The MK RX1 is a multi-codec multi-service professional receiver/decoder specifically designed to meet the needs of the contribution market.

As Operators move to 4k revenue generating services they are also looking to new IP infrastructure deployments to enable low cost and flexible carriage of this high date rate content, but with the flexibility and fallback of traditional satellite connectivity.

Through a fully flexible Platform, RX1 allows for deployment as appliance or future-proofed for Cloud eco-systems.

With the addition of the MediaKind accelerator module, users can gain the benefit of additional processing power without increasing CPU loading on the most demanding services delivering high quality, high density and low latency capability in a compact form-factor.
**Product Overview**

**Content Processing**

The RX1 can decode UHD (4k) HEVC, HD HEVC and MPEG-4 AVC compressed streams, whether 4:2:0 or 4:2:2, 8 bit or 10 bit, and produce uncompressed outputs via a range of outputs. Different combinations of codec and frame rates can be utilized simultaneously to maintain flexibility for onward processing.

**High Bit-rate / High Quality**

For the very highest quality contribution links, even with the use of HEVC encoding, bit-rates greater than 60 Mbit/s may be required. The RX1 can decode multiple compressed video components of up to 150 Mbit/s.

**Low latency**

Having low end-to-end latency is often an important requirement for live contribution links. So the introduction of latency has been minimized in the design of the RX1.

**HDR and WCG**

UHD (4k) services are expected to rapidly evolve to include High Dynamic Range (HDR) and Wider Color Gamut (WCG). RX1 supports the relevant HDR and WCG standards as they are formalized.

**All IP Workflow**

The RX1 supports the latest IP standards such as SMPTE ST 2110 for outputs, and SRT for IP inputs. An optional 25G Ethernet NIC is available to enable SMPTE ST 2110 outputs up to UHD resolution.

The RX1’s inclusion of NMOS IS-04 and IS-05 provides the connection management for this type of workflow.

**Secure Reception of High Value Content**

With high value content such as UHD sports events it remains important to prevent any security compromise. The RX1 supports BISS-CA decryption, the latest 128 bit, rotating key, content protection standard, as well as the long established BISS-1/E encryption and can be easily paired with MediaKind’s CE1 Contribution encoder for the encryption.

**Unit Features**

The following features are available:

- Satellite* (DVB-S, DVB-S2, DVB-S2X), ASI* or IP input
- 4 x 3G / 12G SDI*
- 1 x 3G SDI monitor port
- SMPTE ST 2110 output with SMPTE 2022-7*
- SMPTE 2022-6 output*
- AMWA NMOS IS-04, IS-05
- Dual 10G, 25G IP I/O*
- Low and Super Low latency HD or UHD video decode
- HEVC, MPEG-4 AVC
- BISS-1/E, BISS-CA
- Dual CAM slots
- Multiple Audio codecs
- Transport Stream passthrough
- Front panel control with confidence monitor
- Web based user interface, REST API
- Dual hot swappable power supplies

*Optional
## Specifications
### Inputs and Control

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Description</th>
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</table>
| **ASI Input**      | **ASI option card:**  
Provides 4 x ASI inputs  
Connector: 4 x BNC (F) 75 Ohm  
Max. input rate: 208 Mbps  
Packet length: 188/204 byte packets  
Standard: EN50083-9 |
| **IP Input**       | **Base unit**  
2 x 100/1000BaseT Ethernet ports via RJ45 connector  
**Dual 10GbE NIC option card:**  
Dual SFP+ cages  
10GBASE optical transceivers or 10Gbe SFP DAC |
| **Satellite Input**| 4 independent demodulators  
Frequency range: 950MHz to 2150MHz DVB  
FEC decode  
LNB max. 19V  
Connector: 4 x BNC (F) 75 Ohm  
Modulation: DVB-S, DVB-S2, DVB-S2X  
QPSK, 8PSK, 16PSK, 32PSK, 64PSK  
Packet length: 188/204 byte packets  
Standard: EN50083-9 |
| **External Clock Reference input** | Connector: BNC (F) 75 Ohm  
Standard: EN50083-9 |
Outputs

SDI Output

- Accelerator card (4:2:0, 4:2:2):
  - Connector: Up to 5 x BNC 75 Ohm (4 x main + 1 x monitor)
  - SD-SDI standard: SMPTE ST 259
  - HD-SDI standard: SMPTE ST 292
  - 3G-SDI standard: SMPTE ST 424
  - 12G-SDI standard: SMPTE ST 2082*
  - Embedded audio: SMPTE ST 299
  - SDR/HDR Signalling: SMPTE ST 425-5
  - *not available on the monitor port

- SDI option card (required with SW only 4:2:0 decode):
  - Provides 4 x HD SDI or 4 x 3G SDI or 1 x 12G SDI inputs
  - HD SDI: SMPTE 292M
  - 3G SDI: SMPTE 424M
  - 12G SDI: SMPTE 2082
  - Embedded Audio: SMPTE 299M (HD)
  - SDR/HDR Signalling: SMPTE ST 425-5

IP Output

- Connector: 2 x RJ45 — Format: 100/1000TBaseT
- Connector: 2 x SFP — Format: 100/1000/10000TBaseT*

- Dual 25GbE NIC option card:
  - Dual SFP28 cages
  - Can support 1GbE, 10GbE or 25GbE
  - Can provide hardware acceleration for SMPTE ST 2110 output with SMPTE 2022-7
  - Note: SMPTE ST 2110 output requires the dual 25GbE NIC option card.

Control and Monitoring

Front Panel

- Limited control and monitoring is available through the front panel keypad and display.
- LCD Confidence Monitor

IP

- Full control and status monitoring is provided via:
  - Web browser user interface
  - REST API

- Note: If control and monitoring is required via an option card network port contact your MediaKind representative for availability.
### Video and Audio Options

#### Video Formats
2160p 23.98, 24, 25, 29.97, 50, 59.94
1080p50, 1080p59.94, 1080i25, 1080i29.97, 720p50, 720p59.97

#### Video Decoding* 
1 x UHD (4k) HEVC Main/Main 10/Main 4:2:2 10 Profiles @ Level 5.1, up to 150 Mbps
4 x HD HEVC Main/Main 10/Main 4:2:2 10 Profiles @ Level 5.1**
4 x HD MPEG-4 AVC Main/High Profiles @ Level 4*, High 4:2:2 Profile (includes 10-bit) @ Level 4.2**
Up to 150 Mbps aggregate
** some bitrate limitations apply

#### HDR -> SDR Conversion
HDR HLG10 or HDR PQ10 to BT.709 conversion (available on the monitor port only)

#### Audio Decoding
Max. 8 stereo pairs per service (depending on codec)
MPEG-1 Layer-II
Dolby Digital®, Dolby Digital® Plus
MPEG-H *
Audio sampling rate: 48 kHz
Phase-Aligned Audio supported

#### Audio Pass-through
Dolby E®
Dolby Digital®, Dolby Digital Plus®
Linear PCM

#### Data Decoding
CEA-608 & CEA-708 Closed Captions
Time Code
Generic VANC
Teletext
AFD/BAR data
SCTE-35

### Content Security

#### Dual DVB Common Interface
Enables support for all major CAM modules
Multi-service decryption
Up to 2 CAM modules per option card

#### BISS Decryption
Decryption of BISS-1/E and BISS-CA

#### Director*
A full Conditional Access system to secure delivery of digital content encrypted using rotating keys that are distributed within the transport stream

* *requires additional value pack
### Physical and Power

<table>
<thead>
<tr>
<th>Physical and Power</th>
<th>Specifications</th>
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</thead>
<tbody>
<tr>
<td><strong>Dimensions (W x D x H)</strong></td>
<td>440 x 560 x 44mm (17.2 x 22 x 1.75” approx.)</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>10.5 kg (23 lbs) unpopulated</td>
</tr>
<tr>
<td><strong>Input Voltage</strong></td>
<td>110 VAC / 240 VAC</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>550 Watt max. 175 Watt nominal.</td>
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<tr>
<td><strong>Cooling</strong></td>
<td>Integrated fans</td>
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</table>

### Environmental Condition

<table>
<thead>
<tr>
<th>Environmental Condition</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>0°C to 50°C (32° to 122°F)</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>-20°C to 65°C (4° to 150°F)</td>
</tr>
<tr>
<td><strong>Relative Humidity</strong></td>
<td>5% to 95% (Non-condensing)</td>
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### Compliance

<table>
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<tr>
<th>Compliance</th>
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<tbody>
<tr>
<td><strong>Compliance</strong></td>
<td>CE Marked in accordance with all applicable EU Directives</td>
</tr>
<tr>
<td><strong>EMC Compliance</strong></td>
<td>EN55032, EN55024 and FCC CFR47 Part 15B Class A</td>
</tr>
<tr>
<td><strong>Safety Compliance</strong></td>
<td>EN62368-1 and IEC62368-1</td>
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