

Selenio™ Network Processor

IP gateway, synchronizer, processor for hybrid/all-IP
HD/3G/UHD



Selenio™ Network Processor (SNP) is the industry's first pure-IP processor. With its introduction, Imagine Communications continues to forge ahead with the delivery of innovative solutions for the new broadcast reality of IT-based infrastructures.

The high-density SNP platform offers IP-to-IP processing capabilities, handling uncompressed UHD signals based on the SMPTE 2110 specification for transporting media over IP networks. Building on the award-winning legacy of Imagine's globally deployed 1RU processors, the SNP also features an edge synchronizer for processing streams before they enter the core router, reducing complexity in signal routing.

As a next-gen, FPGA-based processor, the SNP seamlessly bridges SDI and IP networks, while easily meeting UHD requirements in live production. It interoperates with Imagine's other UHD- and IP-ready solutions, including the EPIC™ MV monitoring and control system, and Versio™ cloud-native integrated playout platform, for a seamless end-to-end production workflow.

The compact and versatile standards-centered SNP is ideal for media companies looking to reduce costs and complexity associated with supporting SDI and hybrid SDI-IP workflows in their studio and mobile facilities, while optimizing the agility and efficiency of their IT-based environments.

Benefits

- Deliver standards-based uncompressed video over IP in any production environment
- Reduce operational complexity with multiple processing functions in one compact frame
- Transition smoothly from a hybrid to full-IP network
- Access agile and flexible processing capabilities for different events and applications
- Incorporate UHD in end-to-end IP production workflows

Features

- Support for SMPTE ST 2110-20 video
- Support for SMPTE ST 2110-30 audio
- Support for SMPTE ST 2110-40 data (709 CC, V-chip, SCTE 104 when running with 1080i/50/59.94)
- IP to SDI mode
- SDI to IP mode
- IP to IP mode
- Frame synchronization to PTP with adjustable output phasing and delay
- HD/UHD up/down/cross conversion (licensed option)
- HD Proxy (as separate 1080i IP stream) for UHD signal monitoring (licensed option)
- Supports 2SI and SQD interfaces for UHD
- HD/3G and UHD clean switching
- Audio embedding and de-embedding between SDI & ST 2110
- Video proc amp and color correction
- Audio proc amp
- Preset save/recall
- Generates Black Burst (BB) output synchronized to received PTP timing
- 4 independent processing blocks for various operations (synchronization, conversion, processing)
- Dual QSFP28 flexible Ethernet up to 100GbE with SMPTE ST 2022-7
- 32 HD-BNC connectors for SDI I/O
- Redundant power supplies and control interfaces
- Front serviceable main processing board, front panel, and power supply assembly

Details

The SNP is optimized for UHD production via redundant 100-Gigabit Ethernet network connections, capable of delivering eight uncompressed UHD signals in each direction. Support for these high-capacity network connections eliminates the requirement to compress UHD signals, improving overall efficiency, and contributing to space and power-consumption savings, while preserving picture quality and system latency.

The SNP provides critical synchronization and timing functions, overseeing the integration of new signals into the production environment and helping to ensure the optimal timing of SMPTE 2110 signals for interoperability with all other compliant equipment.

Along with powerful, IP-enabled video processing, the SNP will offer all the capabilities required in today's complex production environments, including audio processing, color space adjustments and HD-UHD up- and down-conversion, as well as the High Dynamic Range (HDR) adaptations and conversions required for integrating UHD and HD signals.

Ideal for the fast-paced mobile production industry, the SNP features four integral processing blocks, each of which can be assigned a separate application and reprogrammed on the fly. The multipurpose nature and quick-configuration capabilities of the SNP significantly reduces equipment requirements and enables production companies to respond to the demands of the current job, and then quickly reconfigure to tackle future assignments.

The standards-based SNP easily integrates with commercial off-the-shelf (COTS) IP routing and switching equipment, providing media companies with the flexibility to work with a variety of technology suppliers for signal routing and management. SNP also interoperates with Imagine's other UHD- and IP-ready solutions, including the Versio™ cloud-native integrated playout platform and EPIC™ MV monitoring and control system, for a seamless end-to-end production workflow.

Specifications

12G/3G/HD-SDI INPUT SPECIFICATIONS

Number of Inputs	32 (bi-directional port shared with output) (8 are 12G-capable)
Connector Type	HD-BNC
Standard	12G: SMPTE ST 2082-1 and Amendment 1 to SMPTE ST 2082-1 3G: SMPTE 424M (1080p50/59.94) HD: SMPTE 292M (1.485, 1.485/1.001 Gb/s)
Impedance	75Ω
Signal Level	800 mV ± 10%
Return Loss	12G: >15 dB, from 5 MHz to 1.485 GHz, >10 dB to 3 GHz, >7 dB to 6 GHz, and >4 dB to 12 GHz, all typical 3G: >15 dB, from 5 MHz to 1.485 GHz, and >10 dB to 3 GHz, all typical HD: >15 dB, typical, from 5 MHz to 1.485 GHz
Equalization	12G: Adaptive cable equalization for >164ft (50m) typical, of Belden 1694A coaxial cable 3G: Adaptive cable equalization for >426ft (130m) typical, of Belden 1694A coaxial cable HD: Adaptive cable equalization for >590ft (180m) typical, of Belden 1694A coaxial cable

Note: 12G will be supported in future software release

12G/3G/HD-SDI OUTPUT SPECIFICATIONS

Number of Outputs	Up to 32 (bi-directional port shared with input) (8 are 12G-capable)
Connector Type	(High-Density) HD-BNC
Standard	12G: SMPTE ST 2082-1 and Amendment 1 to SMPTE ST 2082-1 3G: SMPTE 424M (1080p50/59.94) HD: SMPTE 292M (1.485, 1.485/1.001 Gb/s)
Impedance	75Ω
Return Loss	12G: >15 dB, from 5 MHz to 1.485 GHz, >10 dB to 3 GHz, >7 dB to 6 GHz, and >4 dB to 12 GHz, all typical 3G: >15 dB, from 5 MHz to 1.485 GHz, and >10 dB to 3 GHz, all typical HD: >15 dB, typical, from 5 MHz to 1.485 GHz
Signal Level	800 mV ± 10%
DC Offset	0.0V ± 0.5 V
Rise and Fall Time	12G: <45 ps (20% to 80%) 3G: <135 ps (20% to 80%) HD: <270 ps (20% to 80%)
Overshoot	< 10% of amplitude (all outputs terminated)
Jitter	Timing jitter: 12G: <8 UI peak to peak 3G: <2 UI peak to peak HD: <1 UI peak to peak Alignment jitter: 12G: <0.3 UI peak to peak 3G: <0.3 UI peak to peak HD: <0.2 UI peak to peak

Note: 12G will be supported in future software release

QSFP28 SPECIFICATIONS

Standard	SFF-8665 and SFF-8636. Electrically compliant with IEEE802.3bm chip-to-module 100 Gb/s four-lane Attachment Unit Interface (CAUI-4) standard.
Connector	2x Hot pluggable QSFP28 MSA form factor
Voltage	3.3V
Power consumption	<4.5W typical. Individual per type used
Case operating temperature range	0°C to 70°C

MANAGEMENT CONTROL

Number of Connectors	2
Connector Type	RJ-45
Type	10/100/1000 Base-T Ethernet as defined by IEEE 802.3-2008

Note: Shielded (screened) Ethernet cable should be used with this product.

ENVIRONMENTAL

Temperature	The operating temperature of the SNP is 32°F to 86°F (0°C to 30°C) with relative humidity of 10% to 90% non-condensing. The non-operating temperature is -20 to 70 degrees C.
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MECHANICAL

Dimensions	
Height	1RU or 1.75 in.
Width	17.5 in. (44.45 cm) without ears, 19 in. (48.3 cm) with ears for rack mounting
Depth	23 3/8 in. (59.4 cm) from front rail to back of box (including connectors but not cables) No more than 1.5 inches from front rail to absolute front of installed unit (including screws and pushbuttons) <i>Note: SNP requires at least 2.5 in. (6.3 cm) of space behind the unit for cooling and cabling.</i>
Weight	16.5 lbs (7.5 kg)

POWER CONSUMPTION

Number	Two independent, load-sharing power supplies Two IEC C14 power inlets, one for each power supply
Input voltage	100 to 240 VAC Operating range
Frequency	50 to 60 Hz Operating 47 to 63 Hz
Inrush current	At 264 VAC, at 25°C cold start, 15 Apk typical
Efficiency	Typical 93% @230VAC
Power factor	At 240 VAC, full load, typical 0.98
Harmonic distortion	Complies with the requirements of EN61000-3-2
Power consumption	Less than 350 watts total, as measured across both of the AC mains cords
Maximum input current	4.5 A per input
Heat dissipation	367 W

Ordering Information

HARDWARE	
SNP-GW-3GX32	Selenio Network Processor 1RU Base IP Gateway unit supporting 32 x HD/3G-SDI with Two (2) QSFP28, Four (4) SFP+ interfaces, field-replaceable redundant AC power assembly and main processing board. (Order supported QSFP/SFP modules separately)
100G QSFP	
OP+QSFP+TRMM+100G	100GB/S QSFP28 SR4, MTP/MPO OPTICAL CONNECTOR, 70M WITH OM3 AND 100M WITH OM4
AQSFP-100G-SR4	ARISTA 100GB/S QSFP28 SR4, MTP/MPO OPTICAL CONNECTOR, 70M WITH OM3 AND 100M WITH OM4
AQSFP-100G-PSM4	ARISTA 100GBASE-PSM4 QSFP TRANSCEIVER, UP TO 500M OVER PARALLEL SINGLE MODE FIBER
OP+QSFP+100G+10K	100GB/S QSFP28 LR4, LC OPTICAL CONNECTOR, 10KM WITH SMF
100G AOC	
AAOC-Q-Q-100G-5M	ARISTA QSFP100 TO QSFP100 100GBE ACTIVE OPTICAL CABLE, 5 METER
AAOC-Q-Q-100G-30M	ARISTA QSFP28 TO QSFP28 100GBE ACTIVE OPTICAL CABLE, 30 METER
CQSFP-100G-AOC5M	CISCO 100GBASE QSFP ACTIVE OPTICAL CABLE, 5 METER
FIELD-REPLACEABLE SPARES	
SNP-MAIN-PCB-ASSY	SNP FIELD-REPLACEABLE SPARE MAIN PCB ASSEMBLY
SNP-350W-ACPS-ASSY	SNP FIELD-REPLACEABLE SPARE REDUNDANT 350W AC POWER SUPPLY ASSEMBLY
SNP-FPNL-ASSY	SNP FIELD-REPLACEABLE SPARE FRONT PANEL ASSEMBLY
LICENSE OPTIONS	
SNP-SK-PROXHD	SELENIO NETWORK PROCESSOR SOFTWARE LICENSE TO ENABLE DUAL (2) PROXY VIDEO PER PROCESSOR
SNP-SK-DUAL-CONV	SELENIO NETWORK PROCESSOR SOFTWARE LICENSE TO ENABLE DUAL (2) VIDEO CONVERSIONS PER PROCESSOR
SNP HAS 4 PROCESSORS AND REQUIRES FOUR LICENSES FOR FULL CAPABILITY.	