

JPEG XS 8K FPGA Evaluation Kit

intoPIX TicoXS Flawless Imaging Profile (FIP) video codec with the new JPEG XS TDC Profile on Intel Agilex® FPGAs

The new JPEG XS ISO standard specifies a compression technology for high-quality video transport. Intel has a complete evaluation platform developed in collaboration with intoPIX for 8K-based applications on the Intel Agilex FPGA, providing an easy way to assess the latest JPEG XS profiles for your 8K embedded video and image processing applications.



Market Dynamics

- Displayed resolutions and video quality are rising, and the sheer amount of uncompressed video data that is produced, collected, and transported is becoming unmanageable. Transporting 8K compressed video enables the creation of more intelligent distribution systems.
- Now more than ever, the JPEG XS standardized compression solution enables designers to manage more pixels, save cost and power, simplify connectivity, and preserve quality – all with zero latency and zero implementation complexity.
- The intoPIX 8K TicoXS Flawless Imaging Profile (FIP) Codec IP on Intel® FPGAs responds to these challenges for custom video processing applications. With low complexity, the core includes the new JPEG XS TDC Profile released in 2024 and the largely deployed JPEG XS High Profile. With no latency and no loss of visual quality, 8K can be easily transported over Gigabit networks.

Solution in Action

JPEG XS compression can be used in many applications, including 8K, where quality and latency are crucial, typically those previously transporting uncompressed image and video data. Target applications include:

- IP production and remote production
- 8K/4K/HD AV over IP (SMPTE 2110 and IPMX) and KVM over Gigabit networks (1/ 2.5 Gigabit Ethernet)
- LCD and LED video walls distribution
- Wireless displays, 5G, and Internet of Things (IoT)
- LAN, WAN, and cloud transmission
- Medical imaging
- Smart city cameras
- Virtual or augmented reality

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Solution Description

Features

- Easy-to-use real-time encode-decode loopback
- Compact intoPIX implementation (low logic, low memories, and optional DDR)
- JPEG XS (ISO/IEC 21122) is a compression technology with an end-to-end latency of a few lines (< 1ms)
- Compliance with near-lossless quality assessment on images (ISO/IEC 29170-2)
- Integrated intoPIX TicoXS FIP 8K 60 fps 444/422/420 Encoder and Decoder IP cores with the HDMI Intel FPGA IP (TX / RX) on the Intel Agilex® 7 FPGA I-Series Transceiver-SoC Development Kit
- Configurable settings to evaluate different bandwidth, compression ratios, and coding profiles.
- Support for JPEG XS High Profile and the new FIP with JPEG XS TDC Profile
- Scalable to other Intel FPGAs, such as Intel Arria® and Intel Stratix® devices

Customer Benefits

- Easy way to evaluate the latest JPEG XS 8K workflows in FPGAs that offer more compression efficiency. Try the quality of 8K 30 fps at 750 Mbps or 8K 60 fps at 1.6 Gbps with zero latency!
- Requires only an Intel Agilex 7 FPGA I-Series Transceiver-SoC Development Kit (4x F-Tile) and HDMI 2.1 FMC daughter card: one board implements an encode-decode loopback.
- The intoPIX TicoXS FIP IP with JPEG XS leverages the ease of use and productivity enabled by the Intel FPGA Video and Vision Processing Suite (Intel FPGA VVP Suite).
- Full Intel end-to-end solution: use the same JPEG XS video codec in your embedded FPGA design with the intoPIX FPGA IP and in your Intel CPU or GPU design with the intoPIX Fast TicoXS Software Development Kit (SDK).

Learn More

- [Intel Agilex FPGA Overview](#)
- [HDMI Intel FPGA IP User Guide](#)
- [Intel FPGA Video and Vision Processing Suite](#)
- [Intel Agilex 7 FPGA I-Series Transceiver-SoC Development Kit](#)
- [intoPIX TicoXS FIP FPGA IP](#)
- [intoPIX 8K HDMI 2.1 TicoXS FIP on Intel FPGAs Evaluation](#)
- [JPEG XS](#)
- [FMC HDMI 2.1 Daughter Card](#)



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