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VENTURA

VS902

Multi-format media transport over IP/Ethernet

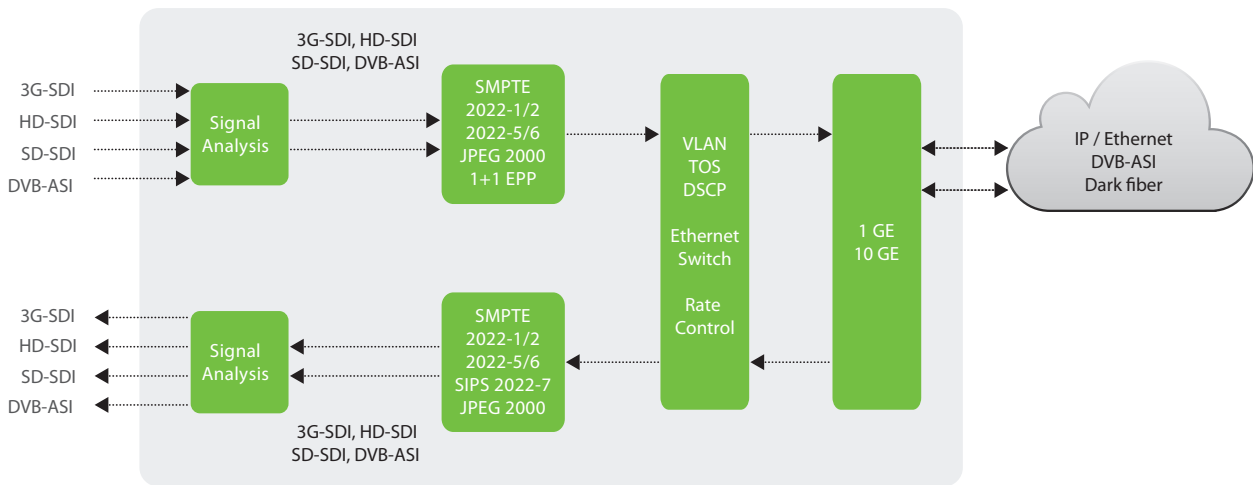**The VS902 is a modular multi-format contribution codec for IP/Ethernet networks.**

The VS902 provides linear encapsulation of uncompressed SD-SDI, HD-SDI, and 3G-SDI signals and also encapsulates DVB-ASI and MADI signals. In addition, the VS902 provides the highest quality JPEG 2000 compression for contribution video over bandwidth limited IP and ASI circuits. All IP transport is compliant with SMPTE 2022 standards. With the VS902, users can deploy multiple video circuits in point to point local loop applications or over long-distance packetized networks. This flexible platform enables highly cost-efficient video transport over a common unified platform accessing virtually any environment—including long distance, metro area and campus networks.

Applications

- Professional broadcast contribution
- Studio-to-studio media exchange
- Live sports and event contribution
- Managed video services over IP

Key features

- Multi channel DVB-ASI, MADI and 3G/HD/SD-SDI video encapsulation using SMPTE 2022-2 and SMPTE 2022-6

- Low latency contribution JPEG 2000 compression and encapsulation with 1.5 frames of end to end delay - transport over IP or ASI

- Standards-based forward error correction supporting SMPTE 2022-1 and SMPTE 2022-5 for protection against packet losses created by occasional network errors

- Seamless IP Protection Switching (SIPS) providing perfect video over IP protection switching using dual network feeds - compliant to SMPTE 2022-7

- Dual networks interfaces supporting 1 GigE and 10 GigE using SFP+ technology

VS902

High density

Simultaneous linear encapsulation and de-encapsulation of 4 x DVB-ASI / SD-SDI / HD-SDI signals or 3 x 3G-SDI signals over 10 GigE. Simultaneous encapsulation and de-encapsulation of 4 x DVB-ASI or MADI signals over 1 GigE. JPEG 2000 compression or decompression of 2 x SD-SDI / HD-SDI / 3G-SDI signals over 1 GigE or ASI.

Signal integrity tests

Provides full CRC and EDH checks on input video signals to ensure signal integrity.

IP/Ethernet toolset

Supports VLAN tagging for segregation of traffic and Quality of Service differentiation via PCP and TOS/DSCP.

Highly configurable rates

Configurable JPEG 2000 compressed video rates from 10Mbps to 600Mbps with 1Mbps resolution.

Audio support

Transparent pre-embedded audio transport for 4 groups of AES audio for SDI signals including Dolby-E and AC-3.
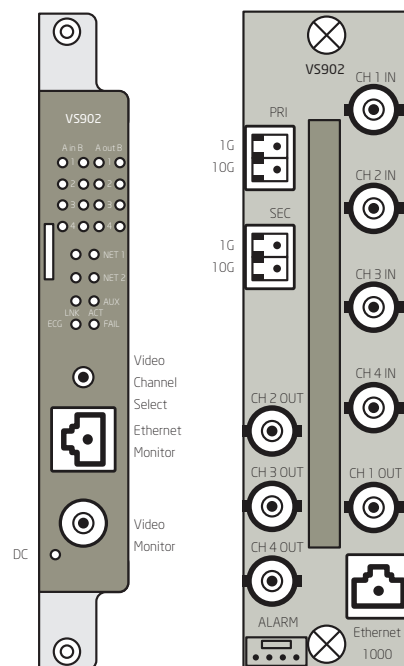
Low latency

Less then 1ms for an encode/decode cycle for uncompressed video. Less than 3 fields, or 1.5 frames when applying JPEG 2000 compression/decompression.

Remote upgrade

Supports remote firmware upgrades via the AEMS (Ventura shelf element manager) for the latest in function upgrades and fault resolution.

NEBS Level 3

Certified to perform in telecommunication installations providing reliable performance in harsh environments.

Front panel

Rear connector

Ventura VS902

Media formats

DVB-ASI	EN50083-9, 1-213Mbps 188 or 204 byte packets SPTS or MPTS
MADI	AES-10, up to 64 channels
SD-SDI	SMPTE-259-C, SMPTE-305M 625i25, 525i29.97, SDTI
HD-SDI	SMPTE-292 720p50, 720p59.94, 720p60 1080i25, 1080i29.97, 1080i30 1080p25, 1080p29.97, 1080p30
3G-SDI	SMPTE-424 1080p50, 1080p60, 1080p59.94

Media interfaces

Number of ports	4 x Input and 4 x output ports (75 Ohm BNC) 1 x Front panel monitor port (not currently used)
Sync input	Analog bi-level (black burst) or SDI - using one of the 4 input ports (75 Ohm BNC)

IP/Ethernet and ASI transport interfaces

Number of ports	4 x Ethernet ports (Front panel port not used)
Connector type	1 x RJ45, 2 x SFP/SFP+
Interface type	Gigabit Ethernet (GbE) IEEE 802.3ab (electrical) or IEEE 802.3z (optical) 10 Gigabit Ethernet (GbE) IEEE 802.3ae (optical) Fast Ethernet (FE) IEEE 802.3u Ethernet IEEE 802.3i
Protocols	IP/UDP/RTP, ARP, IGMPv2/v3, Diffserv/TOS, 802.1p (PCP), 802.1Q (VLAN)
J2K over ASI	DVB-ASI (EN-50083-9) up to 200 Mbps

Processing

Media encapsulation	ASI transport: SMPTE-2022-2 Uncompressed transport: SMPTE-2022-6 JPEG 2000 VSF TR-01 TSoIP SMPTE-2022-2 MADI transport: RTP/UDP/IP
Forward error correction (FEC)	ASI transport: SMPTE-2022-1/2 Uncompressed transport: SMPTE-2022-5 JPEG 2000: SMPTE-2022-1 MADI: SMPTE 2022-1
Seamless IP Protection Switching (SIPS)	Dual stream protection switching SMPTE 2022-7, buffers up to 250 ms of differential delay for 3G-SDI signals

JPEG 2000 compression

Number of ports	2 x SD/HD-SDI
Encoding modes	Encoder (1 or 2 channels), Decoder (1 or 2 channels, Bidirectional codec (1 encoder, 1 decoder)
Video encoding bitrates	SD-SDI: 10 – 200Mbps HD-SDI: 20 – 300Mbps (Dual)
Embedded audio	4 AES groups, user selectable, 20/24-bit resolution, uncompressed
A/V sync	±1 video line

Front panel LED indicators

VID1	Input 1 Status	Output 1-A Status	Output 1-B Status
VID2	Input 2 Status	Output 2-A Status	Output 2-B Status
VID3	Input 3 Status	Output 3-A Status	Output 3-B Status
VID4	Input 4 Status	Output 4-A Status	Output 4-B Status
NWA	Network A Link	Network A Activity	
NWB	Network B Link	Network B Activity	
AUX	Auxiliary Link	Auxiliary Activity	
ECG	Card Status		
FAIL	Card Fail		
DC	Power		

External alarms

Normally open relay contacts. Closed for major and minor alarm signals.

Element management

The Ventura AEMS shelf element managers, FCS183-AEMS and FCS101-AEMS, provide a comprehensive set of status, control and alarm variables through a Web interface. The AEMS is a powerful Linux based embedded management system that also supports SNMP and XML. It also acts as an agent for card upgrades, storing multiple images for each card in the VS103 or VS101 chassis. Users can apply these images to install upgrades from a remote location.

Physical and environmental

Resides in a single slot of a VS101 or VS103 Ventura series chassis	
Power consumption	35W max
Operating temperature	0˚C to 50˚C chassis ambient
Storage temperature	-40˚C to 85˚C ambient
Relative humidity	5% to 85%
Compliance	NEBS Level 3, UL, CSA, CE, FCC (Part 15, Class A), C-Tick, RoHS

Ordering options

VS902-HW-1GE+	Multi-channel IP media transport over 100/1000Base-T GigE. Can be licensed for ASI over IP, MADI over IP, or JPEG 2000 in TS over IP using SMPTE 2022-1/2 encapsulation. Backplane with 4 input and 4 output BNCs for ASI/SDI, and 2 SFP cages. SFP's not included.
VS902-HW-10GE+	Multi-channel IP media transport over 10GigE. Can be licensed for SDI over IP using SMPTE 2022-5/6, or JPEG 2000 in TS over IP (SMPTE 2022-1/2). Backplane with 4 input and 4 output BNCs for SDI, and 2 SFP+ cages. SFP's not included.
VS902-SW-ASI-CH[1-8]	Software option enabling 1-8 ASI over IP unidirectional channel (maximum is 4 transmit and 4 receive).
VS902-SW-SDI-CH[1-8]	Software option enabling 1-8 SDI over IP unidirectional channel (maximum is 4 transmit and 4 receive).
VS902-SW-MADI-CH[1-8]	Software option enabling 1 MADI over IP unidirectional channel (maximum is 4 transmit and 4 receive).
VS902-SW-J2K-CH1	Software option enabling 1 JPEG 2000 over IP unidirectional channel (maximum is 2). With this license the VS902 can be configured as either a single channel encoder or decoder.
VS902-SW-J2K-CH2	Software option enabling 2 JPEG 2000 over IP unidirectional channels (maximum is 2). With this license the VS902 can be configured as a dual channel encoder, dual channel decoder, or in a bi-directional configuration (one encoder + one decoder).
VS902-SW-HD	Software option enabling support for HD-SDI interfaces (applies to SDI over IP and JPEG 2000 over IP)
VS902-SW-3G	Software option enabling support for 3G-SDI and HD-SDI interfaces (applies to SDI over IP and JPEG 2000 over IP)
VS902-SW-FEC	Software option enabling SMPTE 2022 Forward Error Correction for IP input/output. Note that TS over IP uses SMPTE 2022-1 FEC, while SDI over IP uses SMPTE 2022-5 FEC.
VS902-SW-SIPS	Software option enabling SIPS protection and RTP seamless switching according to SMPTE 2022-7. This license is required only on receiver devices.
VS902-SW-EPP	Software option enabling Encoder Partner Protection (EPP) for 1+1 sender redundancy.
VS902-SW-FSYNC	Software option enabling integrated frame store and refsync for SDI over IP and JPEG 2000 in over IP (analog black burst or SDI, at same frame rate as video signals).
VS902-SW-NET-10G	Software option enabling support for 10GigE operation.

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