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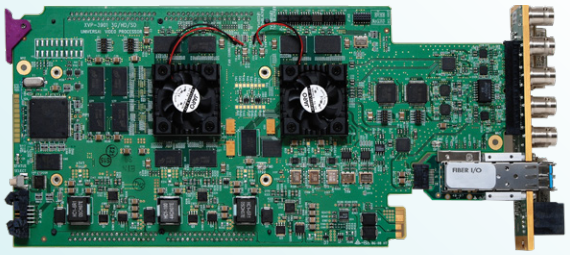
DATASHEET



XVP-3901-DPI

Densité Digital Program Insertion

3G/HD/SD DPI Inserter/Extractor with Frame Sync

Space-saving, modular platform for advanced signal processing.

The XVP-3901-DPI from Grass Valley® is the perfect solution for digital program insertion (DPI) applications. It embeds SMPTE ST 2010 packets containing SCTE 104 DPI messages based on GPI triggers. It can also monitor embedded SMPTE ST 2010 packets for specific SCTE 104 split request messages and triggers the appropriate GPO. All DPI events can be monitored and logged though GV Orbit®.

Using the RS-422 serial port, the XVP-3901-DPI becomes an SCTE 104 injector and it can interface with an automation system to receive and insert a wider range of SCTE 104 messages. The card will return different acknowledge messages to the automation to indicate when the message has been received and when it has been inserted. This allows tracking and logging using the automation's as-run.

The support of AFD (Active Format Description) SMPTE ST 2016, VLI (Video Line Index) RP-186 and WSS (Wide Screen Signaling) allows the card to adjust its ARC automatically without any external intervention. It will also re-insert the proper AFD, VLI or WSS on the output along with other HANC and VANC information. With the integration of the frame sync, incoming feed signals can be synched to house and have the proper ARC when entering the facility. The XVP-3901-DPI also offers a video proc-amp with full YUV/RGB level controls and RGB gamut correction.

The XVP-3901-DPI provides audio capabilities with processing of up to 32 channels of audio, with automatic delay to keep lip-sync. It provides shuffling and down-mixing and four AES inputs/outputs for additional flexibility.

The XVP-3901-DPI allows up to 10 cards to fit in a Densité® 3 frame. Two rears modules with a bypass relay, XVP-3901-75-3DRP-R and XVP-3901-110-3DRP-R-F, are available to automatically bypass the card's processing when the card loses power or if it is removed from the frame.

Rears modules names finishing with '-F' suffix have integrated fiber I/O for applications where fiber connectivity is required. A fiber input/output cartridge is offered as an option. This integrates and makes fiber connectivity easier to install and configure

All card parameters and statuses can be controlled or monitored through GV Orbit.

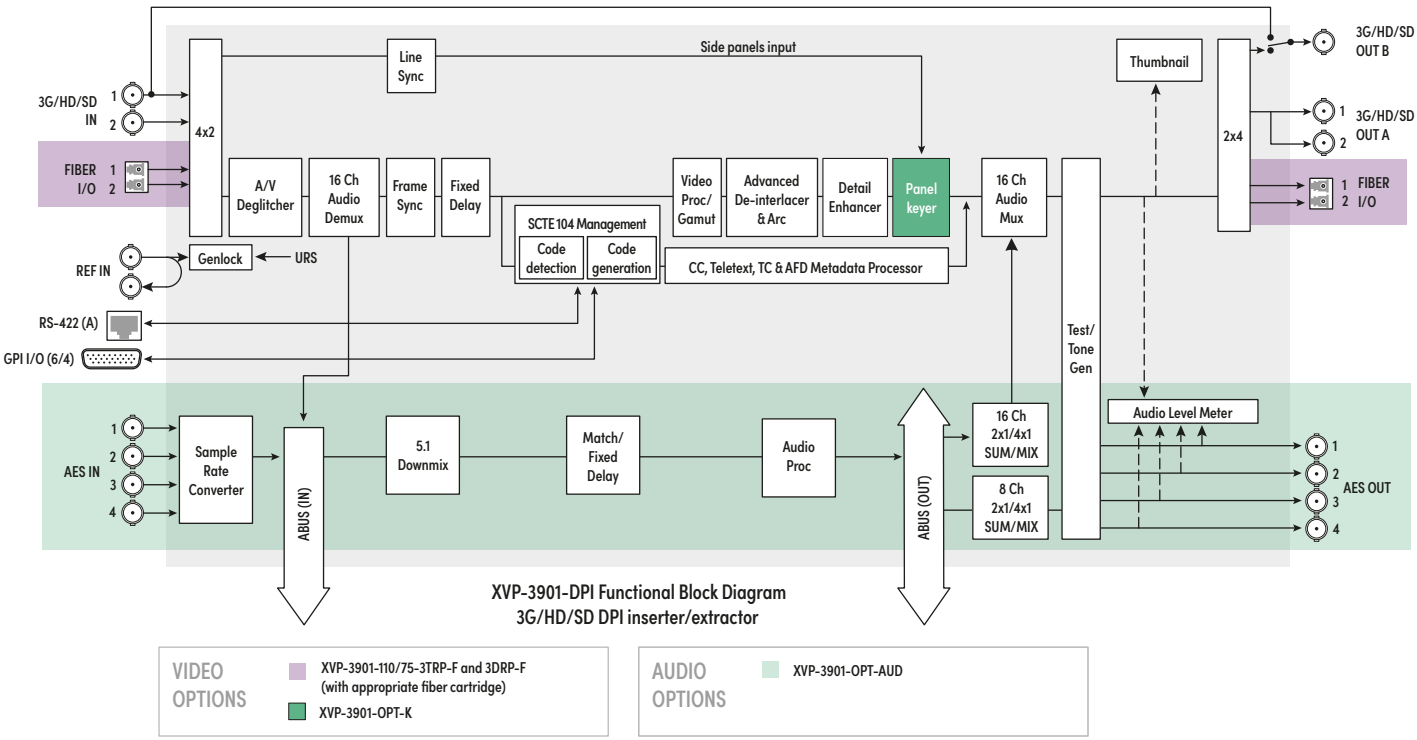
Key Features

- Inserts SCTE104 messages into VANC as per SMPTE ST 2010
- Monitors and extracts SCTE 104 packets and triggers GPI
- 6 GPI inputs and 4 GPO outputs
- Serial port for SCTE 104 serial communication with an automation system: Grass Valley Morpheus®, Florical Systems and DNF Controls GTP-32 Controls Processor
- Bypass relay on rear module (XVP-3901-75-3DRP-R, XVP-3901-110-3DRP-R-F)
- Offers a multirate 3G/HD/SD input and outputs
- Frame synchronizer and aspect ratio converter
- Supports 3G for both Level A (mapping 1) and Level B
- Flexible HD/SD/URS reference input
- Advanced video deinterlacing for higher image quality
- User-programmable additional fixed video delay up to 15 frames
- Automatic ARC using AFD (SMPTE ST 2016), video index (SMPTE RP 186) and WSS
- Custom and fixed ARC presets
- Keyer option for filling black pillars and letter box
- Built-in proc amp with YUV/RGB color correction and legalizer
- Processes and converts ancillary data such as closed-captions (CEA-608-B/CEA-708B), teletext (ETSI EN 300 706/OP-47) and timecode
- Optional optical fiber module
- Perfect audio/video synchronization plus additional audio fixed delay of up to 2 seconds
- Optional 16 channels of embedded full audio processing, shuffling and downmixing
- Offers four AES inputs and outputs

XVP-3901-DPI

Input \ Output		SD		HD				3G	
		525	625	720p50	720p59.94	1080i50	1080i59.94	1080p50	1080p59.94
SD	525	X							
	625		X						
HD	720p50			X					
	720p59.94				X				
	1080i50					X			
	1080i59.94						X		
	1080p23.98						X		
	1080pSF23.98						X		
	1080p25					X			
	1080p29.97						X		
3G	1080p50							X	
	1080p59.94								X

Video Formats Supported



XVP-3901-DPI Functional Block Diagram
3G/HD/SD DPI inserter/extractor

Specifications

Video Input (2) / Output (2)

Signal:

SMPTE ST 259-C (270 Mb/s)

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

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

Supported formats:

SD: 480i59.94, 576i50

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

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

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

Cable length*:

300 m Belden 1694A at 270 Mb/s

150 m Belden 1694A at 1.485 Gb/s

120 m Belden 1694A at 2.970 Gb/s

Return loss*: >15 dB up to 3 GHz

Jitter:

HD/SD: <0.2 UI (alignment jitter)

3G: <0.3 UI (alignment jitter)

Reference Input

Signal:

SMPTE ST 170/SMPTE ST 318/ITU 624-4 blackburst

SMPTE ST 274/SMPTE ST 296 tri-level sync

Return loss: >35 dB up to 5.75 MHz

Video Processing Performance

Signal path: 10 bits minimum

Latency: 1 frame in all modes

Additional delay: up to 15 frames

Audio Input (4)

Sampling freq.: 32 to 96 kHz

Quantization: up to 24 bits

AES3

Level: 0.2 to 7 Vp-p

Input impedance: 110Ω balanced

AES3-id

Level: 0.2 to 2 Vp-p

Input impedance: 75Ω

Return loss: 15 dB at 6 MHz

Audio Output (4)

Sampling freq.: 48 kHz

Quantization: 24 bits

AES3

Level: 2.75 Vp-p

Impedance: 110Ω balanced

AES-3id

Level: 1.0 Vp-p

Impedance: 75Ω

Return loss: 15 dB at 6 MHz

Audio Processing Performance

Quantization: 24 bits

Sampling: 48 kHz, synchronous

Number of channels: 16, 8 pairs, 4 groups

Freq. response: ±0.02 dB (20 Hz to 20 kHz)

SNR: 123 dB (A-weighted)

THD-N: -138 dB (20 Hz to 20 kHz)

Miscellaneous

Fixed delay: 0 to 2.0s

Step: 1 ms (coarse), 1 sample (fine)

GPI (6 In, 4 Out)

Connector: 26-pin D-Sub, opto-isolated

RS-422 A (Automation)

Connector: RJ-45

Signal: Automation protocol

ABUS Connector

As per ABUS standard, Grass Valley

Fiber

Full specifications available on SFP optical plug-in cartridges webpage and datasheet.

Test Pattern Generator

Video: Color bars - 100% white bar with 75% color

Audio:

Left channel pulsed 1 kHz tone

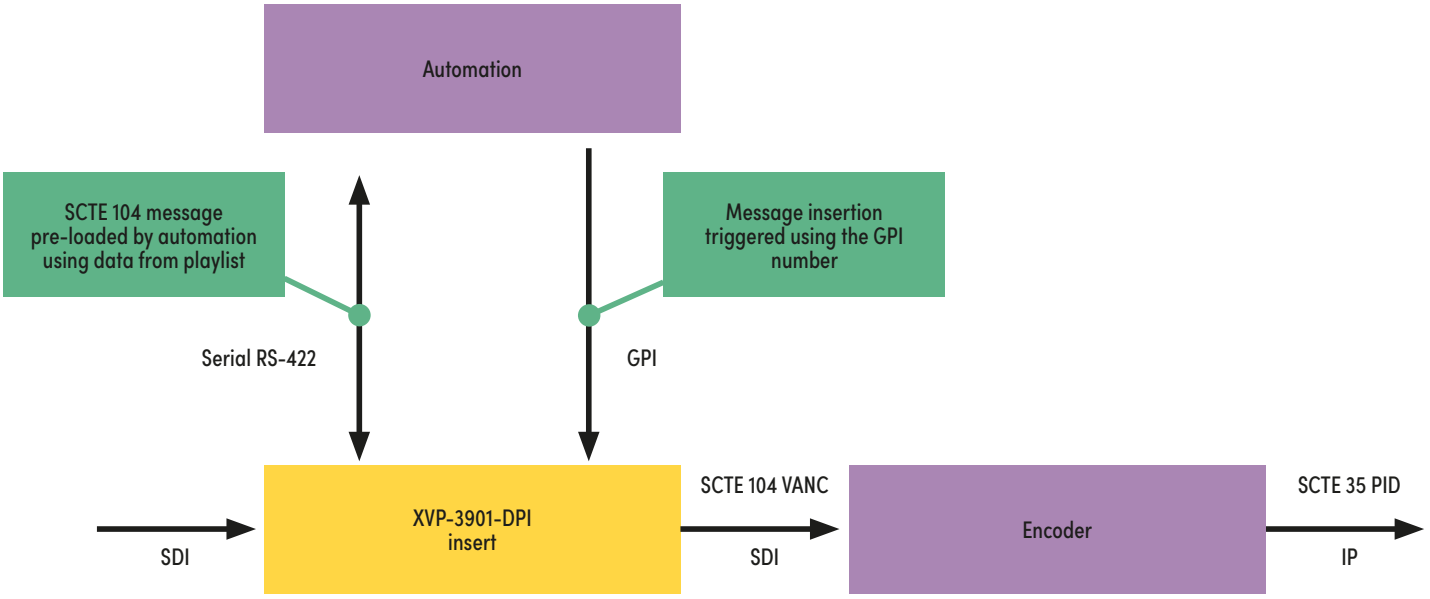
Right channel steady 1 kHz tone

Electrical

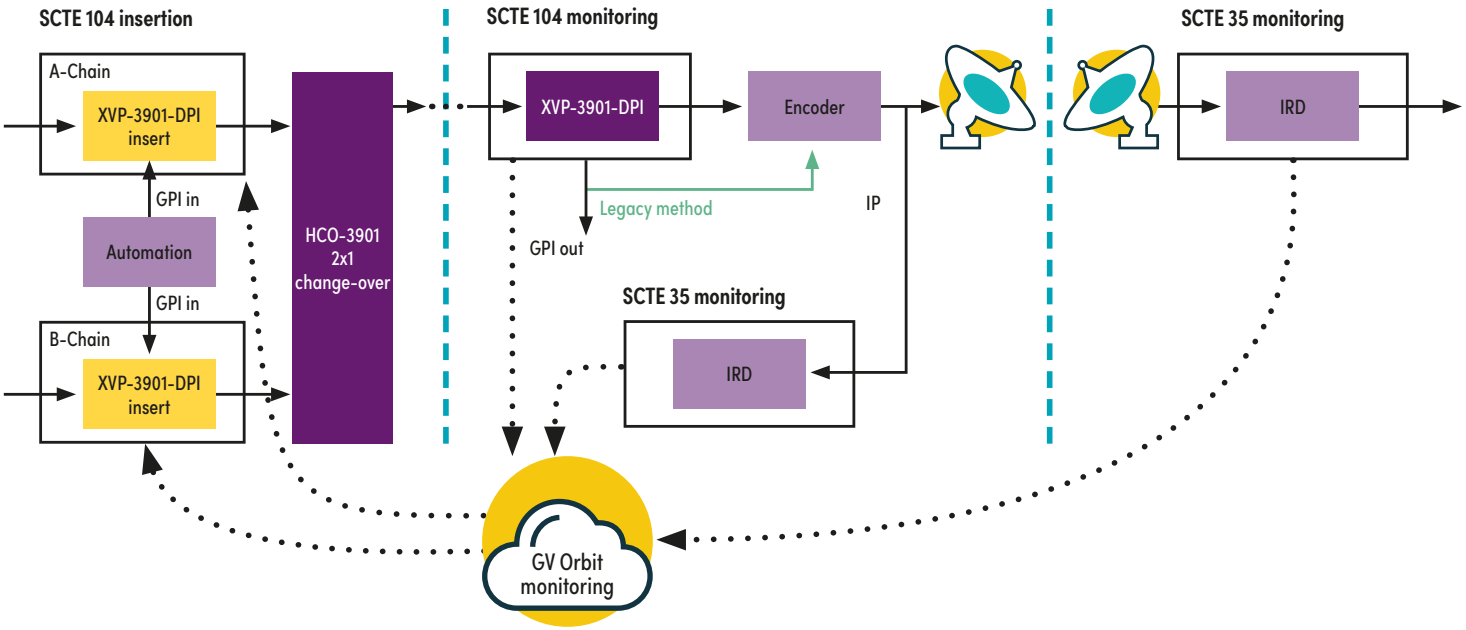
Power: 25W

* Cable length and return loss specifications will be reduced when using the output protected by the bypass relay on XVP-3901-110/75-3DRP-R rears. Refer to the manual for more detail.

Advanced SCTE 104 Insertion Using Automation



Fixed Splice Message Insertion Triggered by GPI



Ordering

Densité 3 Frame

XVP-3901-DPI
3G/HD/SD DPI inserter/extractor

XVP-3901-75-3DRP-R
Double-slot-width panel with 75Ω audio and bypass relay

XVP-3901-110-3DRP-R-F
Double-slot-width panel with 110Ω audio, bypass relay and fiber I/O

Options (software)

XVP-3901-OPT-AUD
AES IO support and 16 channels on-board audio processing option

XVP-3901-OPT-K
Background key input option

Options (hardware)

SFP-R-LC
Single fiber Rx (input) cartridge with LC/PC connector

SFP-RR-LC
Dual fiber Rx (input) cartridge with LC/PC connector

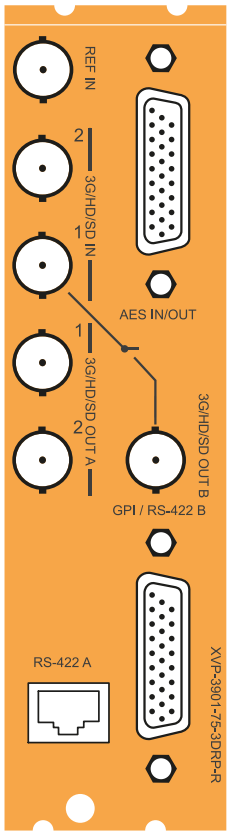
SFP-RT-S13-LC
Dual fiber Rx/Tx (input/output) cartridge 1310 nm with LC/PC connector
Other types of SFP Optical Plug-In Cartridges may be available for this product.
Please visit SFP page at www.grassvalley.com more information.

NSH26M
HD-26 to terminal block adapter

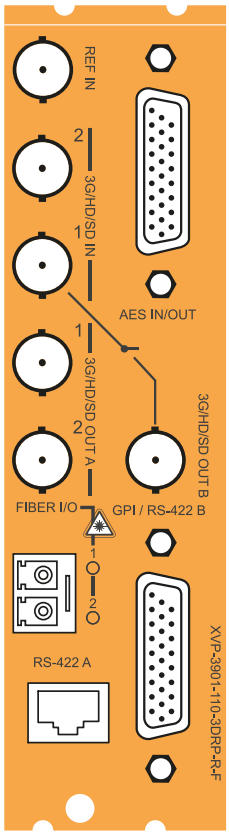
BOC-DA26-8BNC-1
75Ω digital audio breakout cable

Remote control

GV Orbit, iControl™, iControl Solo



XVP-3901-75-3DRP-R



XVP-3901-110-3DRP-R-F

This product may be protected by one or more patents. For further information, please visit: **www.grassvalley.com/patents**

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