

Selenio™ X100

Intelligent Dual-Channel Frame Synchronizer and Converter

Imagine Communications continues to reset the bar for top-performing, feature-rich and cost-effective processors with the introduction of the intelligent dual-channel Selenio X100™ frame synchronizer and converter. Featuring two inputs to two converted outputs, the Selenio X100 delivers a wide array of analog and digital real-time baseband video and audio processing capabilities, along with the exceptional quality and dependability that have been the hallmark of the popular, award-winning Imagine Communications series of 1RU processors.

The Selenio X100 reliably supports SD and HD formats, including built-in 3 Gb/s 1080p Level A and Level B-DL processing, and is equipped with easy-to-use control and monitoring via a built-in web server. The Selenio X100 is shipped with a multitude of standard features such as video processing, color correction and clipping, dual logo generation/insertion, an expanded data wrangler for VANC data and metadata processing for up to 16 services, and GPI and time code insertion and extraction. Superior audio functionality includes two 16-channel SDI de-embedders and embedders, 16 AES input or output ports, 8-channel input and output analog audio interfaces and 32-channel internal audio processing.



At Imagine Communications, our solutions are designed to meet today's needs, as well as the requirements of tomorrow — the Selenio X100 is future-proofed for 10 Gigabit Ethernet (10 GigE) uncompressed baseband over IP, Ultra HDTV (4K) or MPEG encoding/decoding to ensure support for hybrid and next-generation television and production systems.

From ingest to outbound processing and tape archive to production and post production applications and much more, the powerful, energy-efficient Selenio X100 processor easily integrates into the signal workflow of any broadcast environment, including mobile production/OB trucks, small stations, production studios and larger networks.

Product Features

- Intelligent dual-channel frame sync/delay, proc amp, noise reduction, clipping and color correction
- Support for all 1080p/psf production formats (23.98, 24, 25, 29.97, 30)
- True dual-channel processing for analog video
- Data Wrangler VANC processing for known and unknown data types
- Rules Engine for custom signal flow management
- Fast frame sync, fast conversion, delay (lock to one input) and time base corrector (TBC) modes
- Advanced 3D adaptive 10-bit motion detection for up/down/cross/aspect ratio conversion
- Basic frame rate conversion built-in and optional single-channel linear frame rate conversion
- Two switchable auto-sensing 3G/HD/SD inputs
- Dual up/down/cross/aspect/basic ratio conversion
- Noise reduction (mosquito and block), sharpness and texture controls
- Two aspect ratio converters with full control over H/V size and position
- Built-in video test and audio tone generators
- Redundant power supply
- Dual logo generator/inserter
- I-Wings side bar insertion when upconverting
- Audio de-embed/embed, sync, delay, gain, invert and delay with 16 channels (four groups) processing
- PCM and non-PCM (Dolby® Digital, Dolby® E) passthrough
- Options for Dolby® Digital, Dolby® E decode and encode (up to 2 Dolby decoders and encoders)
- Options for DTS Neural Surround Upmix, Downmix, Multimerge and DTS Neural Loudness Control
- Video Interfaces:
 - Auto-sensing for SD-SDI, HD-SDI, 3G-SDI
 - Two SDI inputs (2 HD-BNC, Dual SFP)
 - Four SDI Outputs (4 HD-BNC, Dual SFP)
 - EDH/CRC error monitoring and insertion
 - HDMI output
 - Optional dual channel composite and component analog video
- Audio Interfaces
 - Eight-channel analog audio
 - 2 x 4 groups embedded audio
 - 16 AES (75 ohms) ports
- Data and Metadata
 - Up to 16 services including
 - CC (CEA608/708) and Teletext (OP47)
 - Audio metadata VANC embed/de-embed, generator
 - AFD/Wide Screen Signaling (WSS)/VI
 - Pass multiple user DID/SDID when converting video
 - Time code
- Control and Monitoring
 - 100/100BT Ethernet connectivity
 - SNMP compliant
 - Built-in web control and monitoring
 - Local control panel
 - CCS™ compliant
 - Selenio X50™ and X85™ control panels
 - Magellan™ network control panels
 - Nucleus control panels
 - Magellan CCS™ Navigator
 - Four customizable GPI inputs and outputs

Images/Diagrams



Specifications

Specifications and designs are subject to change without notice

Composite Video Input	
Standard	NTSC (SMPTE170M) PAL-B (ITU624-2) PAL-M
Connector	HD-BNC
Quantization	Normal mode, non-TBC: 12 bits (NTSC, PAL-B, PAL-M) TBC mode: 8 bits (all standards)
Input level	1.0 V pk-pk
Impedance	75 ohms
Return Loss	>40 dB, 0.1 to 6 MHz
Common Mode Range	5.0 V
CMRR	60 dB @ 50/60 Hz, 5 V pk-pk
Setup Level Range	±7.5 IRE
Frequency Response	±0.1 dB, 0.1 to 6 MHz
SNR	62 dB, typical
Y/C Gain Error	<0.1 dB
Y/C Delay Error	<10 ns
Component Video Input	
Format	YPbPr (Betacam/SMPTE), RGB
Connector Amphenol	HD-BNC
Quantization	12 bits
Input level	1.0 V pk-pk
Impedance	75 ohms
Return Loss	>40 dB, 1 kHz to 6 MHz
SNR	>60 dB
3G/HD/SD-SDI Video Input	
Number of inputs	2
Standard	3G: SMPTE 424M (2.97, 2.97/1.001 Gb/s) HD: SMPTE 274M, SMPTE 296M (1.485, 1.485/1.001 Gb/s) SD: SMPTE 259M-C (270 Mb/s, 525/625 component video)
Connector	HD-BNC
Impedance	75 ohms
Return Loss	>10 dB, typical, from 1485 to 2970 MHz >15 dB, typical, from 5 to 1485 MHz >20 dB, typical, from 5 to 270 MHz

Equalization	3G: Adaptive cable equalization for up to 492 ft (150 m), typical, of Belden 1694A coaxial cable HD-SDI: Adaptive cable equalization for up to 607 ft (185 m) typical, of Belden 1694A coaxial cable SD-SDI: Adaptive cable equalization for up to 1310 ft (400 m) typical, of Belden 8281 coaxial cable
Fiber Video In (Via SFP Port)	
Number of Inputs	2
Standard	3G: SMPTE 424M HD-SDI: SMPTE 292M SD-SDI: SMPTE 259M
Connector	LC
Laser	Safety Level Class 1
Audio Input	
Unbalanced AES Input	
Number of Inputs	16 (shared with AES outputs, software configurable)
Connector	HD-BNC
Impedance	75 ohms
Return Loss	>25 dB, 0.1 to 6.0 MHz
Sensitivity	<100 mV
Input Audio Sampling Rate	32 to 108 kHz
Balanced AES Input (With External Balun)	
Number of Inputs	16 (shared with AES outputs, software configurable)
Connector	XLR with external balun
Sensitivity	<200 mV
Impedance	110 ohms ±20% (0.1 to 6 MHz)
Maximum Input Signal	10 V pk-pk
Common Mode Rejection	0 V to 7 V (0 to 20 kHz)
Input Audio Rate	32 to 108 kHz
Analog Audio Input	
Number of Inputs	8 mono channels
Type	Balanced
Connector	DB-25, Tascam-style cable snake for balanced 8-channel audio
Input Audio Level	28 dBu to 12 dBu (adjustable in 1 dB increments)
Input Impedance	High-Impedance or 600 ohms, jumper selectable
CMRR	>80 dB @ 60 Hz, typical
Linearity	<±0.5 dB, typical
Frequency Response	<±0.1 dB (20 Hz to 20 kHz), typical
THD	>90 dB (20 Hz to 20 KHz), typical
SNR	>100 dB, typical

Video Output	
Fiber Video Output (Via SFP Port)	
Number of Outputs	2
Standard	3G: SMPTE 424M HD-SDI: SMPTE 292M SD-SDI: SMPTE 259M
Connector	LC
Output Wavelength	1310 ±30 nm
Output Power	-7 dBm (typical) to 0 dBm
Rise/fall Time	3G: <105 ps/120 ps, typical
Jitter	3G: <45 ps, typical HD-SDI: <60 ps, typical SD-SDI: <110 ps, typical
Laser	Safety Level Class 1
HDMI Output	
Number of outputs	1
Standards	1080p/60, 1080p/59.94, 1080p/50, 1080p/30, 1080p/29.97, 1080p/25, 1080p/24, 1080p/23.98 1080i/60, 1080i/59.94, 1080i/50, 1080psf/24, 1080psf/23 720p/60, 720p/59.94, 720p/50 525, 625, 640 x 480p
Compliance	HDMI 1.4a
Connector	HDMI Type A
Composite Video Output	
Standard	NTSC, PAL-B, PAL-M
Connector	HD-BNC
Quantization	12 bits
Impedance	75 ohms
Return Loss	>40 dB, 0.1 to 6 MHz
Frequency Response	±0.1 dB to 5.5 MHz, typical
DC Offset	<0.5 mV
Differential Gain	<0.5%
Differential Phase	<1°, typical
Y/C Gain	<1°, typical
Y/C Delay	NTSC: <10 ns, typical PAL: <20 ns, typical
Transient Response	<0.5% K Factor
SNR	>60 dB to 5.5 MHz
Component Video Output	
Format	YPbPr (Betacam/SMPTE)
Connector	HD-BNC
Quantization	12 bits
Impedance	75 ohms
Return Loss	>40 dB, 1 kHz to 6 MHz
DC offset	<0.5 mV
SNR	>60 dB, typical

3G/HD/SD-SDI Output	
3G/HD/SD-SDI Output Video	
Number of outputs	2
Standard	3G: SMPTE 424M (2.97, 2.97/1.001 Gb/s) HD: SMPTE 274M, SMPTE 296M (1.485, 1.485/1.001 Gb/s) SD: SMPTE 259M-C (270 Mb/s, 525/625 component video)
Connector	HD-BNC
Impedance	75 ohms
Return Loss	>10 dB, typical, from 1485 to 2970 MHz >15 dB, typical, from 5 to 1485 MHz >20 dB, typical, from 5 to 270 MHz
Signal Level	800 mV ±10%
DC Offset	0.0 V ±0.5V
Rise and Fall Time	SD: 400 to 1500 ps (20% to 80%)
Overshoot	<10% of amplitude (all outputs terminated)
Jitter Timing jitter:	3G: <2 UI pk-pk HD: <1 UI pk-pk SD: <0.2 UI pk-pk
Alignment jitter:	3G: <0.3 UI pk-pk HD: <0.2 UI pk-pk SD: <0.2 UI pk-pk
Audio Output	
Unbalanced AES Output	
Number of outputs	16 (shared with AES inputs, software configurable)
Standard	AES 3, SMPTE 276M
Type	Unbalanced, AC coupled
Connector	HD-BNC
Impedance	75 ohms
Return Loss	>25 dB, 0.1 to 6 MHz
Signal Amplitude	1.0 V pk-pk, 10% into 75 ohms load
Audio Sampling Rate	48 kHz
Rise/Fall Time	30 ns to 44 ns (10 to 90%)
Bits	24, 20, or 16
Channel Status and User Bit	Maintained, but professional mode, 48 kHz
Balanced AES Output (With External Balun)	
Number of Outputs	16 (shared with AES inputs, software configurable)
Type	Balanced, transformer coupled
Connector	XLR with external balun
Impedance	110 ohms, 20% (0.1 to 6 MHz)
Signal Amplitude	2 to 7 V pk-pk into 110 ohms load
Audio Rate	48 kHz
Jitter	±20 ns
Rise/Fall Time	5 ns to 30 ns (10 to 90%)
Bits	24, 20 or 16
Channel Status and User Bits	Maintained, but professional mode, 48 kHz.

Analog Audio Output	
Number of Inputs	8 mono channels
Type	Balanced
Connector	DB-25, Tascam-style cable snake for balanced 8-channel audio
Output Audio Level	28 dBu to 12 dBu (adjustable in 2 dB increments)
Output Impedance	66 ohms
Frequency Response	<±0.2 dB (20 Hz to 20 kHz), typical
THD	>90 dB (20 Hz to 20 kHz), typical
SNR	>93 dB, typical
Crosstalk	>95 dB, 20 Hz to 20 kHz, typical
Linearity	<±1.0 dB (to -100 dBFS), typical
Miscellaneous	
Genlock	
Connector	HD-BNC
Impedance	75 ohms
Return Loss	>40 dB 25 Hz to 10 MHz (SMPTE 318M-1999) >45 dB 25 Hz to 10 MHz >40 dB 10 to 30 MHz
Common Mode Range	5.5 V pk-pk
CMRR	60 dB @ 60 Hz, 5 V pk-pk
Input Level	NTSC/PAL-B: 1 V pk-pk, -6.0 dB to +6.0 dB Tri-Level Sync: ±300 mV, -6.0 dB to +6.0 dB 1080i: 59.94/50 1080p: 29.97/25/23.98 1080psf: 23.98 720p: 59.94/50
Signal Type	NTSC/PAL-B Analog Composite ±300 mV Tri-Level Sync
Standards	SMPTE 170M (NTSC) ITU-R BT.470-6 (PAL-B) SMPTE 274M (1080i, 1080p) SMPTE 296M (720p)
DARS Input	
Standard	AES3, SMPTE 276M
Type	Unbalanced, AC-coupled
Connector	HD-BNC
Sensitivity	100 mV
Impedance	75 ohms
Return Loss	>25 dB, 0.1 to 6 MHz
Sampling Rate	48 kHz
RS-232/422/485	
Number of Rx Ports	2 RS-422/485 or RS-232
Number of Tx Ports	2 RS-422/485 or RS-232
Electrical	EIA-232-C, EIA-422-B, EIA-485-A
Connector	Samtec TFM-110-01-L-D-RE1-WT 20 pin-connector RS-232/422/485 switchable from user control RS-422 termination through jumpers
LAN	
Number of Connectors	1
Connector	RJ-45
Type	10/100 Base-T Ethernet as defined by IEEE 802.3

General Purpose Interface	
Connector	6-position screw terminal (Weidmuller 1607080000)
Inputs	+5 V
Outputs	Relay controlled contact closure Power On: Circuit normally open Power Off: Circuit closed Signal Level: +/-75 V w.r.t to GPO common
Power Consumption	The Selenio X100 provides redundant power; during normal operation, both power supplies are on. However, only one is powering the frame at any time. The line voltage is auto-detected. (to be verified)
Temperature	14° to 113° F (-10° to 45° C), with a relative humidity of <95% non-condensing.
Power Use	100-240 VAC, @ 47-63 Hz, 2.5 A (X2)
Frame Dimensions	
Height	1RU
Width	19 in. (48.3 cm)
Depth	front mounting ear to end of longest rear connector 24.2 in. (61.5 cm)

Ordering Information

X100-1RU-2PS	1RU dual channel intelligent frame sync and converter with advanced audio processing
Options	
X100OPT-AVIO	Plug-in dual channel analog video input and output module option
X100OPT-SK-SC	1 channel linear frame rate conversion software key license option
X100OPT-ADVAUD	Plug-in advanced audio submodule option (required for Dolby and DTS options)
X100OPT-SK-DDD	1 Dolby Digital decodersoftware keylicense option, requires X100OPT-ADVAUD
X100OPT-SK-DDE	1 Dolby Digital encoder software key license option, requires X100OPT-ADVAUD
X100OPT-SK-DED	1 Dolby E decoder software key license option, requires X100OPT-ADVAUD
X100OPT-SK-DEE	1 Dolby E encoder software key license option, requires X100OPT-ADVAUD
X100OPT-SK-DTS	1 DTS Neural Surround and Loudness Control software key license option (1 for 2.0 Loudness Control or 2 x 1.0 Loudness Control, 3 for Upmix, Downmix, 5.1 Loudness Control, 4 for Multimerge, 4 x 2.0 Loudness Control, 1 x 5.1 + 2 Loudness Control), requires X100OPT-ADVAUD
X100-PSU-200W	Spare/Replacement power supply
X100OPT-TOOL-CABLE	HD-BNC cable insertion and extraction tool
X100OPTCAB-HDBNC-A	HD-BNC plug to BNC Jack adaptor cable for audio (12" / 0.3m)
X100OPTCAB-HDBNC-V	HD-BNC plug to BNC Jack adaptor cable for video (12" / 0.3m)
X100OPT-75-TERM	75 ohms precision HD-BNC Terminator

OP+SFP+RR	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. Dual PIN receiver with pathological support for baseband video
OP+SFP+TT+13+13	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1310 nm and 1310 nm wavelength dual transmitter with pathological support for baseband video
OP+SFP+TT+27+29	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1270 nm and 1290 nm CWDM wavelength dual transmitter with pathological support for baseband video
OP+SFP+TT+31+33	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1310 nm and 1330 nm CWDM wavelength dual transmitter with pathological support for baseband video
OP+SFP+TT+35+37	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1350 nm and 1370 nm CWDM wavelength dual transmitter with pathological support for baseband video
OP+SFP+TT+43+45	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1430 nm and 1450 nm CWDM wavelength dual transmitter with pathological support for baseband video
OP+SFP+TT+47+49	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1470 nm and 1490 nm CWDM wavelength dual transmitter with pathological support for baseband video
OP+SFP+TT+51+53	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1510 nm and 1530 nm CWDM wavelength dual transmitter with pathological support for baseband video
OP+SFP+TT+55+57	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1550 nm and 1570 nm CWDM wavelength dual transmitter with pathological support for baseband video
OP+SFP+TT+59+61	Small Form Factor (SFP) for Imagine Communications Fiber Optic Products. 1590 nm and 1610 nm CWDM wavelength dual transmitter with pathological support for baseband video
Remote Control Panels	
MAGELLAN Panel with OLED Displays, Rotary Control and LCD Pushbuttons (user programmable LCD pushbuttons)	
RCP-24LCD-OLED*	1RU control panel with 24 LCD buttons and OLED display
RCP-48LCD-OLED*	2RU control panel with 48 LCD buttons and OLED display
MAGELLAN Panel with OLED Displays, Rotary Control and Pushbuttons (user prints out legends for the pushbuttons)	
RCP-32PB-OLED*	1RU control panel with one OLED display, one control knob and 32 push buttons
RCP-64PB-OLED*	2RU control panel with two OLED displays, two control knobs and 64 push buttons
MAGELLAN Panel with LCD pushbuttons (user programmable LCD pushbuttons)	
RCP-16LCD*	1RU control panel with 16 LCD buttons
RCP-32LCD*	1RU control panel with 32 LCD buttons
RCP-64LCD*	2RU control panel with 72 LCD buttons
Software Key for MAGELLAN Panels *	
RCP-PROCMV-OPT	Software key license that enables control of Imagine Communications multiviewers and processing devices on Magellan Remote Control Panels (OLED display with LCD programmable push button and OLED display with pushbutton versions only)