The Harmonic RD9000 multi-format professional decoder enables rapid, reliable deployment of eye-catching UHD content for contribution and primary distribution applications.

With a significant increase in UHD TV sets hitting the market, content providers and broadcasters are looking for a solution to address the needs of early adopters. Compact and reliable, the RD9000 real-time professional decoder is the answer. Designed to ensure high performance, the RD9000 delivers pristine UHD for an immersive, high-resolution experience.

**Innovative Technology**
RD9000 is software-based multi-format (H.265) professional decoder that is perfect for contribution and primary distribution applications. The platform's software architecture provides content providers and broadcasters with maximum flexibility, which is paramount in today’s market.

Contribution encoding is the critical step to achieve a superior end-user experience. With its wide range of encoding tools, HEVC offers incredible compression efficiency, making live UHD delivery achievable for satellite, cable, terrestrial and fiber networks.

Single-slice UHD HEVC technology is a cornerstone of the RD9000, eliminating border compression artifacts and maximizing compression efficiency. This technology is essential to achieving superior video quality in premium contribution applications. In addition, the RD9000 supports HDR (High Dynamic Range) along with WCG (Wide Color Gamut) to ensure drastic contrast and color rendering for “wow” video experience.

Combined with Harmonic’s ViBE CP9000 HD/UHD contribution encoder, the RD9000 multi-format professional decoder offers users a pristine UHD contribution solution.

**Versatile and Future-Proof**
RD9000 software-based decoder featuring any-format and any-codec is the reference decoder for any contribution and primary distribution use case.

Supporting HDR and WCG via a flexible, software-based design, the RD9000 is future-proof.

RD9000 already supports SMPTE-2110 or SMPTE 2022-6 uncompressed video over IP outputs. Additionally, the RD9000 decoder supports DVB/SMPTE standards and is interoperable with professional encoders.

**World-Class Service and Support**
Harmonic stands behind the RD9000 professional decoder with comprehensive service and support programs, including system design, service deployment, technical support and network maintenance. World-class service plans and a global network of flexible and responsive support professionals help ensure our customers can deliver outstanding “anytime, anywhere, any-device” video experiences.
**SPECIFICATIONS**

**INPUT/OUTPUT**

- **DVB-S2/S2X**: 4 x RF input
  - L-Band: 950MHz to 2150MHz
  - QPSK, 8PSK, 16APSK, 32APSK
- **MPEG over ASI**: Up to 4 x ASI inputs
- **MPEG over IP input**: RJ-45 10/100/1000, UDP or RTP, SRT input, Zixi input, CBR or Null-stripped TS, RTP & SMPTE-2022/Cop3 FEC
  - Unicast / Multicast
  - IGMP V1/V2/V3
  - Hitless redundancy SMPTE 2022-7
- **De-scrambling**: BISS 1 mode, E, BISS 2 mode 1, E, CA1
- **Outputs**: 4 x 3G-SDI output & Genlock, 12G-SDI & HDMI 2.0 & Genlock, 2 x 10G for HD Video over IP SMPTE 2110, 2 x 25G for HD/UHD Video over IP SMPTE 2110

**VIDEO PROCESSING**

- **Performances**: Two models:
  - RD9020: UHD up to 80Mbps
  - RD9080: UHD up to 160Mbps
- **Nb of services**: 1 x UHD or up to 4 x SD/HD
- **Codec**: HEVC / H.265, MPEG-4 / AVC / H.264, MPEG-2
- **Decoding Profiles**: HEVC: Main10 4:2:2 Level 5.1, AVCH.264: Up to H422/L4.2, MPEG-2: up to 4:2:2@HL
- **Chroma sampling**: 4:2:0, 4:2:2
- **Bit Depth**: 8, 10-bit
- **Resolution**: 3840x2160p (UHD), 1920x1080p, 1280x720p, 720x576i, 720x480i
- **Frame Rates**: 60, 59.94, 50, 30, 29.97, 24, 23.97
- **Down-up conversion**: Any format / frame rate above
- **HDR**: HDR10, PQ10, HLG
- **Wide Color Gamut**: BT.709, BT.2020
- **Ancillary**: Closed Caption EIA-608, EIA-88, Teletext OP-47, Transparent SMPTE-2038

**PHYSICAL**

- **Dimensions (H x W x D)**: 1.7 x 17.2 x 16.9 in (1 RU), 4.3 x 43.7 x 42.9 cm (1 RU)
- **Weight**: 26.7 lbs / 12kg
- **Power Consumption**: 190 W
- **Input Voltage**: 100-240 VAC
- **Cooling**: Front to rear airflow
- **Features**: Dual AC PSU

**ENVIRONMENTAL**

- **Operating Temperature**: 41° to 104° F (5° to 40° C)
- **Storage Temperature**: 23° to 131° F (-10° to 70° C)
- **Maximum Humidity**: 90%
- **Electromagnetic Compliance**: CE marked in accordance with the 93/68/EEC (22/07/93) directive
- **Safety**: IEC 60950 and EN 60950

**AUDIO PROCESSING**

- **Performances**: Up to 8 audio services per video
- **Audio codecs**: MPEG1 Layer 2, AAC-LC, HE-AAC V1, HE-AAC V2, Dolby Digital (AC-3, E-AC-3)
- **Decoding Formats and bitrates**: MPEG-1 Layer II 2.0, AC-3 2.0, AC-3 5.1, DD+ (E-AC-3) 5.1, AAC-LC/HE-AAC 2.0, AAC-LC/HE-AAC 5.1 64-256 kbps, 128-448 kbps, 384-640 kbps, 192-448 kbps, 96-448 kbps, 32-160 kbps, Linear PCM, Pass-through
- **Embedded audio**: Up to 8 audios per video

**CONTROL AND MONITORING**

- **WEB-browser User interface**
- **Restful API and SNMP for NMX integration**
- **Firmware update via WEB User Interface**
- **RJ-45 Ethernet 10/100/1000**
- **Note 1**: check for availability
- **Note 2**: Front panel not available

**ORDERING INFORMATION**

**HARDWARE ELEMENTS**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD9020-1U-2AC-SRV</td>
<td>Decoder Up to 4xHD or 1xUHD AVC/HEVC, 4.2.0/4.2.2, up to 80Mbps</td>
</tr>
<tr>
<td>RD9080-1U-2AC-SRV</td>
<td>Decoder Up to 4xHD or 1xUHD AVC/HEVC, 4.2.0/4.2.2, up to 160Mbps</td>
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<tr>
<td>RD9x00-HW-SDI</td>
<td>4 x 3G-SDI output &amp; ASI input card</td>
</tr>
<tr>
<td>RD9X00-HW-DVBS2X</td>
<td>DVB-S2X card with 4 x RF input</td>
</tr>
<tr>
<td>RD9x00-12GSDI</td>
<td>1 x 12G-SDI &amp; HDMI 2.0 output card</td>
</tr>
<tr>
<td>RD9x00-12GSDI</td>
<td>HD over SMPTE 2110 output card, 2x10Gbps</td>
</tr>
<tr>
<td>RD9x00-12GSDI</td>
<td>HD/UHD over SMPTE 2110 output card, 2x25Gbps</td>
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