

# H.264 AVC Intra Frame Codec

## PRODUCT DESCRIPTION

CoreEL's H.264 AVC Intra Frame Codec is one of industry's first FPGA based single chip I-frame only encoding and decoding solutions. The H.264 intra frame codec core is a high performance highly optimized and pipelined video compression-decompression engine supporting H.264/ MPEG-4 Part 10 standard. It is compliant with ISO/IEC 14496-10 standard and 2010 ITU-T H.264 standard. The core is also compliant with SMPTE RP2027-2012 standard.

The codec design is fully autonomous. It does not require any external processor to aid the codec operations. The encoder takes in uncompressed video input and outputs encoded video in Elementary Stream (ES) format or optionally in Transport Stream (TS) format. The decoder takes in the ES writes out uncompressed video on to video buffers.

The codec solution is available in both FPGA netlist and source code licensing models. CoreEL can also customize the core according to end application requirements.

Typical application include:

- Video contribution encoders and decoders
- High quality ingest and archiving video/play-out servers
- Test & measurement equipment
- Low latency video monitoring equipment
- 3D video
- Medical
- Aerospace & defence

## KEY FEATURES

Device	Max CABAC Bitrate	Max CAVLC Bitrate	HD [1080p] Frame-rate
Kintex-7 / Virtex-6	100 Mbps	600 Mbps	60 fps
Virtex-5	50 Mbps	300 Mbps	30 fps

- Supports high profile coding
- Also supports main & constrained baseline profile (4:2:0 8-bit support)
- Supports colour bit depth upto 10 bits
- 4:2:0 and 4:2:2 chroma format support
- Supports resolutions up to full HD (1920x1080) and scalable up to 4K
- Supports progressive and interlaced formats
- Frame-rate up to 60 fps for progressive Full HD resolution
- Single chip FPGA solution
- H.264 codec has been validated in hardware using
  - Joint Video Team (JVT) bit-streams
  - European Broadcasting Union (EBU) sequences
  - Fraunhofer syntax, stress and pathological streams
  - Panasonic professional bit-streams
  - Video Quality Experts Group (VQEG) sequences

- Simultaneous multi-channel encode-decode
- Rate distortion optimization
- Dual pass encoding
- CBR, VBR and capped VBR rate control
- Ultra low Latency of sub 10 ms
- Supports both CABAC & CAVLC entropy coding
- Support for mathematically lossless encoding
- CAVLC entropy mode

**PART NUMBER(S)**

The following variants of this IP core are available:

Part Numbers	Variants
C1030	H.264 AVC Intra Frame Codec
C1011	AVC Intra Class 50 (Hi10 Intra Profile)
C1012	AVC Intra Class 100 (Hi422 Intra Profile)
C1031	AVC-Intra Class 200
C1032	Standalone Entropy Encoder-Decoder