DATASHEET

DENSITÉ 3+ XIP-3901-JPEG-XS

Multichannel JPEG XS Encode/ Decode SMPTE ST 2110 Application for XIP-3911 and XIP-3901

XIP-3901-JPEG-XS Encode/Decode application for the software-defined platforms Densité 3+ XIP-3911 and XIP-3901.

The XIP-3901-JPEG-XS application from Grass Valley supports multiple channels of HD and UHD encoding/ decoding between SMPTE ST 2110-20 uncompressed video and SMPTE ST 2110-22 high-quality compressed video using the JPEG XS standard. The application provides a low-latency encoding side and an optional SMPTE ST 2110 stream alignment is available on the decoding side to match production studio equipment top-of-frame reference, if needed. Network connectivity is enabled with dual 25 GbE I/O for full SMPTE ST 2022-7 redundancy.

Based on open standards, this IP edge application is compliant with the SMPTE ST 2110 suite of standards and the JT-NM TR-1001 technical recommendation for easy integration in a broadcast network production environment. The XIP-3901-JPEG-XS compression is fully compliant with the ISO/IEC 21122-1 standard and uses the high 4:2:2 and 10-bit profile, which makes this application fully industry compliant and interoperable with multiple vendors.

The XIP-3901-JPEG-XS application offers a bridge between a remote contribution network and a core production network using ultra-low latency encoding and decoding to efficiently manage network bandwidth over long distances, supporting compression ratios from 6:1 to 36:1.

Combined with JPEG XS-enabled LDX cameras, IPVU and GV Orbit, Grass Valley's JPEG XS remote production workflow increases the efficiency of production teams by reducing the movement of people and equipment, increasing the utilization kit and reducing on-site setup times.

The XIP-3911 and XIP-3901 Agile Processing Platforms also provide long-term value by protecting a customer's CAPEX investment in current HD and UHD SDI and now IP infrastructure. The application-based licensing model adapts the XIP-3911 to new workflows with different software applications resulting in a truly virtualized hardware environment.

The XIP-3901-JPEG-XS is configured, controlled and monitored by GV Orbit from Grass Valley, taking advantage of many features and functions specifically crafted to make IP easy. It can also be configured using the on-board HTML5 web interface and documented Rest API, and controlled via NMOS.

Based on the proven Densité modular framework of over 100 cards, the flexible, space-efficient XIP-3911 agile processing platform can accommodate a gradual adoption of different production elements into 1080p and 4K UHD broadcasting workflows, all while protecting your investment in installed equipment. With flexibility to configure up to 12 XIP-3911 multichannel JPEG XS applications per Densité 3+ FR4 frame, the Densité platform scales to a density of 48 4K UHD or 96 HD encoder/decoder in a 4 RU frame. This means space and cost-efficient scaling today and tomorrow.

Key Features

- Independent multichannel JPEG XS UHD/HD video encoder/decoder

- Ultra-low latency codec based on IntoPix's ISO standardized JPEG XS transported over SMPTE ST 2110-22

- User selectable compression ratio from 6:1 to 36:1 (6:1 is nearly lossless, 10:1 is visually lossless)

- Supports HD (720p/1080i/1080p) and 4K UHD (2160p) video resolutions

- 3 operating modes available that optimizes number of encoding/decoding paths:
  - 2 HD/UHD encoders and 2 HD/UHD decoders
  - 8 HD encoders
  - 8 HD decoders

- XIP-3911 and XIP-3901 applications supporting SMPTE ST 2110 suite of standard on dual 25 GigE IP media network interfaces:
  - SMPTE ST 2110-20/21 video outputs with associated SMPTE ST 2110-40 metadata streams
  - SMPTE ST 2110-22 Constant Bit-Rate Compressed Video
  - SMPTE ST 2110-30/31 Level A, B, C (up to 16 channels) audio stream
  - SMPTE ST 2022-7 Class A & D seamless protection switching of IP streams
  - SMPTE ST 2059-1 & -2 precision time protocol with best master clock algorithm
  - Support unicast and multicast signals
  - JT-NM TR-1001-1 compliant including in-band or out-of-band control of NMOS IS-04/IS-05
  - Support of DHCP, LLDP and DNS-SD for easy IP configuration
  - Media interfaces supports AOC cable, Short and Long Reach fiber
  - Supports FEC74 (CL74 Fire Code) and FEC108 (Reed Solomon IEEE) Forward Error Correction

- 12G 2160p, 3G 1080p and HD 1080i/720p SDI output available on the decoder paths

- Complete integration with GV Orbit for configuration, control and monitoring

- HTML5 web-based configuration interface

- Open configuration management & monitoring with the Rest API

- Individual XIP-3911 and XIP-3901 applications licensed, purchased as needed

- Rapid switching between XIP-3911 applications

Densité 3+ FR4

4 RU

12 XIP-3911 = 24 4K UHD Channels

Densité 3+ FR1

1 RU

2 XIP-3911 = 4 4K UHD Channels

The Grass Valley End-to-End Workflow Solution

A typical end-to-end JPEG XS-based remote production signal flow.
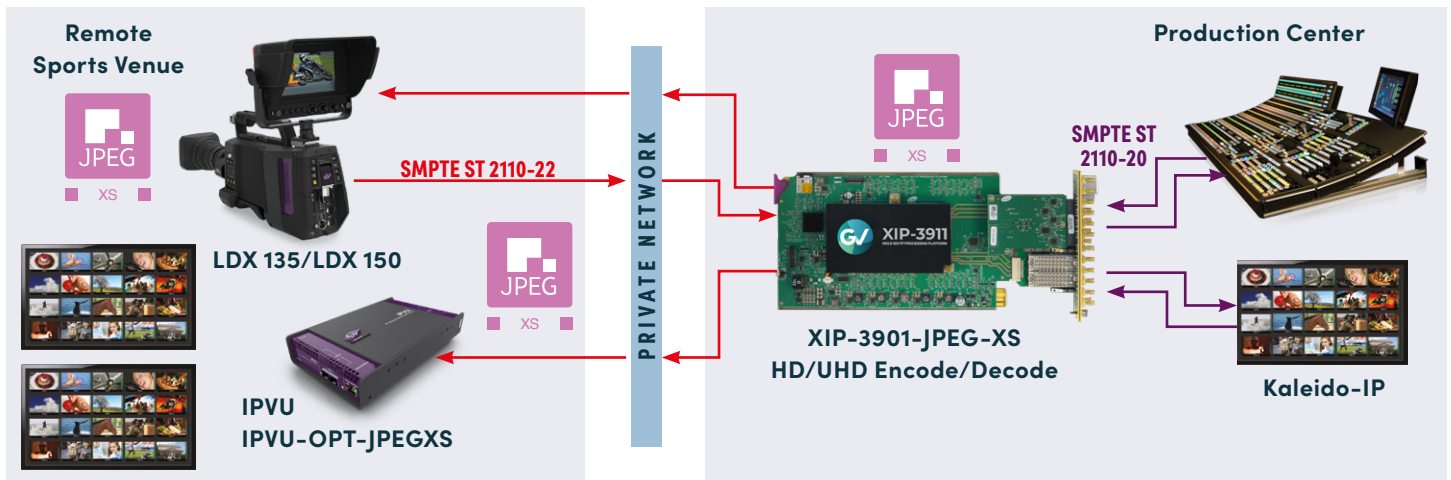
SDI Outputs

Physical: 8 used HD-BNC output connectors

SDI Standards:

SMPTE ST 292 (1.485, 1.485/1.001 Gb/s)

SMPTE ST 424 (2.970, 2.970/1.001 Gb/s)

SMPTE ST 2082-1:2015 (out 1 & 5)

Supported output formats:

HD: SMPTE ST 274: 1080i59.94, 1080i50

HD: SMPTE ST 296: 720p59.94, 720p50

3G: SMPTE ST 425 level A (mapping 1): 1080p59.94, 1080p50

12G: SMPTE ST 2082-10: 2160p59.94, 2160p50

Jitter:

HD/SD: <0.2 UI (alignment jitter)

3G: <0.3 UI (alignment jitter)

12G: <0.3 UI (alignment jitter)

Ethernet Port for Media

Physical: Two SFP28 sockets for active optical cable, short- and long-reach fiber

Standard: IEEE 802.3-2008 25 GbE

Performance: Up to 25 Gb of streaming per direction

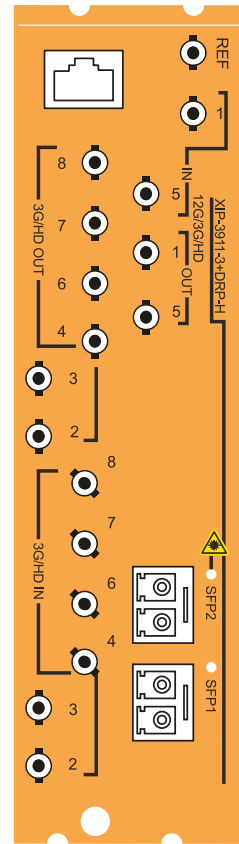### Ethernet Port for Control

Physical: One electrical RJ45 port
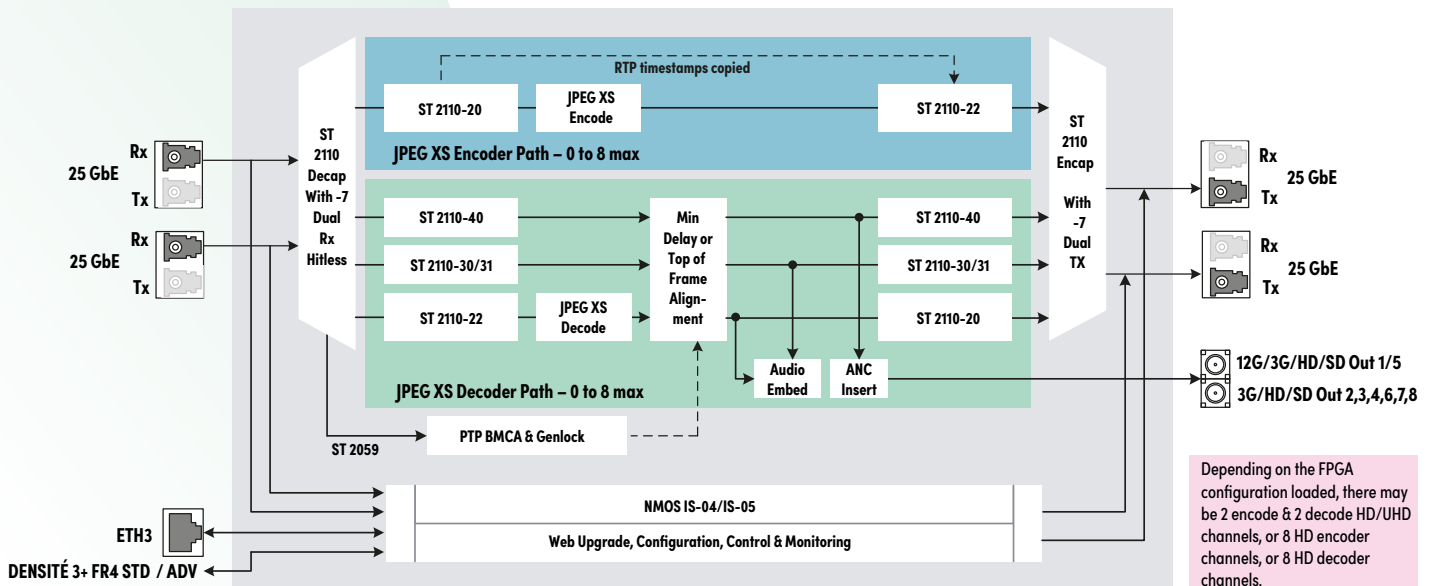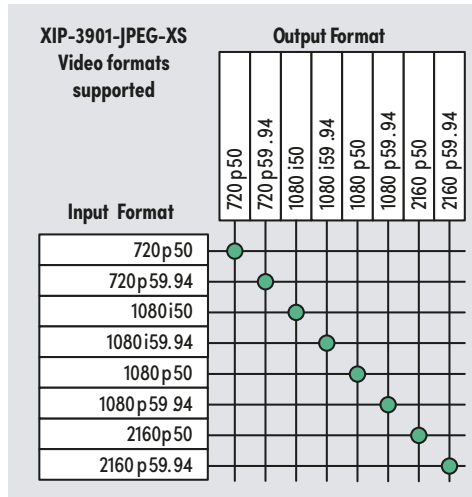
Standard: IEEE 802.3 1000 Mb/s

Video Processing Performance

Signal path: 10 bits minimum

Electrical

Power: 60W maximum

XIP-3901-JPEG-XS Video formats supported

Input Format \ Output Format	720p50	720p59.94	1080i50	1080i59.94	1080p50	1080p59.94	2160p50	2160p59.94
720p50	●							
720p59.94		●						
1080i50			●					
1080i59.94				●				
1080p50					●			
1080p59.94						●		
2160p50							●	
2160p59.94								●

XIP-3911-3+DRP-H

XIP-3901-JPEG-XS Multichannel Encode/Decode Application Block Diagram

Ordering

Application Software

XIP-3901-JPEG-XS
Multichannel JPEG XS Encode/Decode ST-2110 Application

Densité 3+ Frame

XIP-3911
Agile SDI/IP processing platform

XIP-3911-3+DRP-H
Double rear panel for Densité 3+ with HD-BNC

SFP+ Options
One or two SFP+ are needed to run this application

SFP-25G-SR
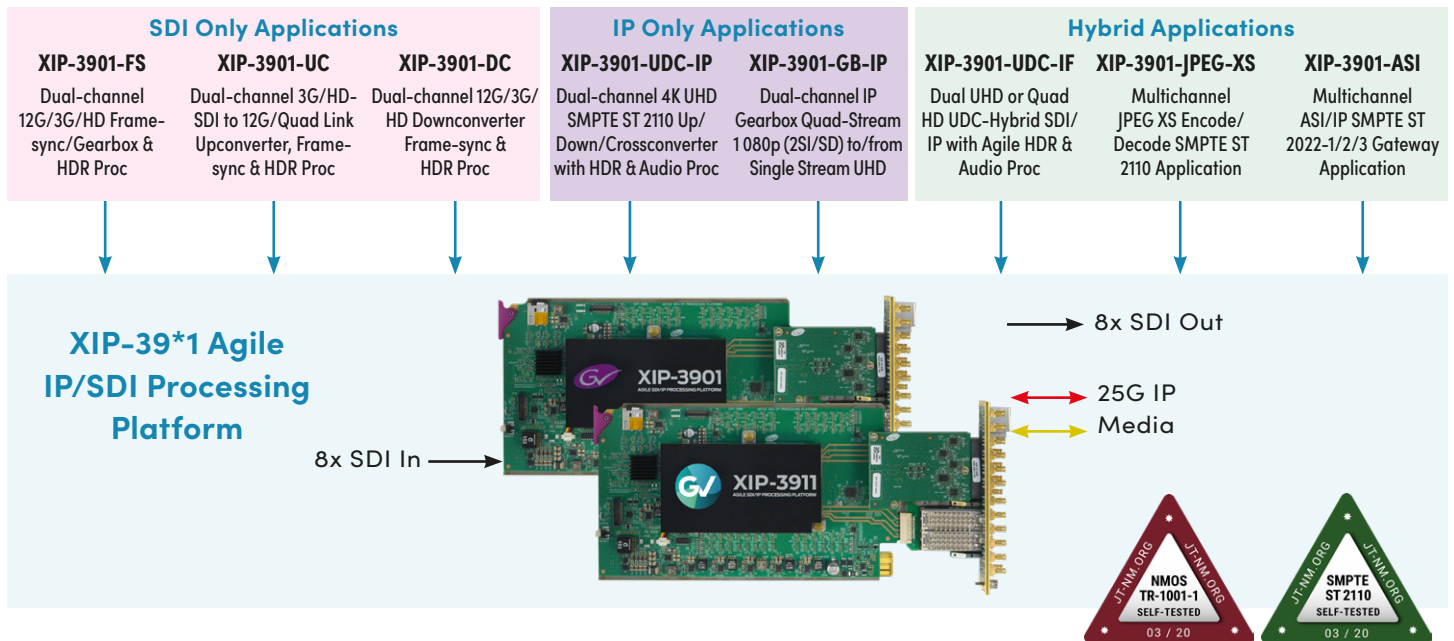SFP28 25GBASE optical transceiver MMF

SFP-25G-LR
SFP28 25GBASE optical transceiver SMF

XIP Application Portfolio

All the processing applications delivered on the XIP-3911 and XIP-3901 platforms allow live productions, either from trucks, venues, stadiums or broadcast facilities to make the most of new UHD and HDR formats. Packing lots of audio/video processing power in a small form factor results in savings in terms of space, power and weight.

The XIP-3911 Agile Processing Platform also provides long-term value by protecting a customer's CAPEX investment in current HD and UHD SDI and now IP infrastructure. The application-based licensing model adapts the XIP-3911 to new workflows with different software applications resulting in a truly virtualized hardware environment.

XIP Application Agility Evolution

SDI Only Applications			IP Only Applications		Hybrid Applications		
XIP-3901-FS	**XIP-3901-UC**	**XIP-3901-DC**	**XIP-3901-UDC-IP**	**XIP-3901-GB-IP**	**XIP-3901-UDC-IF**	**XIP-3901-JPEG-XS**	**XIP-3901-ASI**
Dual-channel 12G/3G/HD Frame-sync/Gearbox & HDR Proc	Dual-channel 3G/HD-SDI to 12G/Quad Link Upconverter, Frame-sync & HDR Proc	Dual-channel 12G/3G/HD Downconverter Frame-sync & HDR Proc	Dual-channel 4K UHD SMPTE ST 2110 Up/Down/Crossconverter with HDR & Audio Proc	Dual-channel IP Gearbox Quad-Stream 1080p (2SI/SD) to/from Single Stream UHD	Dual UHD or Quad HD UDC-Hybrid SDI/IP with Agile HDR & Audio Proc	Multichannel JPEG XS Encode/Decode SMPTE ST 2110 Application	Multichannel ASI/IP SMPTE ST 2022-1/2/3 Gateway Application

XIP-39*1 Agile IP/SDI Processing Platform

8x SDI In

8x SDI Out

25G IP Media

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