# 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.

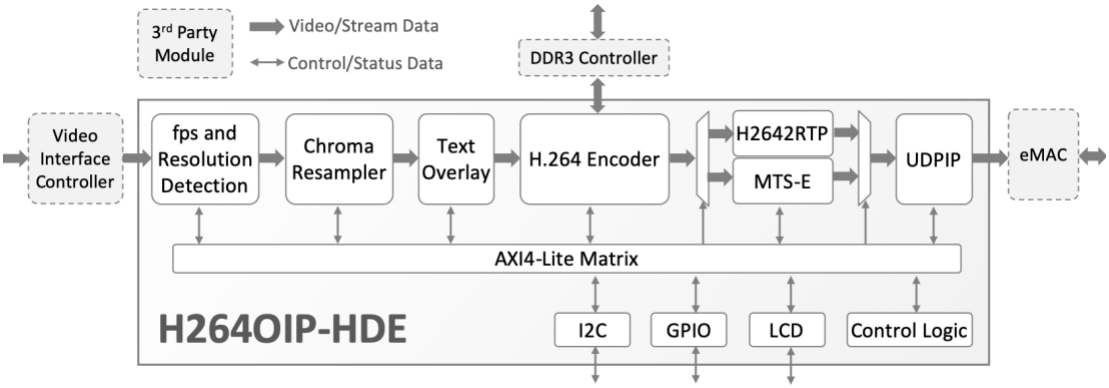
### FEATURES

- 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)

## Block Diagram




## Reference Designs

These available turnkey reference designs for Xilinx 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 Stratix IV GX<br>DK-DEV-4SGX230N | DVI or HDMI<br>(HSMC DVI or HDMI) | 1G Ethernet | Intel eMAC and DDR3 controller MegaCores | 720p25/30/50/60<br>1080p@30 |
| Intel Arria V<br>DK-START-5AGXB3N | DVI or HDMI<br>(HSMC DVI or HMDI) | 1G Ethernet | Intel eMAC and DDR3 MegaCores | 720p25/30/50/60<br>1080p@30 |
| Intel Arria 10<br>DK-DEV-10AX115S-A | HDMI<br>(HSMC HDMI) | 1G Ethernet | Intel eMAC and DDR3 MegaCores | 720p25/30/50/60<br>1080p@30/50/60 |
| Xilinx Kintex-7<br>KC705 | HDMI<br>(FMC HDMI1.4a Card) | 1G Ethernet | Xilinx TEMAC and DDR3 controller LogiCores | 720p25/30/50/60<br>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.


www.cast-inc.com • info@cast-inc.com • tel +1 201.391.8300
CAST, Inc. 50 Tice Blvd, Suite 340, Woodcliff Lake, NJ 07677 USA