ProView™ 7100

Integrated Receiver-Decoder, Transcoder and Stream Processor

HIGHLIGHTS

- Four TS descramblers with four integrated DVB-CI slots
- Single/dual-channel decoder in 1 RU
- Four stereo pairs of audio decoding
- High-quality MPEG-4 AVC to MPEG-2 transcoding with down conversion option
- Four independent ASI outputs
- Four IP outputs with 1+1 redundancy support
- HD-SDI, SD-SDI, HDMI and analog video outputs
- Any-to-any remultiplexing capabilities
- Deterministic remultiplexing for SFN distribution
- Regeneration of PSI/SI and MPEG tables
- Graphical user interface provides easy drag-and-drop management

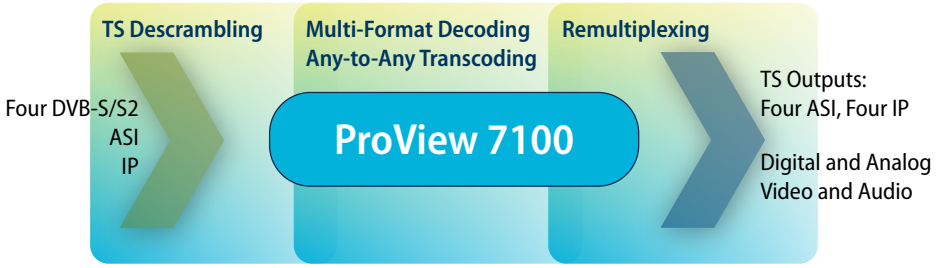
Harmonic's ProView™ 7100 is the industry's first single-rack-unit, scalable, multi-format integrated receiver-decoder (IRD), transcoder and MPEG stream processor. Leveraging Harmonic expertise in intelligent function integration, it adds broadcast-quality MPEG-4 AVC (H.264) and MPEG-2 video compression to the feature-rich ProView IRD platform, allowing content providers, broadcasters, cable MSOs and telcos to easily and cost-effectively streamline their workflows and decrease operating costs.

Harnessing a flexible and modular design, the ProView 7100 addresses the vast spectrum of content reception applications, from single-channel decoding and MPEG-4 AVC-to-MPEG-2 transcoding to DVB descrambling and remultiplexing of multiple transport streams. With an advanced and dense multi-channel descrambler, the ProView 7100 simplifies the deployment of (or migration to) an all-IP headend solution, and powers the launch of added-value services such as HD. The flexible hardware design can be easily reconfigured by a firmware upgrade, enabling seamless adaptation to new inbound video formats and codecs, such as the transition from SD MPEG-2 to HD AVC.

The ProView 7100 supports a rich set of input options, ranging from multiple DVB-S/S2 to IP and DVB-ASI, allowing it to mesh with any headend architecture and enabling support for advanced content delivery redundancy schemes, such as primary satellite and backup IP network feeds.

Utilizing powerful processing capabilities, the ProView 7100 offers next-generation deterministic SFN remultiplexing (DSR) to dramatically reduce the distribution network bandwidth of regional program replacement in DVB-T SFN broadcasts. By using DSR, the local regional programs are synchronously included in the SFN multiplex at each transmitting site, avoiding the need for full multiplex regional retransmission.

The ProView 7100 performs any-to-any transcoding of up to eight channels of H.264 to MPEG-2, allowing programmers to efficiently distribute superior-quality video content while using minimal satellite transponder capacity. Content can be received and transcoded to any resolution required.



High-end IRD and stream processor

APPLICATIONS

- Contribution and distribution
- Decoding for re-encoding
- Digital turnaround
- DVB descrambling
- All-IP headends
- DTT Distribution – MFN and SFN

BUSINESS BENEFITS

Lower CAPEX — Integrating and combining multi-format decoding, multi-program descrambling and remultiplexing capabilities, the ProView 7100 dramatically streamlines system architectures. Its unequalled density and flexibility makes it the clear choice for CAPEX investment.

Business Continuity — The trend towards HD and AVC content distributiion creates business continuity issues with legacy receivers. The ProView 7100 can be repurposed via firmware upgrades for different uses and new applications, such as migration from SD MPEG-2 to HD AVC.

Expanding Channel Lineup — Integrating multiple DVB-S/S2 demodulation and streaming descrambled content over IP, the ProView 7100 enables operators to quickly and cost-effectively launch new services, leveraging their existing IP or legacy ASI infrastructure.

OPEX Friendly — Able to house a multi-format decoder and descramble up to four full Multi-Program Transport Streams (MPTS) in a 1-RU chassis, the dense ProView 7100 is perfectly suited for operators mindful of their energy cost and rack space.

Lower OPEX — Harmonic's unique DSR technology can save up to 90% of satellite or IP bandwidth and increase architecture flexibility in regional DVB-T SFN distribution networks. The common national programs do not need to be re-transmitted in each region, and both the national and regional signals can be distributed over different networks.

TECHNICAL BENEFITS

Fully Integrated Platform — The ProView 7100 combines all headend reception functionality — such as multiple transport-stream descrambling, multi-format and codec decoding, and any-to-any transcoding — with full remultiplexing capabilities, including PID filtering, remapping and table regeneration.

Superior Transcoding — The ProView 7100 is equipped with two decoding or transcoding cards for SD, HD, MPEG-2 and H.264 formats. Harmonic's industry-leading compression algorithms assure the distribution of superior-quality video for all added-value services, including HD and VOD.

Expended Input Options — Able to simultaneously receive content over DVB-S/S2, ASI and IP, the ProView 7100 allows operators to maximize flexibility and optimize redundancy schemes.

Support for All-IP Infrastructures — The ProView 7100, in combination with the integrated Harmonic FLEX® decoder, enables an all-IP headend architecture, resulting in a more scalable and lower-cost transition to IP-based services.

Broadcast-Quality Down Conversion — The ProView 7100 performs HD down conversion and aspect ratio adaptation to generate broadcast-quality baseband analog video and audio that can be easily integrated with existing cable network infrastructures.

Friendly Management — The ProView 7100 can be simply configured through a stand-alone interface or with Harmonic's NMX™ Digital Service Manager for mass configuring, monitoring and automated redundancy in centralized or distributed architectures.

Advanced DSR Processing — The ProView 7100 performs regional program insertion in a national common multiplex at each DVB-T SFN transmission site. DSR supports CBR and VBR content replacement or insertion of any number of programs or PIDs. A special EAS mode is provided for emergency alert program switching.

RF INPUT INTERFACES – DVB-S/DVB-S2

Number of Inputs	Four L-band
Connectors	Four F-type, 75 Ω (working simultaneously)
Frequency Range	950-2,150 MHz
RF Input Level	(-65) to (-25) dBm
LNB Power	13 VDC, 18 VDC / 350 mA

TRANSPORT STREAM INPUT INTERFACES

DVB-S	
Constellation	QPSK
Symbol Rate	1-45 Msym/s
FEC	All ratios compliant with standard
DVB-S2	
Constellation	QPSK, 8PSK
Symbol Rate	1-45 Msym/s
FEC	All ratios compliant with standard
FEC Blocks	Short and normal
Roll Off	0.2, 0.25 and 0.35
Mode	CCM, VCM
Pilots	On & off
ASI	
Number of Inputs	Four
Connectors	BNC, 75 Ω
Packet Length	188 byte packets
TS Max Bit Rate	108 Mbps
	Compliant with CENELEC EN 50083-9
MPEG over IP	
Number of Inputs	Four simultaneous SPTS/MPTS
Sockets	Four
Encapsulation Protocols	MPEG-2 TS over UDP
Addressing	Multicast/unicast
Connectors	100/1000 Base-T, RJ45 for redundancy

TRANSPORT STREAM OUTPUT INTERFACES

ASI	
Number of Outputs	Four (duplicate or independent)
Connectors	BNC, 75 Ω
Packet Length	188
TS Maximum Output Bit Rate	108 Mbps
	Compliant with CENELEC EN 50083-9
MPEG Over IP	
Number of Outputs	Four simultaneous SPTS/MPTS
Sockets	Four
Encapsulation Protocols	MPEG-TS over UDP
Redundancy	1+1 physical layer support
Addressing	Multicast
Connectors	100/1000Base-T, RJ45

TRANSPORT STREAM PROCESSING

Service-level remultiplexing from any input to any output
Service-level filtering
High-accuracy PCR restamping
PSI /SI processing and regeneration
Auto generation or passthrough of PSI/SI tables
CA signaling removed when descrambling
Deterministic remultiplexing of local content into the national TS for DVB-T SFN content distribution

CONDITIONAL ACCESS

BISS	Embedded, up to full TS
DVB-CI Interface	Two independent CI slots EN-50221, allowing descrambling of up to four TS (number of PIDs dependent on the CAMs)
CA Methods	MultiCrypt, SimulCrypt
CAS	Viaccess®, Irdeto®, Conax®, Nagravision® (partial list)

VIDEO DECODING

Configuration	Single or dual channel
Decoding Formats	
MPEG-2 SD	4:2:0 MP @ ML
MPEG-2 HD	4:2:0 MP @ HL
MPEG-4 AVC SD	MP @ L3
MPEG-4 AVC HD	MP @ L4.0 / HP @ 4.0
Maximum Video Rate	
MPEG-2 SD	15 Mbps
MPEG-2 HD	50 Mbps
MPEG-4 AVC SD	10 Mbps
MPEG-4 AVC HD	20 Mbps (MP), 25 Mbps (HP)
Video Formats	1080i @ 29.97, 30, 25 fps 720p @ 59.94, 50, 60 fps 480i @ 29.97 fps 576i @ 25 fps 480p @ 59.94 fps
Analog Video Output	PAL-B/G/I/M/N/D, NTSC, Russian SECAM

VIDEO PROCESSING

HD Video Downconverted to SD with Aspect Ratio Conversion	Letterbox, center cut, AFD
Aspect Ratio Conversion	16:9 to 4:3
VBI Reinsertion	Composite video, embedded in SDI
Descrambling	Four TS with four DVB CAM slots

AUDIO DECODING

Stereo Pairs per Video Channel	Four
Audio Formats	MPEG-1 Layer-II Dolby® Digital (AC-3) stereo down-mix Dolby Digital 5.1 passthrough Dolby Digital Plus (E-AC-3) Dolby E passthrough AAC Audio leveling

VIDEO AND AUDIO INTERFACES

Video Outputs	
Composite Video Interfaces	Two (per video channel)
SD/HD-SDI with Embedded Audio	Two (per video channel)
Analog Video	One RGB-HD, 15-pin D-type (single-channel decoder only)
HDMI	One (single-channel decoder only)
Audio Outputs	
Stereo Pairs	Four (per video channel)
Analog Audio Stereo Pairs	Four (balanced)
Digital audio (AES/EBU-S/P-DIF)	Four
Digital Audio Interfaces	Four (balanced)
Modes	Stereo, joint stereo, dual channel, single channel

VIDEO TRANSCODING

Number of channels	Up to eight
Video Input	
	MPEG-4 AVC SD MP @ L3 MPEG-4 AVC HD MP @ L4.0 / HP @ 4.0 HD 1080i: 1920/1440, @ 29.97, 30, 25 fps HD 720p: 1280/960 @ 59.94, 50, 60 fps SD: 480i @ 29.97 fps, 576i @ 25 fps, 480p @ 59.94 fps; vertical - 720/704/544/528
Video Outputs	
	MPEG-2 SD 4:2:0 MP @ ML MPEG-2 HD 4:2:0 MP @ HL Output resolution conversation – HD–>HD, HD–>SD, SD–>SD MPEG-2 SD: 1-12 Mbps MPEG-2 HD: 7-18 Mbps
Any to any	
VBI passthrough	
Audio passthrough	

CONTROL AND MONITORING

Web browser interface
Ethernet – RJ45 10/100BaseT control interface
Front panel keypad and LCD
SNMP traps and alarms
Telnet
Terminal via RS-232 or RS-485
Presets

PHYSICAL

Dimensions (H x W x D)	1.75 in x 19 in x 15.5 in (1 RU) 4.4 cm x 48.3 cm x 39.37 cm
Weight	11 lbs / 5 kg
Power Voltage	100 V-240 V AC, 50/60 Hz
Power Consumption	Up to 100 W max

ENVIRONMENTAL

Operating Temperature	0-50° C
Operating Humidity	5-90% (non-condensing)
Storage and Transportation Temperature	-40° C - 70° C
Storage and Transportation Humidity	0-95% (non-condensing)

COMPLIANCE

EMC	EN61000-3-2;-3 EN55022 (CISPR 22) EN55024 (CISPR 24) FCC part 15 (class A)
Safety	EN60950 CB (IEC60950) UL60950 ROHS Directive 2002/95/EC

HEADQUARTERS

Americas Sales
4300 North First Street
San Jose, CA 95134 U.S.A.
T 1 800 828 5521 inside the U.S.
+1 408 542 2559 outside the U.S.
F +1 408 490 6001

ASIA-PACIFIC

Harmonic (Asia Pacific) Limited
Suite 2301, L23, Office Tower
Langham Place, 8 Argyle St
Mongkok, Kowloon Hong Kong
T +852 2116 1119
F +852 2116 0083

EUROPE AND MIDDLE EAST

United Kingdom
250 Fowler Avenue, Ground Floor
IQ Farnborough
Farnborough Hampshire GU14 7JP
United Kingdom
T +44 (0)1 252 555 400
F +44 (0)1 252 377 171

Africa, India, Russia and CIS Countries
10 Haamel St
Park Afek
Rosh Ha'ayin, 48092 Israel
T +972.3.9007777
+972.3.9007800
F +972.3.9007766

04.04.12