

## H.264 4k Video Decoder IP Core

### Product Description

SOC provides an H.264 video decoder for 4K resolutions in both FPGA IP core format and a standalone all-in-one module.

An API is provided with the decoder which allows the user to configure the decoder according to the applications.

The SOC H.264 4k video decoder module is a System-On-Module (SOM) card that can be connected to a user device/PCB using a standard DDR3 memory connector. It can interface with an FPGA for user product integration or connect to I/O chips for direct product design and fabrication.

Users have the options of using the codec modules or licensing SOC IP cores for production. If IP cores are preferred, users have the option of Xilinx or Intel (Altera) FPGAs.

A network stack is also available to allow the decoder to be connected to an IP network directly via an Ethernet port.

### Key Features

- All-hardware Design
- High Speed (*Low latency, less than 0.25ms*)
- Small Silicon Footprint
- Low Power
- High Reliability (*due to hardware architecture*)
- High-Precision – 10bits available
- High-Video Quality
- Decode streams with any bit rate
- User controllable API
- Option of IP Core or Module
- Video Transmission Cores available (*Ethernet and UDP/IP network stack*)

### Specifications

- Standard: H.264/AVC (ISO/IEC14496-10)
- Profiles: High 4:2:2  
Support lower profiles
- Video resolutions: Up to 4K (3840x2160)
- Frame rate: Up to 60fps
- Chroma formats: 4:2:2 or 4:2:0
- Precision: 8 bits or 10 bits
- Input format: H.264 Elementary, or Transport Stream
- Video output format: RGB or YUV
- Audio support: AAC or MPEG-2 Layer II
- Latency: 0.5ms
- Power consumption: 1-4W (IP core)
- FPGA: Xilinx or Altera

### FPGA Resources (For 4k@30)

- **Xilinx FPGAs**
  - Logic Resources: 42,500 LUTs (for 8bit)  
46,000 LUTs (for 10bit)
  - Block RAMs: 3,500kb (for 8bit)  
3,900kb (for 10bit)
  - DSPs: 25
  - Example FPGA: Kintex-7, Zynq-7
- **Altera FPGAs**
  - ALMs: 30,000
  - Block RAMs: 3,000kb
  - DSPs: 25
  - Example FPGA: Stratix-V, Arria-10

### H.264 4k Video/Audio Decoder Module

H.264 Compressed  
4k Stream

Digital Video/Audio  
4k Data



Temperature Range: 0 – 75<sup>0</sup> C and -40<sup>0</sup> – +80<sup>0</sup>