T-Ramp™ IP+DVB-S-S2+ASI/SDI+HDMI+ASI+IP
Real Time, Hardware Based, 1 RU, Local or Remotely Manageable Multi Resolution, SD and HD, 4:2:0, H.264 and MPEG-2 Decoder with IP, DVB-S/S2, or looped ASI. Set up via LCD Front Panel or via Browser. Output is SDI (SMPTE 259M), HD-SDI (SMPTE 292M), ASI, Component, HDMI, or Composite. Audio Output includes embedded AAC, AC-3, or MPEG-1 Layer II on SDI Ports or balanced audio with dual XLR Connectors. Dual CAM Modules. Can Decrypt 8 Services if used with 4 Service CAM Cards.

Features
- Inputs:
  - IP (100/1000 M), DVB-ASI with loopthrough, or DVB-S or DVB-S2 with loopthrough
- Outputs:
  - IP (UDP, RTP), HD-SDI, SDI, HDMI, two mirrored DVB-ASI outputs, YPbPr, or two composite outputs – one BNC, one RCA
- Audio Outputs: Embedded AAC, MPEG-1 Layer II, YPbPr, Composite, Balanced XLR, Dolby Digital® AC-3 Passthrough
- Optional DS3 in/out interface is compatible with Barco and Huawei protocols
- Built-in re-multiplexer
- BISS 1 or BISS E decryption
- Dynamic PMT detection and automatic update
- VBI teletext, EBU/DVB subtitle support
- WSS support
- Closed Caption support
- Unicast and Multicast support
- Down converts HD input to SD output
- 2 CI slots support 4 service CAM modules each
- Compatible with: Conax, Cryptoworks, Irdeto, NDS, Mediaguard, SECA, Viaccess, and more
- Supports PAL, NTSC, and SECAM
- LCD front panel controls plus web-based management
- Maximum IP output bit rate is 70 Mbps
- Maximum 32 separate Unicast or Multicast IP output streams

Applications
- Off-air satellite receiver
- MPEG-2/4/H.264 HD Decoder
- Transport Stream Decoder
- Multichannel satellite decryption
- IP or ASI re-multiplexing
- Signal monitoring
- IP to ASI and ASI to IP converter

Overview
IRD’s are devices used by professionals to receive or demodulate RF feeds and to then decode the resultant MPEG encoded stream.

The T-Ramp™ IP+DVB-S-S2+ASI/SDI+HDMI+ASI+IP is an advanced MPEG-2 and H.264 standard definition integrated receiver decoder for both high definition and standard definition video. It receives signals from many different sources, including IP, ASI, DVB-S, and DVB-S2. Its numerous output interfaces include SDI, HD-SDI, HDMI, ASI, YPbPr, CVBS, and XLR audio, to meet many different system requirements. The T-Ramp also has two common interface slots which can decode multiple scrambled channels.

Audio support includes embedded AAC or MPEG-1 Layer II on SDI ports, Dolby Digital® AC-3 passthrough, or analog audio output (L, R) on XLR’s.

The T-Ramp also converts transport streams to IP, or decodes IP streams to a wide variety of different outputs, which makes it ideal for IPTV systems and IP-based head-ends.

The system can be operated with front panel controls or web-based management software. With multiple inputs and outputs, the T-Ramp can be used in many different settings – including traditional head-end networks and downlinks.

Sample GUI

Input and Output Status
**Specifications**

**DVB-S2/S RF Input**
- Frequency range: 950-2150 MHz
- Input Level: -25 to -65 dBm
- Input Impedance: 75 Ω
- Connector: F-type female
- Symbol rate: 2 to 45 Mbauds
- Roll off factor: DVB-S QPSK: 0.35
  DVB-S2 8PSK: 0.35, 0.25, 0.2
- FEC Code Rate: 1/2, 2/3, 3/4, 5/6, 7/8
- Punctured rates: DVB-S QPSK: 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
  DVB-S2 8PSK: 3/5, 2/3, 3/4, 5/6, 8/9, 9/10
- LNB Level: 0, 13V, 18V adjustable
- LNB Band Selection: 0/22 KHz selectable
- Satellite Selection Command: DiSEqC 1.0

**DVB-ASI Input**
- Inputs: One input, one loopthrough input
- Connectors: Two BNC female, 75 Ω

**IP Input**
- Protocols: UDP, RTP
- Type: Multicast, Unicast, IGMPv2, ARP
- Effective Bit Rates: 10/100 Base-T: 70Mb/s
  1000 Base-T: 800Mb/s
- Ethernet Connector: RJ45, 100/1000 M

**DVB-ASI Output**
- Outputs: Two outputs
- Standard: DVB-ASI, EN50083-9
- Output Bit Rate: ≤ 99Mb/s
- TS Processing: Two Independent TS Re-multiplexed from tuner, TS/IP and 2 ASI inputs
- Connectors: Two BNC female, 75 Ω

**HDMI Output**
- Output: One HDMI output, HDMI 1.3 interface (up to 1080i)
- Video Resolution & Frame Rate: 1080i x 30, 1080i x 29.97, 1080 x 25, 720p x 60, 720p x 59.94, 720p x 50, 480p x 60, 576p x 50, 576i x 25, 480i x 29.97
- Audio: HDMI/AES Embedded – Stereo or compressed data pass through

**SDI/HD-SDI Output**
- Outputs: Two SD-SDI/HD-SDI outputs – one for backup
- SD Standard: SMPTE 259M, 270 Mb/s (10bit)
- HD Standard: SMPTE 292M, 1.485 Gbit/s (10bit)
- Level: 800mV p-p
- Connectors: Two BNC female, 75 Ω
- Audio: Embedded audio

**Digital Video Processing**
- Video Standards: MPEG-2 (MP@ ML for SD, MP@HL for HD)
  MPEG-4/H.264 AVC Part 10 (MP@L3 for SD, HP@L4.1 for HD)
- SDI Video Resolution: 1080i x 30, 1080i x 29.97, 1080 x 25, 720p x 60, 720p x 59.94, 720p x 50, 480p x 60, 576p x 50, 576i x 25, 480i x 29.97
- Video PID Bit Rate: < 80Mb/s
**Digital Audio Processing**

<table>
<thead>
<tr>
<th>Number of Outputs:</th>
<th>2 audio outputs are decoded or passed through</th>
</tr>
</thead>
<tbody>
<tr>
<td>Audio Sampling Rates:</td>
<td>32, 44.1 and 48 KHz</td>
</tr>
<tr>
<td>Audio Bit Rates – MPEG-1 Layer I:</td>
<td>32, 64, 96, 128, 160, 192, 224, 256, 288, 320, 352, 384, 416, and 448 kb/s</td>
</tr>
<tr>
<td>Audio Bit Rates – MPEG-1 Layer II:</td>
<td>32, 48, 56, 64, 80, 96, 112, 128, 160, 192, 224, 256, 320, and 384 kb/s</td>
</tr>
<tr>
<td>Nominal Output Level:</td>
<td>1V p-p (with standard test stream)</td>
</tr>
<tr>
<td>Output Format:</td>
<td>AES/EBU</td>
</tr>
<tr>
<td>Load Impedance:</td>
<td>110Ω (with XLR adaptor cables)</td>
</tr>
<tr>
<td>Connectors:</td>
<td>2 D-sub 9 male with XLR adaptor cables</td>
</tr>
</tbody>
</table>

**Analog Audio Output**

<table>
<thead>
<tr>
<th>Number of Outputs:</th>
<th>Two pairs of stereo audio outputs (2 Audio PIDs or 4 channels are decoded)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output Impedance:</td>
<td>600 Ω (balanced)</td>
</tr>
<tr>
<td>Output Modes:</td>
<td>Stereo, Left, Right, Dual Mono</td>
</tr>
<tr>
<td>Cross Talk Among Channels:</td>
<td>&gt;70 dB</td>
</tr>
<tr>
<td>THD:</td>
<td>&lt;0.3% @ 400 Hz, 1 KHz test tone</td>
</tr>
<tr>
<td>Frequency Response:</td>
<td>±0.5 dB over 20 Hz ~ 18 KHz</td>
</tr>
<tr>
<td>Output Level:</td>
<td>0 dBm in 600 Ω (0 dBu), adjustable range ±10 dB</td>
</tr>
<tr>
<td>Connectors:</td>
<td>Two D-sub 9 male, with XLR adaptor cable</td>
</tr>
</tbody>
</table>

**Ancillary Data Processing**

| Subtitles: | DVB, EBU |
| VBI: | Teletext, WSS, VFD, VPS |
| Closed Captioning: | EIA 608, EIA 708, EIA 608-to-708 |

**Redundancy**

| Redundancy Port: | Among Tuner, Two ASI inputs and TS/IP |
| Switching Condition: | TS Sync Loss |
| Switching Mode: | Main, Spare |

**Control & Monitoring**

| Local: | Front panel operation, LCD display |
| Remote: | SNMP, HTTP (Web Interface), Proprietary HDMS (Headend Device Management System) via RJ45, 10/100 Base-T |
| Serial Port: | One RS-232 D-sub female, for debug use only |
| Equipment Upgrade: | Embedded FTP loader and Telnet |

**Physical and Power**

| Power Supply: | AC 90V ~ 250V, 50/60 Hz |
| Power Consumption: | 24W (exclusive of LNB power) |
| Dimensions – HxWxL: | 1.7 x 19 x 10 inches (44 x 483 x 255mm) |
| Weight: | 11.9 lbs (5.4 Kg) |
| Operating Temperature: | 32 to 113°F (0 to 45°C) |
| Storage Temperature: | 14 to 140°F (-10 to 60°C) |
| Operating Humidity: | 10 ~ 90%, non-condensed |

**Certifications**

| FCC: | Part 15 Class B |

**Ordering Information**

T-Ramp IP+DVB-S-S2+ASI/SDI+HDMI+ASI/IP
T-Ramp DS3: Optional DS3 input and output