ARC® Video Subsystem H.264 Decoder v1.2

H.264 Baseline Decoder

Release Notes

5821-008

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Chapter 1 — Introduction

This release contains the ARC Video Subsystem H.264 Decoder for the ARC 700 processor with the ARC Media Extensions.

H.264 provides good video quality at bit rates that are substantially lower than those needed by the MPEG-2 MP@ML, MPEG-4 SP, and MPEG-4 ASP standards.

The following release summary is provided:

Supported IP Libraries, Tools and OS Platforms

The ARC Video Subsystem H.264 Decoder implementation supports the following IP Libraries, tools and host operating systems:-

Company	Product	Version
ARC	ARChitect 2	2.9.51 or later
ARC	ARC 700 IP Library	4.4 for MX [1]
ARC	ARC 700 IP Library	4.6 or later for MXP [2]
ARC	ARC Media Extensions IP Library (MX)	1.1 or later
ARC	ARC Media Extensions Processor IP Library (MXP)	1.1 or later
MetaWare	High C/C++ Toolset	7.4.3 Patch 2 or later
Microsoft	Windows XP	2002 Service pack 2
Red Hat	Linux	RHEL 3.0

Notes

1 ARC 700 IP Library version 4.4 is compatible with MX only

2 ARC 700 IP Library version 4.6 or later is compatible with MXP

Supported ARC Video Subsystems

The ARC Video Subsystem H.264 Decoder supports the following ARC Video Subsystems:

Product	IP Library Version
AV 417V	MXP 1.1 or MXP 1.2
AV 407V	MXP 1.2
AV 406V	MXP 1.2
AV 404V	MXP 1.2
AV 402V	MXP 1.2
AV 401V	MXP 1.3
AV 401	MX 1.1

Features

The following codecs are supported:

- H.264 Baseline Decoder

Supported Standards

The decoder conforms to the H.264 standard for baseline decode.

Release Details

The following table contains the release details for the ARC Video Subsystem H.264 Decoder implementation on the ARC 700 processor.

Software	H.264 Baseline Decoder
Processor	ARC 700
Version No	1.2
Release Date	April 2008

Installation Structure

The ARC Video Subsystem H.264 Decoder library is supplied as a single ARChitect IP Library file using the file extension `.iplib`.

Building with ARChitect creates the full build structure of the ARC Video Subsystem H.264 Decoder.

Documentation

The *ARC Video Subsystem H.264 Decoder Bookshelf* is the starting point for all the documentation, and provides links to specific reference material and additionally provides links to:

ARC Video Subsystem H.264 Decoder Release Notes: Containing a summary of the release, and changes since the last release.

ARC Video Subsystem H.264 Decoder Getting Started: Containing a summary on using the product.

ARC Video Sub-System Codecs Application Programming Interface Reference: Describing the C Application Program Interface (API) and resource requirements and the basic integration and usage of the codec library.

To view the on-line documentation, select **Help > Contents** from the ARChitect menu.

Building the ARC Video Subsystem H.264 Decoder using the ARChitect tool generates a set of documentation in portable document format (PDF).

Chapter 2 — Build Structure

A full build structure is created following successful extraction of the provided codec zip file. The contents of the extracted system are described in the following sections:

Build Specification

The ARC Video Subsystem H.264 Decoder module has the following build specifications

- Make file for building codec and example wrapper using the MetaWare C/C++ compiler toolchain
- The built codec is suitable for execution using the MetaWare debugger instruction set simulator and/or on an ARCangel 4 FPGA platform using a suitable ARC700 FPGA image.
- The build codec uses/requires the ARC700 Media Extensions with or without optional CAVLC acceleration, and is release mode (no debug information is contained in the object files)

Build Directory Structure

The directory structure for the build related files and the associated documents are as follows.

Table 1 Directory Structure

Directory	Files	Description
\docs\pdf	*.pdf	Release notes, Getting Started, Reference
\H264DecoderLib	*.h, *.c	API and memory management utility source files
\H264DecoderLib\H264Decoder, \H264DecoderLib\H264Common, \H264DecoderLib\VideoCommon, \H264DecoderLib\H264SIMDDec, \H264DecoderLib\H264VLCDec	*.h, *.cpp	H.264 codec source files (H264VLCDec is only required when doing a build to include support for hardware CAVLC acceleration)
\H264DecoderApp	*.h, *.c	Example application source files
\H264DecoderLib\deps, \H264DecoderApp\deps	*.dep	C/C++ dependency files
\H264DecoderLib\obj, \H264DecoderApp\obj	*.o	Compiled/assembled relocatable object files
\H264DecoderLib	*.a	Library/archive files

Build File Descriptions

The following sections detail the specific files contained in the installation structure:

Build Files

The root directory contains the following files used for building the projects for the ARC Video Subsystem H.264 Decoder using the project space provided.

- `Makefile` – generic make file to build the codec and wrapper application
- `h264.cmd` – linker command file to control linkage of the example application

Documents

The `docs\pdf` directory contains the following documents related to the project.

- `contents.pdf` – *ARC Video Subsystem H.264 Decoder Bookshelf*
- `h264_decoder_rel_notes.pdf` – *ARC Video Subsystem H.264 Decoder Release Notes*
- `h264_decoder_getting_started.pdf` – *ARC Video Subsystem H.264 Decoder Getting Started*
- `arc_video_subsystems_codecs_api_rf.pdf` – *ARC Video Subsystem H.264* Decoder *API Reference*

Source Files

There are a number of source directories that contain the following files, which serves as the source for making the projects.

- `H264DecoderLib\H264Decoder`, `H264DecoderLib\H264Common`, `H264DecoderLib\VideoCommon` – contains generic H.264 Baseline decoder library files (C++ source and header files)
- `H264DecoderLib\H264SIMDDec`, `H264DecoderLib\H264VLCDec` – contains ARC700 Media Extension specific accelerated code for H.264 Baseline decode (C++ source and header files)
- `H264DecoderLib` – contains utility files (`memctl.c`) and API wrapper code (`arc_h264.c`) to provide the documented ARC Video Codec API
- `H264DecoderApp` - contains an example application (`main.c`)

Header Files

The `H264DecoderLib` directory contains the following files, which are the headers required for using the API in other projects.

- `arc_codecs.h` – header file required by any code that wishes to use the ARC H.264 Video Codec library

- `stdint.h` – local implementation of C99 types
- `arc_pgu.h` – not required for this build

Linker Command File

The root directory contains the following file, which is the linker command file for memory placements.

- `h264.cmd`

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Chapter 3 — Release Change Information

The major changes from previous releases of the ARC Video Subsystem H.264 Decoder module are described here.

The following release change information is available:

Release v1.0

The first Early Access Program (EAP) release from ARC International.

Release v1.1

Contains improved decoder performance over any previous Early Access Program (EAP) releases.

Release v1.2

This release contains changes to the code to allow for the automatic detection of FMO coded sequences. Non-FMO coded content results in a significant reduction in the memory data bandwidth usage.

Chapter 4 — Known Issues

An up to date list of product issues is located on the customer support site, https://support.arc.com/.