Harmonic’s ProView™ 7100 is the industry’s first single-rack-unit, scalable, multiformat integrated receiver-decoder (IRD), transcoder and MPEG stream processor. Leveraging Harmonic expertise in intelligent function integration, it adds broadcast-quality SD/HD MPEG-2 and MPEG-4 AVC 4:2:0/4:2:2 10-bit decoding and video transcoding 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. For applications in which preserving pristine video quality is paramount, the ProView 7100 supports AVC HD 4:2:2 10-bit decoding up to 1080p.

The ProView 7100 IRD harnesses a flexible and modular design to address the vast spectrum of content reception applications, from decoding, descrambling and multiplexing of multiple transport streams to MPEG-4 to MPEG-2 transcoding. With an advanced and dense multichannel descrambler, the ProView 7100 simplifies the deployment of (or migration to) an all-IP headend solution and powers the launch of added-value services. The flexible hardware design is easily reconfigured with firmware upgrades, enabling seamless adaptation to new inbound video formats and codecs, such as MPEG-4 AVC.

The ProView 7100 utilizes powerful processing capabilities to multiplex transport streams that include local and regional data, and also to perform deterministic remultiplexing for SFN distribution. It supports transcoding of up to eight channels of AVC 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.

A rich set of options includes input of multiple DVB-S/S2, IP and DVB-ASI feeds. Support for advanced content delivery redundancy schemes includes the ability to provide simultaneous primary satellite and backup IP network feeds.
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 distribution 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 multiformat 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.

High-Fidelity Decoding
The ProView 7100 offers integrated 4:2:0 and 4:2:2 10-bit precision decoding for DVB-S/S2, DVB-ASI and IP applications, enabling content providers to decode SD and HD content with pristine picture fidelity.

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

Expanded 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**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Inputs</td>
<td>One (standard)</td>
</tr>
<tr>
<td>Connectors</td>
<td>One or four F-type, 75 Ω (working simultaneously)</td>
</tr>
<tr>
<td>Frequency Range</td>
<td>950-2,150 MHz</td>
</tr>
<tr>
<td>RF Input Level</td>
<td>(-65) to (-25) dBm</td>
</tr>
<tr>
<td>LNB Power</td>
<td>13 VDC, 18 VDC / 350 mA</td>
</tr>
</tbody>
</table>

**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 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 Bitrate: 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 Bitrate: 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
- T2-MI deframing to MPEG TS
- 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, Viaccess®, Irdeto®, Conax®, Nagravision® (partial list)

**VIDEO DECODING**

- Configuration: Single or dual channel
- Decoding Formats:
  - MPEG-2 SD: 4:2:0 MP @ ML, 4:2:2 @ ML
  - MPEG-2 HD: 4:2:0 MP @ HL, 4:2:2 P @ HL, 4:2:2 HP @ HL
  - MPEG-4 AVC SD: 4:2:0 MP @ L3, 4:2:2 HP @ L3
  - MPEG-4 AVC HD: 4:2:0 MP @ L4.0 / HP @ 4.1, 4:2:2 @ HIP/HI10P/HI422P @ L4.1 (8 and 10 bit)
- Maximum Video Rate:
  - MPEG-2 SD: 4:2:0 – 15 Mbps, 4:2:2 – 50 Mbps
  - MPEG-2 HD: 4:2:0 – 50 Mbps, 4:2:2 – 80 Mbps
  - MPEG-4 AVC SD: 4:2:0 – 50 Mbps, 4:2:2 – 100 Mbps (CAVLAC), 50 Mbps (CABAC)
  - MPEG-4 AVC HD: 4:2:0 – 20 Mbps (MP), 25 Mbps (HP)
- Video Formats:
  - 1080p @ 29.97, 30, 25 fps
  - 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 Down Converted 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

<table>
<thead>
<tr>
<th>Stereo Pairs per Video Channel</th>
<th>Four[^1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Formats</td>
<td>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</td>
</tr>
</tbody>
</table>

## Video and Audio Interfaces

### Video Outputs
- **Composite Video Interfaces:** Two (per video channel)
- **SD/HD/3G-SDI with Embedded Audio:** Two (per video channel)
- **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 (balanced)
- **Digital Audio Interfaces:** Stereo, joint stereo, dual channel, single channel

## Video Transcoding

<table>
<thead>
<tr>
<th>Number of channels</th>
<th>Up to eight (from the same input TS)[^1]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video Input</td>
<td>MPEG-4 AVC SD MP @ L3, MPEG-4 AVC HD MP @ L4, 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</td>
</tr>
<tr>
<td>Video Outputs</td>
<td>MPEG-2 SD 4:2:0 MP @ ML, MPEG-2 HD 4:2:0 MP @ HL, Output resolution conversion – HD-&gt;HD, HD-&gt;SD, SD-&gt;SD, MPEG-2 SD: 1-12 Mbps, MPEG-2 HD: 7-18 Mbps</td>
</tr>
</tbody>
</table>

## 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

## Notes:
1. Licensed feature.
2. Requires optional 4:2:0 and 4:2:2 decoding boards.
3. Requires video decoding board.
4. Requires video transcoding board.

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[^1]: Provided by: Mega Hertz  800-883-8839  info@go2mhz.com  www.go2mhz.com

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