

H264OIP-HDE

H.264 Video Over IP – HD Encoder Subsystem

This Video Over IP Subsystem integrates H.264 compression, Transport Stream and RTP/UDP/IP encapsulation to enable the rapid development of complete video streaming products. Hardware reference designs and customization services complete the solution.

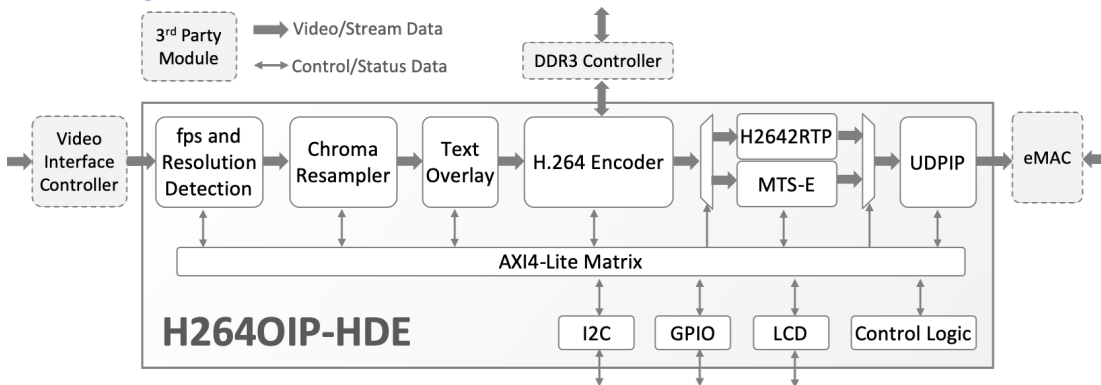
The subsystem can be configured to use one of the H.264 Low Power or Ultra-Fast encoder cores and the MTS-E, RTP and UDPIP, hardware stacks available from CAST. Flexible interfaces allow easy integration of video, memory, and network controllers, and AXI4-Lite slave interfaces allow a host processor to access all control and status registers. An optional custom logic module allows standalone, processor-free operation and provides access to control and status registers via UDP packets. Video and stream data are transferred among the subsystem's modules using AXI-Stream, making removing or adding modules straightforward.

The produced stream can be decoded using H.264-compatible software viewers (e.g. VLC), or CAST's Low-Latency H.264 Decoder subsystem.

Applications

The H264OIP-HDE Subsystem is suitable for broadcasting, surveillance, industrial, defense, and medical live-streaming applications. The software-free platform consumes significantly less energy than software based solutions, making it ideal as a compression coprocessor in battery-operated devices with video streaming capabilities.

Block Diagram



Reference Designs

These available turnkey reference designs for AMD and Intel devices extend the H264OIP-HDE Subsystem with third-party Ethernet MAC, video-in and DDR memory controllers.

FPGA Family and Platform	Video-In	Stream Out	3rd Party Cores	Video Formats
Intel Arria 10 DK-DEV-10AX115S-A	HDMI (HSMC HDMI)	1G Ethernet	Intel eMAC and DDR3 MegaCores	720p25/30/50/60 1080p@30/50/60
AMD Kintex-7 KC705	HDMI (FMC HDMI1.4a Card)	1G Ethernet	AMD TEMAC and DDR3 controller LogiCores	720p25/30/50/60 1080p@30/50/60

Customization Services

CAST can integrate the H264OIP-HDE subsystem with your choice of video-in, memory, and network controllers. We can also modify it to support multiple video channels, or different CAST compression cores.

FEATURES

- H.264 High, Main or Baseline Profile Video Compression
 - 4:2:2 or 4:2:0
 - Ultra-low, sub-frame latency capable
 - Intra-Only options suitable for AVC Intra 50/100
- RTP or MPEG Transport Stream and UDPIP Encapsulation
- Processor-free UDP-controlled operation
- AXI4-ST bus for Video & Stream

Customization Options

- Integration with Video-In Controllers (e.g., DVI, HDMI, MIPI-CSI, or SDI)
- Integration with IP-based MAC controllers (e.g., Ethernet or 802.11 WiFi)
- Multiple video channels, different video preprocessing modules, or different compression algorithms (e.g., JPEG)