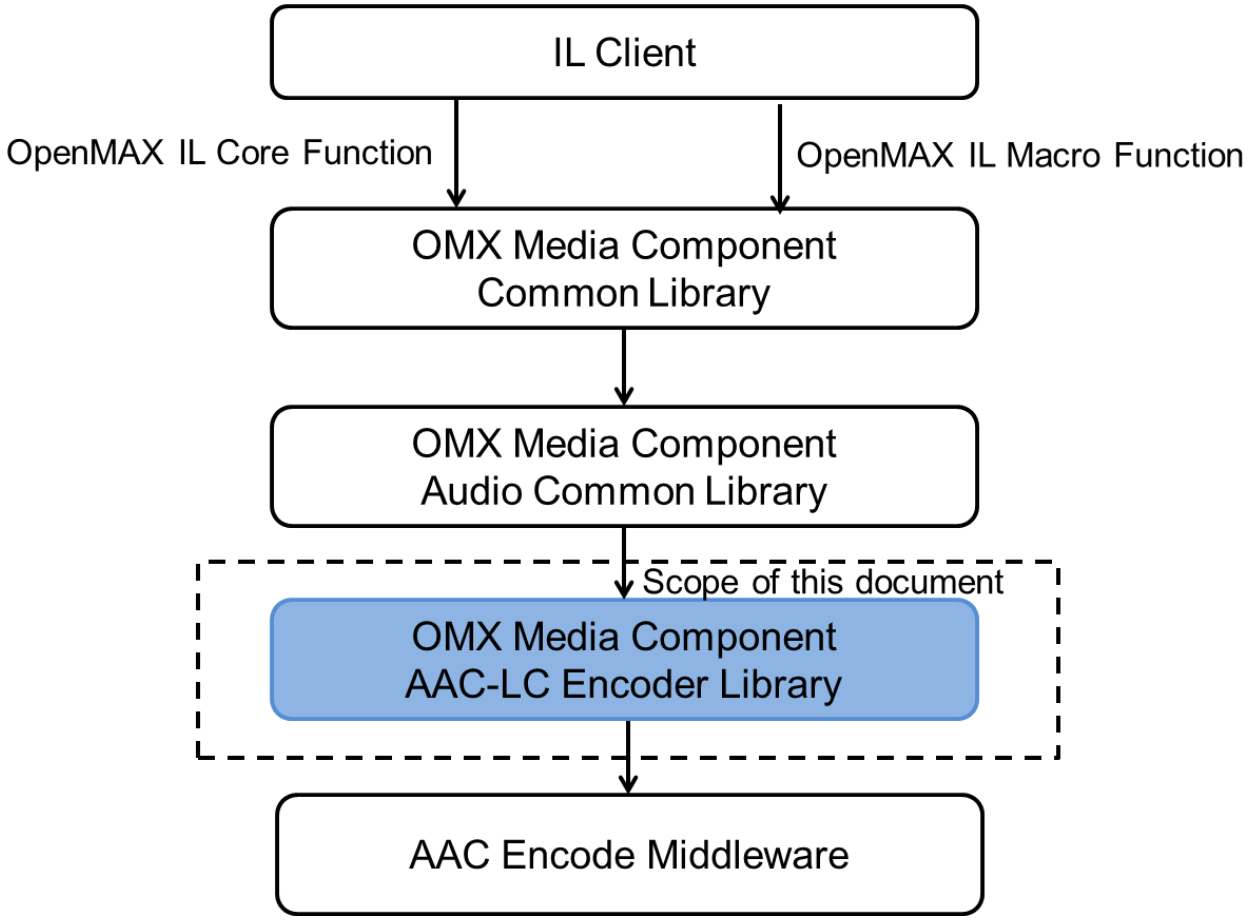

Figure 1-1 Software Configuration of AAC-LC Encoder Media Component and Scope

1.3. Related Documents

Table 1-1 shows the reference documents and related documents.

Table 1-1 List of Related Documents

No	Document Name	Description
[1]	OMX Media Component User's Manual Common Part	
[2]	OMX Media Component User's Manual Audio Common Part	
[3]	OpenMAX Integration Layer Application Programming Interface Specification Version 1.1.2, September 1, 2008	http://www.khronos.org/registry/omxil/specs/OpenMAX_IL_1_1_2_Specification.pdf

1.4. Terminology

Table 1-2 shows the terminology used in this document.

Table 1-2 Terminology

Term	Abbreviation	Description
Audio Port Base	APB	The base value of the port index of the Audio Media Component. The port index values of the input and output ports are obtained by adding offset values to this base value.
OpenMAX IL	-	Open API specified by the Khronos Group. It standardizes accesses to primitive media processing which is commonly used in graphics, audio, and image libraries.
Component	-	Refers to a component that is defined in OpenMAX IL Specification.
Media Component	MC	A component that performs multimedia processing. It corresponds to the Component that is defined in OpenMAX IL.
IL Client	-	Refers to software that uses functions of OpenMAX IL Core and Component.

1.5. Role Name and Component Name

Table 1-3 shows the role name and component name of AAC-LC Encoder Media Component.

Table 1-3 Role Name and Component Name

Role Name	Component Name
audio_encoder.aac	OMX.RENESAS.AUDIO.ENCODER.AAC

2. Functions

AAC-LC Encoder Media Component is the component that provided functions to compress PCM data by MPEG-2 AAC standard.

AAC-LC Encoder Media Component performs encoding process when PCM data is stored in the input buffer, and the compressed data is stored to the output buffer.

2.1. Function Details

2.1.1. Encode Function

The supported standard specifications and functions of AAC-LC Encoder Media Component are shown in the following.

Table 2-1 Supported Standard Specifications and Functions

Coding Method	Compliant Standard	MPEG-2 Advanced Audio Coding ISO/IEC 13818-7 : 2006 (Fourth Edition) ISO/IEC 13818-7 : 2006/Amd.1 : 2007
	Supported Profile	ISO/IEC 13818-7 : 2006 Low Complexity
Input Format	16 bit linear PCM (channel interleaved format)	
Input Channel	1 channel / 2 channels	
Output Format	AAC data (ADTS format / RAW format*)	
Output Channel	Stereo / Monaural / Dual Monaural	
Sampling Frequency	8 / 11.025 / 12 / 16 / 22.05 / 24 / 32 / 44.1 / 48 kHz	
Bit Rate	8 to 288[kbps] (per channel) VBR supported	
Number of samples per frame	1024 samples	

* It is able to output the AudioSpecificConfig information which is used for producing MPEG-4/ISO File Format.

2.1.2. The Created Frame and Mute Data

Figure 2-1 shows an example about the created frame and mute data. The input PCM data of different pieces of music are separated by the buffer flag OMX_BUFFERFLAG_EOS. For encoding, the first output of each piece of music is a created frame which is generated by encoding 1 frame of mute data. After that, the stream data corresponded to the input data is output. For the final encoding of the piece of music, if the input PCM data is less than 1-frame amount, the insufficient part of the frame is filled by mute data, and the whole frame is encoded. In addition, for each piece of music, the number of output frames is more than the (upper rounded) number of frames of input PCM data by 1.

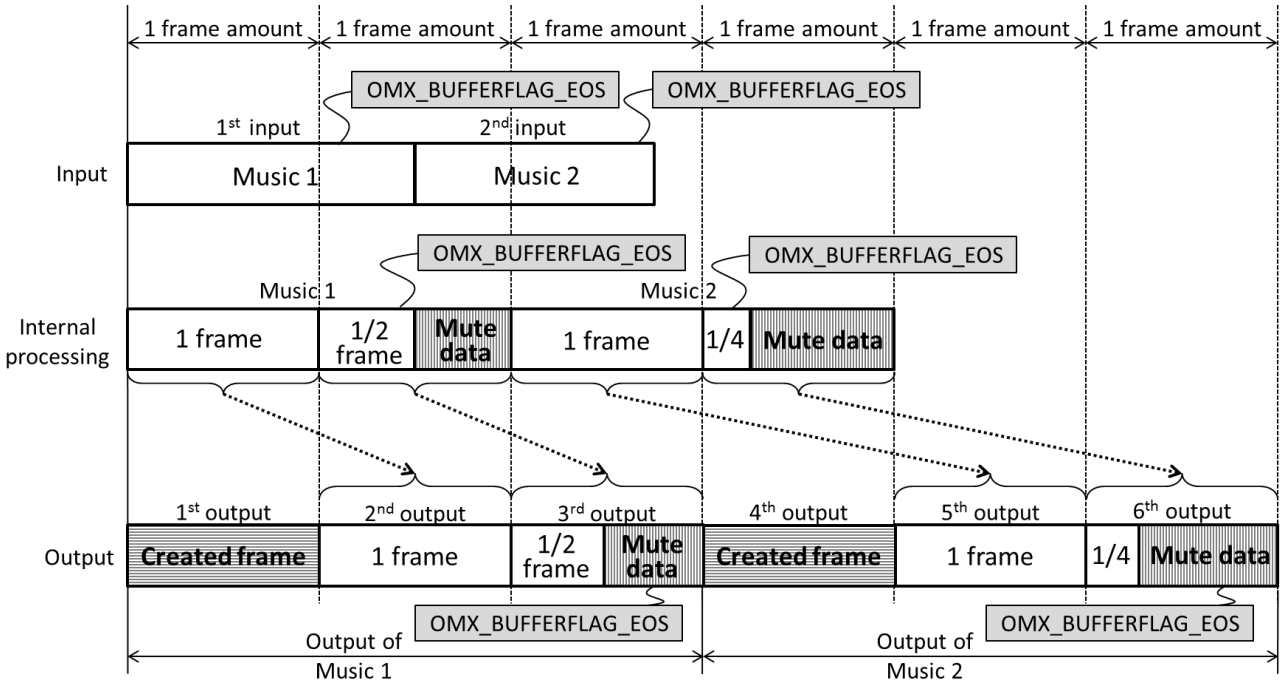

Figure 2-1 The Created Frame and Mute Data

2.1.3. Markbuffer

The markbuffer of AAC-LC Encoder Media Component is introduced. Figure 2-2 shows how the marks are attached to the output buffers according to the marks of input buffers. In Figure 2-2, it only illustrates the relationship of the marks between input and output buffers, and there is no concern of the timing correlation between them.

Pattern 1 shows the situation that, for OMX_EmptyThisBuffer, the byte number of input PCM data is equal to 1-frame size. For each input buffer, there is 1-frame-period delay to obtain the correlated output data in the output buffer. Pattern 2 and Pattern3 show the situations that, the 1-frame PCM data consists of the data input by multiple OMX_EmptyThisBuffer, and there is more than 1-frame PCM data input by single OMX_EmptyThisBuffer. In such cases, the mark of the output buffers take the latest mark of correlated input buffers. The Mark is able to be carried over for the input data exceeding the amount of one frame.

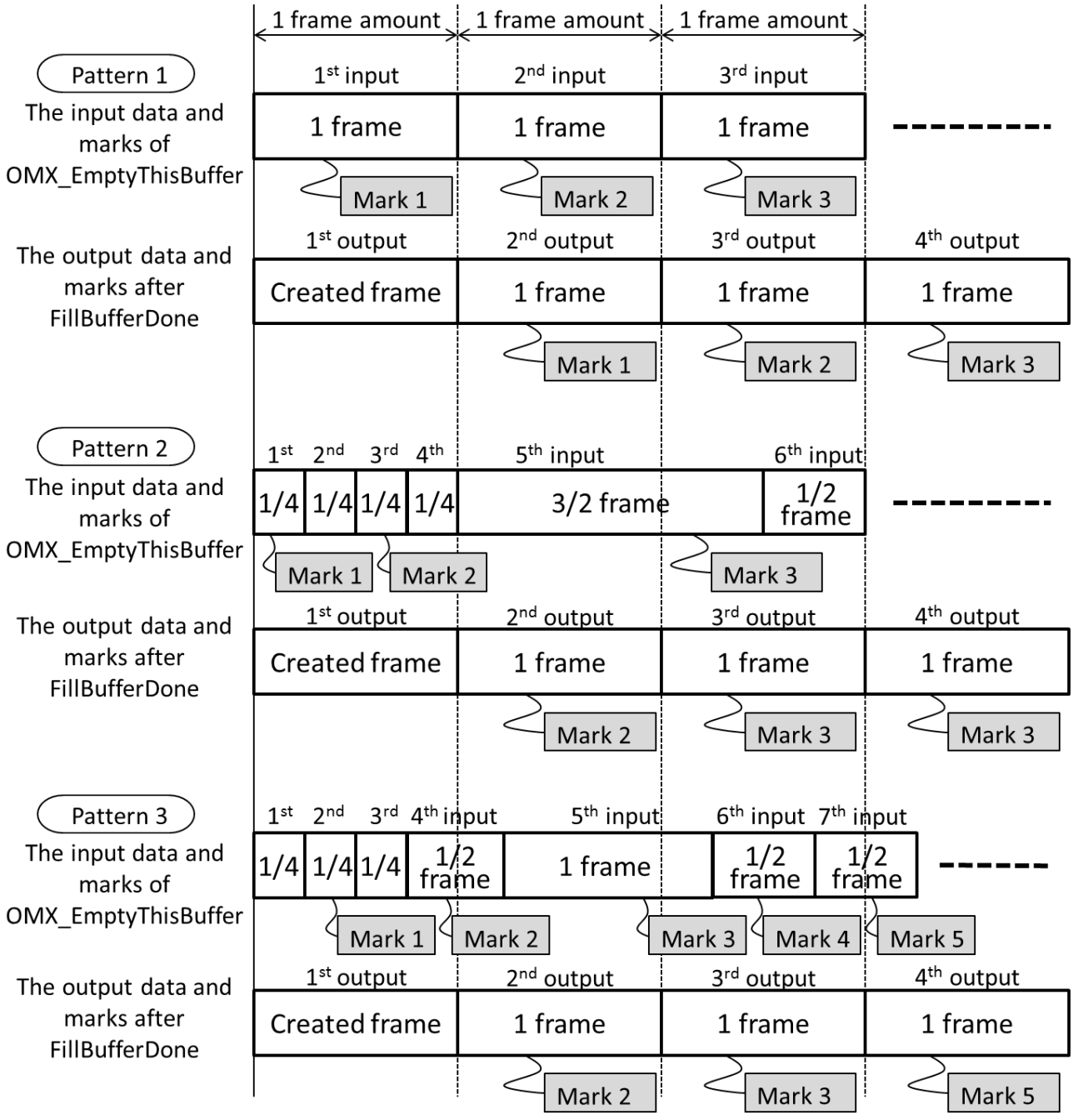

Figure 2-2 The Relationship of Marks between Input Buffers and Output Buffers

2.2. Port

AAC-LC Encoder Media Component has one input port and one output port.

For the input port, there are input buffers to store the PCM data. For the output port, there are output buffers to store the compressed data.

Table 2-2 Ports of AAC-LC Encoder Media Component

Component	Port Index	Type
AAC-LC Encoder Media Component	APB+0	Input Port
	APB+1	Output Port

3. I/O Data Format

3.1. Buffer Payload

Figure 3-1 shows the data storage format of input buffers for AAC-LC Encoder Media Component. The PCM data of any number of samples (multiple of the number of channels) is stored in input buffers.

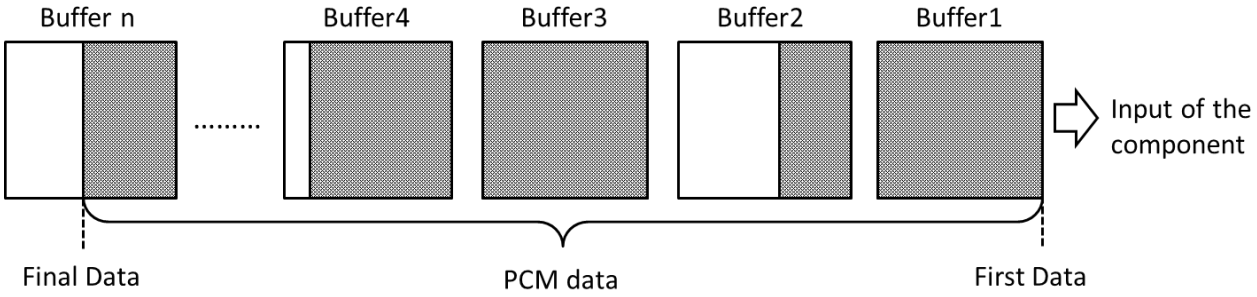

Figure 3-1 Data Storage Format of Input Buffers

Figure 3-2 shows the data storage format of output buffers for AAC-LC Encoder Media Component. "fn" in the figure denotes the sequence number (frame number) of compressed data. For AAC-LC Encoder Media Component, the output of compressed data is stored in frame units.

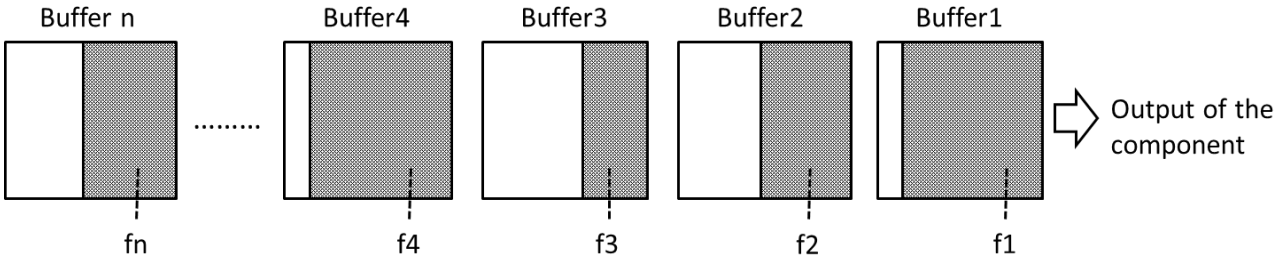

Figure 3-2 Data Storage Format of Output Buffer

3.2. Data Format of Input Buffer

The PCM data is stored in the input buffer of AAC-LC Encoder Media Component whose address is denoted by the member pBuffer of structure OMX_BUFFERHEADERTYPE with size of nFilledLen. For Stereo/Dual Monaural PCM data, the L channel and R channel data is stored alternately in the input buffer (interleaved format) as shown in Figure 3-3. For Monaural PCM data, it is stored sequentially in the input buffer as shown in Figure 3-4.

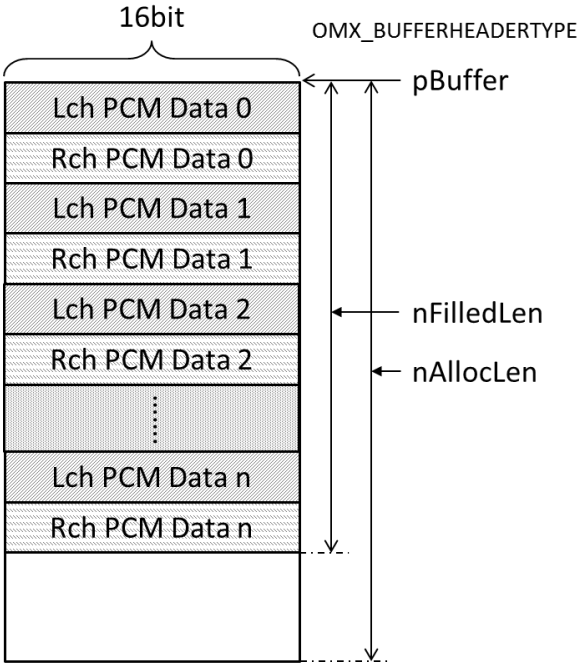

Figure 3-3 Data Format of Input Buffer (Stereo/Dual Monaural)

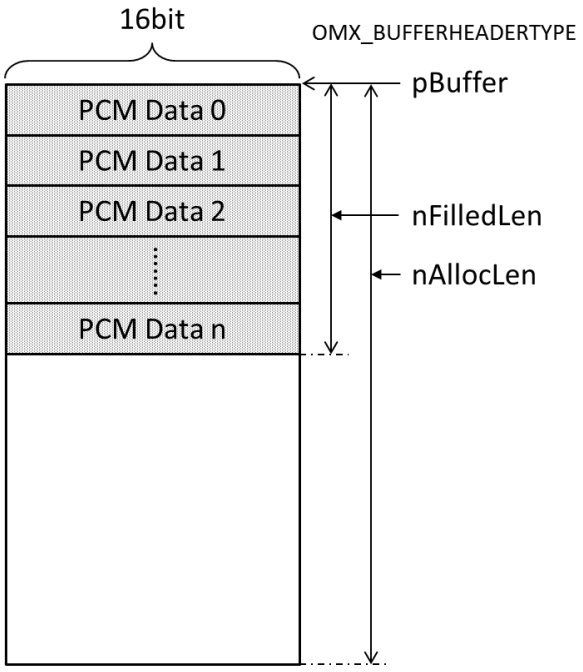

Figure 3-4 Data Format of Input Buffer (monaural)

3.3. Data Format of Output Buffer

The data format of output buffer of AAC-LC Encoder Media Component is shown in Figure 3-5. The output data is stored in the output buffer whose address is denoted by the member pBuffer of structure OMX_BUFFERHEADERTYPE with size of nFilledLen.

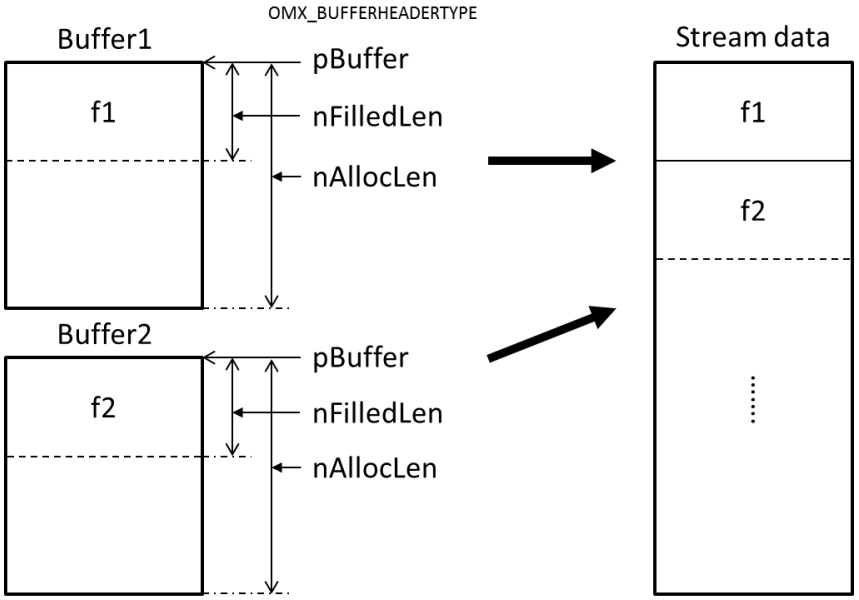

Figure 3-5 Data Format of Output Buffer

4. API Reference

Please refer to the related document [2].

5. Indexes

5.1. Standard Indexes of AAC-LC Encoder Media Component

Table 5-1 shows the list of standard indexes that are available for AAC-LC Encoder Media Component.

Table 5-1 List of Indexes available for AAC-LC Encoder Media Component

Index	Corresponding Strucure Name
Description	
OMX_IndexParamAudioInit	OMX_PORT_PARAM_TYPE Structure
Please refer to the related document [1].	
OMX_IndexParamVideoInit	OMX_PORT_PARAM_TYPE Structure
Please refer to the related document [1].	
OMX_IndexParamImageInit	OMX_PORT_PARAM_TYPE Structure
Please refer to the related document [1].	
OMX_IndexParamOtherInit	OMX_PORT_PARAM_TYPE Structure
Please refer to the related document [1].	
OMX_IndexParamStandardComponentRole	OMX_PARAM_COMPONENTROLETYPE Structure
Please refer to the related document [1].	
OMX_IndexParamCompBufferSupplier	OMX_PARAM_BUFFERSUPPLIERTYPE Structure
Please refer to the related document [1].	
OMX_IndexParamPortDefinition	OMX_PORTDEFINITIONTYPE Structure
Please refer to the related document [1] and [2].	
OMX_IndexParamAudioPortFormat	OMX_AUDIO_PARAM_PORTFORMATTYPE Structure
Please refer to the related document [2].	
OMX_IndexParamAudioPcm	OMX_AUDIO_PARAM_PCMMODETYPE Structure
To set or get information regarding PCM.	
OMX_IndexParamAudioAac	OMX_AUDIO_PARAM_AACPROFILETYPE Structure
To set or get information regarding AAC.	

5.2. Indexes Specified by OpenMAX IL Macro Functions

Table 5-2 shows indexes which can be specified by OpenMAX IL Macro functions and available port index for AAC-LC Encoder Media Component.

Table 5-2 Indexes Specified by OpenMAX IL Macro Functions

Index	Get/SetParameter		Get/SetConfig		Port Index	
	Get	Set	Get	Set	APB+0	APB+1
OMX_IndexParamAudioInit	x	x	-	-	-	-
OMX_IndexParamVideoInit	x	x	-	-	-	-
OMX_IndexParamImageInit	x	x	-	-	-	-
OMX_IndexParamOtherInit	x	x	-	-	-	-
OMX_IndexParamStandardComponentRole	x	x	-	-	-	-
OMX_IndexParamCompBufferSupplier	x	x	-	-	x	x
OMX_IndexParamPortDefinition	x	x	-	-	x	x
OMX_IndexParamAudioPortFormat	x	x	-	-	x	x
OMX_IndexParamAudioPcm	x	x	-	-	x	-
OMX_IndexParamAudioAac	x	x	-	-	-	x

x : Effective
- : Ineffective

6. Structures

Table 6-1 shows the list of structures of AAC-LC Encoder Media Component.

Table 6-1 Structures of AAC-LC Encoder Media Component

Structure Name	Reference
OMX_AUDIO_PORTDEFINITIONTYPE	Section 6.1
OMX_PARAM_COMPONENTROLETYPE	Related Document [1]
OMX_PARAM_BUFFERSUPPLIERTYPE	Related Document [1]
OMX_AUDIO_PARAM_PORTFORMATTYPE	Section 6.2
OMX_AUDIO_PARAM_PCMMODETYPE	Section 6.3
OMX_AUDIO_PARAM_AACPROFILETYPE	Section 6.4

Given below is an explanation of how to interpret the member of the structures described in this section.

- ✓ Description of a member of a structure corresponded to index

[Member]

Member Name	Get	Set
Indicates the member name	Indicates the attribute of the member specified in the OMX_GetParameter () or OMX_GetConfig () function. If "R" is written, the value of this member can be obtained. If "W" is written, please specify a value in this member.	Indicates the attributes of the member specified in the OMX_SetParameter () or OMX_SetConfig () function. If "W" is written, please specify a value in this member. If “-” is written, the value of this member is ignored. Any value specified in this member is not reflected.

6.1. OMX_AUDIO_PORTDEFINITIONTYPE

[Structure] Please refer to section 4.1.5 in the related document [3].

[Function] Please refer to section 4.1.5 in the related document [3].

[Members]

Member Name	Get	Set
cMIMEType	R	-
pNativeRender	R	-
bFlagErrorConcealment	R	-
eEncoding	R	-

[Details]

cMIMEType

Configurable value	-
Acquirable value	NULL
Initial value	NULL
Remarks	Not supported.

pNativeRender

Configurable value	-
Acquirable value	NULL
Initial value	NULL
Remarks	Not supported.

bFlagErrorConcealment

Configurable value	-
Acquirable value	OMX_FLASE
Initial value	OMX_FLASE
Remarks	Not supported.

eEncoding

Configurable value	-	
Acquirable value	**nPortIndex**	**Value**
	APB+0	OMX_AUDIO_CodingPCM
	APB+1	OMX_AUDIO_CodingAAC
Initial value	**nPortIndex**	**Value**
	APB+0	OMX_AUDIO_CodingPCM
	APB+1	OMX_AUDIO_CodingAAC
Remarks	-	

6.2. OMX_AUDIO_PARAM_PORTFORMATTYPE

[Structure] Please refer to section 4.1.6 in the related document [3].

[Function] Please refer to section 4.1.6 in the related document [3].

[Members]

Member Name	Get	Set
nSize	W	W
nVersion	R	-
nPortIndex	W	W
nIndex	W	-
eEncoding	R	-

[Details]

nSize

Configurable value	Specify the size (in bytes) of the OMX_AUDIO_PARAM_PORTFORMATTYPE structure.
Acquirable value	-
Initial value	-
Remarks	-

nVersion

Configurable value	-
Acquirable value	Specification version of OpenMAX IL (1.1.2).
Initial value	Specification version of OpenMAX IL (1.1.2).
Remarks	-

nPortIndex

Configurable value	APB+0 APB+1
Acquirable value	-
Initial value	-
Remarks	-

nIndex

Configurable value	**nPortIndex**	**Value**
	APB+0	0
	APB+1	0
Acquirable value	-	
Initial value	-	
Remarks	-	

eEncoding

Configurable value	-		
Acquirable value	**nPortIndex**	**nIndex**	**Value**
	APB+0	0	OMX_AUDIO_CodingPCM
	APB+1	0	OMX_AUDIO_CodingAAC
Initial value	**nPortIndex**	**nIndex**	**Value**
	APB+0	0	OMX_AUDIO_CodingPCM
	APB+1	0	OMX_AUDIO_CodingAAC
Remarks	-		

6.3. OMX_AUDIO_PARAM_PCMMODETYPE

[Structure] Please refer to section 4.1.7 in the related document [3].

[Function] Please refer to section 4.1.7 in the related document [3].

[Members]

Member Name	Get	Set
nSize	W	W
nVersion	R	-
nPortIndex	W	W
nChannels	R	W
eNumData	R	-
eEndian	R	-
bInterleaved	R	-
nBitPerSample	R	-
nSamplingRate	R	W
ePCMMode	R	-
eChannelMapping	R	-

[Details]

nSize

Configurable value	Specify the size (in bytes) of the OMX_AUDIO_PARAM_PCMMODETYPE structure.
Acquirable value	-
Initial value	-
Remarks	-

nVersion

Configurable value	-
Acquirable value	Specification version of OpenMAX IL (1.1.2).
Initial value	Specification version of OpenMAX IL (1.1.2).
Remarks	-

nPortIndex

Configurable value	APB+0
Acquirable value	-
Initial value	-
Remarks	-

nChannels

Configurable value	1, 2
Acquirable value	Setting value
Initial value	2
Remarks	-

eNumData

Configurable value	-
Acquirable value	OMX_NumericalDataSigned
Initial value	OMX_NumericalDataSigned
Remarks	Not supported.

eEndian

Configurable	-

value	
Acquirable value	OMX_EndianLittle
Initial value	OMX_EndianLittle
Remarks	Not supported.

bInterleaved

Configurable value	-
Acquirable value	OMX_TRUE
Initial value	OMX_TRUE
Remarks	Not supported.

nBitPerSample

Configurable value	-
Acquirable value	16
Initial value	16
Remarks	Not supported.

nSamplingRate

Configurable value	8000, 11025, 12000, 16000, 22050, 24000, 32000, 44100, 48000
Acquirable value	Setting value
Initial value	48000
Remarks	-

ePCMMode

Configurable value	-
Acquirable value	OMX_AUDIO_PCMModeLinear
Initial value	OMX_AUDIO_PCMModeLinear
Remarks	Not supported.

eChannelMapping

Configurable value	-
Acquirable value	eChannelMapping[0]= OMX_AUDIO_ChannelLF eChannelMapping[1]= OMX_AUDIO_ChannelRF
Initial value	eChannelMapping[0]= OMX_AUDIO_ChannelLF eChannelMapping[1]= OMX_AUDIO_ChannelRF
Remarks	Not supported.

6.4. OMX_AUDIO_PARAM_AACPROFILETYPE

[Structure] Please refer to section 4.1.9 in the related document [3].

[Function] Please refer to section 4.1.9 in the related document [3].

[Members]

Member Name	Get	Set
nSize	W	W
nVersion	R	-
nPortIndex	W	W
nChannels	R	W
nSampleRate	R	W
nBitRate	R	W
nAudioBandWidth	R	-
nFrameLength	R	-
nAACtools	R	-
nAACERtools	R	-
eAACProfile	R	-
eAACStreamFormat	R	W
eChannelMode	R	W

[Details]

nSize

Configurable value	Specify the size (in bytes) of the OMX_AUDIO_PARAM_AACPROFILETYPE structure.
Acquirable value	-
Initial value	-
Remarks	-

nVersion

Configurable value	-
Acquirable value	Specification version of OpenMAX IL (1.1.2).
Initial value	Specification version of OpenMAX IL (1.1.2).
Remarks	-

nPortIndex

Configurable value	APB+1
Acquirable value	-
Initial value	-
Remarks	-

nChannels

Configurable value	-
Acquirable value	nChannels of OMX_AUDIO_PARAM_PCMMODETYPE structure
Initial value	2
Remarks	-

nSampleRate

Configurable value	-
Acquirable value	nSamplingRate of OMX_AUDIO_PARAM_PCMMODETYPE structure
Initial value	48000
Remarks	-

nBitRate

Configurable value	VBR: 0 CBR: 1ch: 8000 - 288000, 2 ch: 16000 - 576000	
Acquirable value	Setting value	
Initial value	128000	
Remarks	**nSampleRate [Hz]**	**nBitRate [bps/ch]**
	8,000	8000 - 48,000
	11,025	8000 - 66,150
	12,000	8000 - 72,000
	16,000	8000 - 96,000
	22,050	8000 - 132,300
	24,000	8000 - 144,000
	32,000	8000 - 192,000
	44,100	8000 - 264,600
	48,000	8000 - 288,000
	For VBR, set as 0. For CBR, set the value according to the nSampleRate and nChannels of this structure. For the setting values beyond the defined range, it will be transformed to a valid value in the media component before the operation. ・ For the value less than the lower limit, it will work at the lower limit value. ・ For the value higher than the upper limit, it will work at maximum value.	

nAudioBandWidth

Configurable value	-
Acquirable value	0
Initial value	0
Remarks	Not supported.

nFrameLength

Configurable value	-
Acquirable value	1024
Initial value	1024
Remarks	Not supported.

nAACtools

Configurable value	-
Acquirable value	0x0000000F
Initial value	0x0000000F
Remarks	Not supported.

nAACERtools

Configurable value	-
Acquirable value	OMX_AUDIO_AACERNone
Initial value	OMX_AUDIO_AACERNone
Remarks	Not supported.

eAACProfile

Configurable value	-
Acquirable value	OMX_AUDIO_AACObjectLC
Initial value	OMX_AUDIO_AACObjectLC
Remarks	-

eAACStreamFormat

Configurable value	OMX_AUDIO_AACStreamFormatMP2ADTS OMX_AUDIO_AACStreamFormatMP4ADTS(*) OMX_AUDIO_AACStreamFormatMP4FF OMX_AUDIO_AACStreamFormatRAW	
Acquirable value	Setting value.	
Initial value	OMX_AUDIO_AACStreamFormatMP2ADTS	
Remarks	**Value**	**Description**
	OMX_AUDIO_AACStreamFormatMP2ADTS	MPEG-2 AAC ADTS format
	OMX_AUDIO_AACStreamFormatMP4ADTS (*)	MPEG-4 AAC ADTS format
	OMX_AUDIO_AACStreamFormatMP4FF	MPEG-4/ISO File Format
	OMX_AUDIO_AACStreamFormatRAW	AAC RAW format
	(*) If OMX_AUDIO_AACStreamFormatMP4ADTS is specified, this software works as OMX_AUDIO_AACStreamFormatMP2ADTS is specified.	

eChannelMode

Configurable value	OMX_AUDIO_ChannelModeStereo OMX_AUDIO_ChannelModeDual OMX_AUDIO_ChannelModeMono			
Acquirable value	Setting value.			
Initial value	OMX_AUDIO_ChannelModeStereo			
Remarks	**Value**	**Description**		
	OMX_AUDIO_ChannelModeStereo	Stereo 2 channels		
	OMX_AUDIO_ChannelModeDual	Main/sub audio 2 channels		
	OMX_AUDIO_ChannelModeMono	Monaural 1 channel		
	The setting of nChannels has priority over this setting in execution.			
	Setting Value and Acquirable Value		**Executing Value**	
	nChannels	**eChannelMode**	**nChannels**	**eChannelMode**
	1	OMX_AUDIO_ChannelModeStereo	1	OMX_AUDIO_ChannelModeMono
		OMX_AUDIO_ChannelModeDual		
		OMX_AUDIO_ChannelModeMono		
	2	OMX_AUDIO_ChannelModeStereo	2	OMX_AUDIO_ChannelModeStereo
		OMX_AUDIO_ChannelModeMono		
	2	OMX_AUDIO_ChannelModeDual	2	OMX_AUDIO_ChannelModeDual

6.5. Structure Members Used in a Unique Manner

Table 6-2 shows structure members used in a unique manner for AAC-LC Encoder Media Component.

Table 6-2 Structure Members Used in a Unique Manner

Structure Name	Member	Usage
OMX_BUFFERHEADERTYPE	nOffset	Non-supported. Please set 0
	hMarkTargetComponent	Any value can be specified to the OMX_BUFFERHEADERTYPE structure which is input by the OMX_EmptyThisbuffer( ) function. The value specified in this member is copied into the corresponding member of the OMX_BUFFERHEADERTYPE structure which is returned by the (*FillBufferDone)( ) callback function.
	pMarkData	
	nTickCount	
	nTimeStamp	Any value can be specified to the OMX_BUFFERHEADERTYPE structure which is input by the OMX_EmptyThisbuffer( ) function. The value specified in this member is used for calculating the output value of corresponding member of the OMX_BUFFERHEADERTYPE structure which is returned by the (*FillBufferDone)( ) callback function.
	nFlags	Please refer to section 6.5.1.
OMX_AUDIO_PARAM_AACPROFILETYPE	nChannels	The value will not be reflected even if it is specified by the function OMX_SetParameter().
	nSampleRate	

6.5.1. Buffer Flag (nFlags)

The buffer flag (nFlags in the OMX_BUFFERHEADERTYPE structure) for AAC-LC Encoder Media Component is shown as below.

Table 6-3 Buffer Flag for I/O Port

Flag Name (nFlags)	Description for support
OMX_BUFFERFLAG_EOS	This flag can be used as described in the related document [2]. Please use this flag in order to get all of the output of input data. The output stream data is relatively short if the OMX_BUFFERFLAG_EOS is unused.
OMX_BUFFERFLAG_STARTTIME	These flags do not affect the processing of Media Component but the flag set to input buffer is transferred to related output buffer.
OMX_BUFFERFLAG_DECODEONLY	
OMX_BUFFERFLAG_DATACORRUPT	
OMX_BUFFERFLAG_ENDOFFRAME	
OMX_BUFFERFLAG_SYNCFRAME	
OMX_BUFFERFLAG_EXTRADATA	
OMX_BUFFERFLAG_CODECCONFIG	When OMX_AUDIO_AACStreamFormatMP4FF is specified to the eAACStreamFormat of OMX_AUDIO_PARAM_AACPROFILETYPE, the setting will be operated in the first FillBufferDone callback fuction after the state transition from OMX_StateIdle to OMX_StateExecuting. The AudioSpecificConfig data of MPEG-4/ISO File Format is stored in the buffer with this flag.

7. Events

There is no particular event for AAC-LC Encoder Media Component.

8. Memory Size

Table 8-1 shows the size and purpose of main memory areas used in AAC-LC Encoder Media Component, as well as the value of nBufferSize, nBufferCountAcutal, nBufferCountMin in the OMX_PARAM_PORTDEFINITONTYPE structure.

Table 8-1 Main Memory Areas used in AAC-LC Encoder Media Component

Memory Area Name	Memory Size (byte)			Description
Input Buffer (APB + 0)	**OMX_PARAM_PORTDEFINITIONTYPE**		**Value**	Buffer to store input PCM data. This is the size of memory area allocated by the OMX_AllocateBuffer() function.
	nBufferSize	Minimum Size	4096	
		Default Size	32768	
		Maximum Size	32768	
	nBufferCountActual	Minimum Count (= nBufferCountMin)	1	
		Default Count	8	
		Maximum Count	8	
Output Buffer (APB + 1)	**OMX_PARAM_PORTDEFINITIONTYPE**		**Value**	Buffer to store output stream data. This is the size of memory area allocated by the OMX_AllocateBuffer() function.
	nBufferSize	Minimum Size	1536	
		Default Size	2048	
		Maximum Size (= nBufferCountMin)	2048	
	nBufferCountActual	Minimum Count	1	
		Default Count	16	
		Maximum Count	16	

- Additionally, areas for such as context and task communication are need.

Revision History	OMX Media Component User's Manual AAC-LC Encoder Part

Rev.	Date	Description	
		Page	Summary
0.01	Nov. 20, 2013	-	Newly created.
0.02	Feb, 12, 2014	-	Due to the modification of Input API The explanation of nChannels and nSamplingRate in Section 6.3 is revised The explanation of nChannels and nSampleRate in Section 6.4 is revised The explanation of the priority of eChannelMode is added to the remark of eChannelMode in Section 6.5
0.03	Feb. 21, 2014	-	The explanation of OMX_PARAM_PORTDEFINITIONTYPE structure and the Internal Work Buffer Size are added to Section 8
0.10	Jul. 18, 2014	-	Correction of errors.
1.00	Oct. 10, 2014	-	Official Release

OMX Media Component User's Manual
AAC-LC Encoder Part

Publication Date : Oct. 10, 2014 Rev. 1.00
Published by: Renesas Electronics Corporation

SALES OFFICES Renesas Electronics Corporation http://www.renesas.com

Refer to "http://www.renesas.com/" for the latest and detailed information.

Renesas Electronics America Inc.
2801 Scott Boulevard Santa Clara, CA 95050-2549, U.S.A.
Tel: +1-408-588-6000, Fax: +1-408-588-6130

Renesas Electronics Canada Limited
1101 Nicholson Road, Newmarket, Ontario L3Y 9C3, Canada
Tel: +1-905-898-5441, Fax: +1-905-898-3220

Renesas Electronics Europe Limited
Dukes Meadow, Millboard Road, Bourne End, Buckinghamshire, SL8 5FH, U.K
Tel: +44-1628-585-100, Fax: +44-1628-585-900

Renesas Electronics Europe GmbH
Arcadiastrasse 10, 40472 Düsseldorf, Germany
Tel: +49-211-6503-0, Fax: +49-211-6503-1327

Renesas Electronics (China) Co., Ltd.
Room 1709, Quantum Plaza, No.27 ZhiChunLu Haidian District, Beijing 100191, P.R.China
Tel: +86-10-8235-1155, Fax: +86-10-8235-7679

Renesas Electronics (Shanghai) Co., Ltd.
Unit 301, Tower A, Central Towers, 555 Langao Road, Putuo District, Shanghai, P. R. China 200333
Tel: +86-21-2226-0888, Fax: +86-21-2226-0999

Renesas Electronics Hong Kong Limited
Unit 1601-1613, 16/F., Tower 2, Grand Century Place, 193 Prince Edward Road West, Mongkok, Kowloon, Hong Kong
Tel: +852-2265-6688, Fax: +852 2886-9022/9044

Renesas Electronics Taiwan Co., Ltd.
13F, No. 363, Fu Shing North Road, Taipei 10543, Taiwan
Tel: +886-2-8175-9600, Fax: +886 2-8175-9670

Renesas Electronics Singapore Pte. Ltd.
80 Bendemeer Road, Unit #06-02 Hyflux Innovation Centre, Singapore 339949
Tel: +65-6213-0200, Fax: +65-6213-0300

Renesas Electronics Malaysia Sdn.Bhd.
Unit 906, Block B, Menara Amcorp, Amcorp Trade Centre, No. 18, Jln Persiaran Barat, 46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: +60-3-7955-9390, Fax: +60-3-7955-9510

Renesas Electronics Korea Co., Ltd.
12F., 234 Teheran-ro, Gangnam-Ku, Seoul, 135-920, Korea
Tel: +82-2-558-3737, Fax: +82-2-558-5141

Colophon 3.0

OMX Media Component User's Manual

Renesas Electronics Corporation