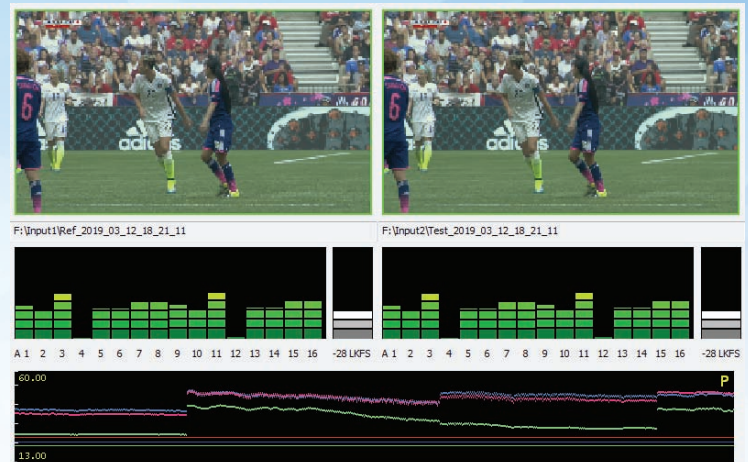


## RTM 3RU - For Multi-Channel, Real-Time HD or SD Encoding And Network Quality Testing

A real-time test of audio and video quality provides users with significant benefits including...

- The ability to perform long term quality testing on uncompressed video and audio for any length of time for the full media network delivery path.
- Full-reference testing that compares the high quality video and audio source signal to return channels after processing and transmission for highly accurate measurements and automatic low-quality event recording.
- Quality measurements that are not influenced by the creative effects applied to source video material, saving valuable time and effort with no false positives for every test run.

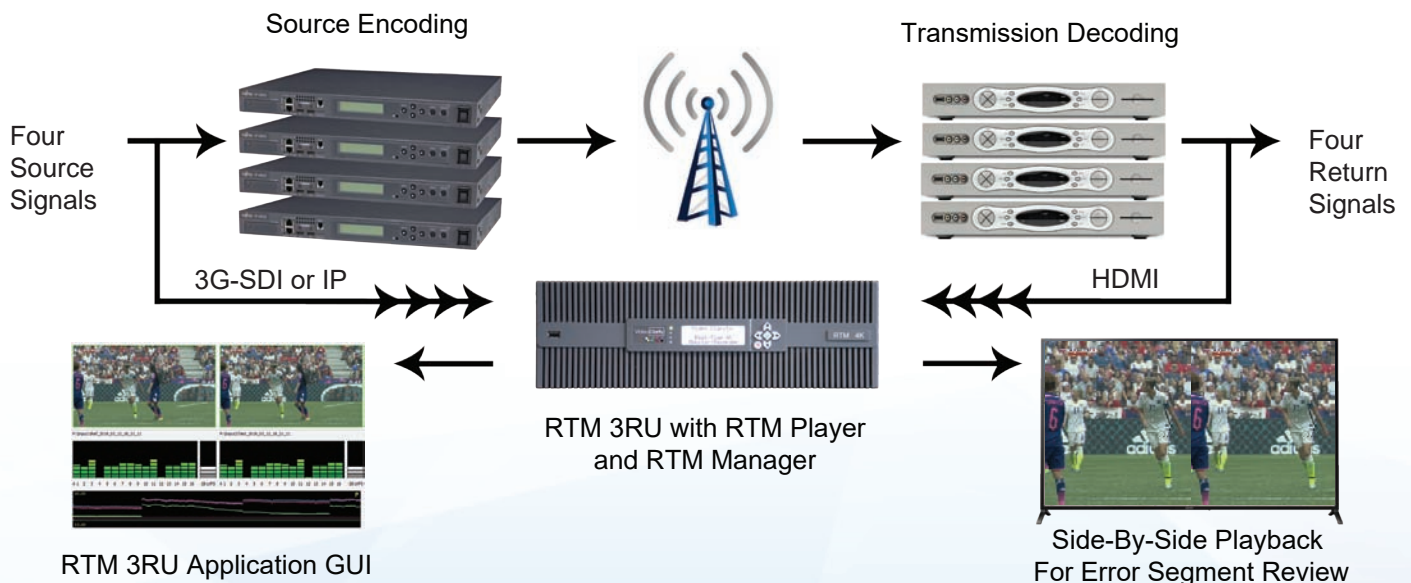


The RTM 3RU includes four each of 3G-SDI, MPEG IP, and HDMI inputs for uncompressed or compressed device testing, encoder/transcoder/statmux testing, network path testing, and testing outputs of set top box or handheld device media versus before-processing source content for up to four individual channels applied to high definition and standard definition resolutions of video with embedded audio and ancillary data.

RTM 3RU will perform a real-time video PSNR or DMOS/MS-SSIM quality assessment along with audio quality, lip sync, and audio program loudness metrics simultaneously with VANC line data accuracy tests.

The included RTM Player provides recorded error event side-by-side playback as well as an optional single source playback function to the device test chain without the use of external video hardware.

RTM 3RU can also be software upgraded to provide a single uncompressed 4K/UHD full reference test.



## Real-Time Quality Testing for Network, Encoder, Transcoder, and Home Delivery Devices

## RTM 3RU Features

- RTM 3RU GUI provides visual thumbnail of source and test video inputs with instant test score updates
- RTM Manager provides browser control with real-time score graphs for video quality and lip sync tests
- RTM Player allows drag and drop of test logs for comparison playback of recorded error sequences
- Either PSNR or DMOS (with MS-SSIM algorithm) is selectable as the video quality test in RTM 3RU
- aFreq is applied for audio performance and lip sync measurement with audio/video offset thresholds
- aPeak is applied for LKFS audio program loudness measurement with min and max threshold settings
- VANC data check is selectable per line and is measured for total data payload accuracy

## RTM 3RU System Back Panel and Specifications



### Model #: RTM-S3084

**Storage:** 6.0 TB

**Power:** 100 - 240VAC, 47-63Hz, 600W Max

**Desktop Output:** HDMI or DisplayPort (2)

**Includes:** RTM System Guide PDF, 3RU rack kit, keyboard, mouse, 4 SMB to BNC cable kit, analog breakout cable, HDMI mini to Type A output cable, USB to GNIC adapter, RTM RTM Player, RTM Log Grapher, RTM Manager, RTM Scheduler, Command Line API, REST API

**Video I/O:** SMPTE 259/292/296/424 and 425 option

- 3G-SDI - 4 bidirectional interfaces (SMB-BNC)
- HDMI 2.0/1.4b - 4 inputs, 1 output w-cable supplied
- Input 8 source & test signals up to 1080p/60Hz each

**Audio I/O:** 24 bit, 48 KHz

- 16 channels of embedded audio per SMB-BNC
- 8 channels of audio per HDMI input or output
- Dolby® Digital Plus (input decoder incl.) or PCM

**Options:** CV-1L ClearView Software, RTM-4K-1L RTM 4K function license upgrade, CV-Importer is either included in CV-1L or as a separate option

**GNIC IP Inputs For HD or SD Testing and Control Use:**

- 1 - 10Gb and 1 - 1Gb - RJ45
  - 1 - 1Gb - via supplied USB/RJ45
- Dimensions: 17" W x 5.25" H x 20.15" D (3RU)  
43 cm x 13.5 cm x 51.4 cm

Weight: 31 lbs, 14.1 Kg

Operating Temperature: 0 - +40 Celsius

Storage Temperature: -20 - +50 Celsius

Relative Humidity: 5-95%, non condensing

### Included CV-SDI-IO-3G:

RTM 4K systems apply one interface module with  
- Four SMB to BNC cables  
- HDMI mini to Type A cable  
- Analog output multi-cable

**Digital Video:** 4 SMB-BNC input/output selectable - 3G-SDI

- Supports YCbCr 4:2:2 8 or 10-bit - SMPTE 259, 292, 296, 424, optionally 425

**Digital Embedded Audio:** 16 channels - SDI embedded input and output

**HDMI 1.4b:** 1 output, up to 4096x2160p60Hz 4:2:0 on HDMI mini output

**Analog Video:** 3 BNC out - Component (Y, Pr, Pb) or Composite or S-Video

**Reference Video:** Input on breakout multi-cable - not used

**Digital Video Formats:** 525i 59.94Hz, 625i 50Hz

720p 60, 59.94, 50Hz; 1080i 60, 59.94, 50Hz

1080p 60, 59.94, 50, 30, 29.97, 25, 24, 23.98Hz

4K Option: 2160p 60, 59.94, 50, 30, 29.97, 25, 24, 23.98Hz

**Digital Audio Format:** 24bit, 48KHz PCM, or DD+

**Timecode:** -SMPTE-12M on SDI, or LTC BNC - not used

### Included CV-HDMI-I-4:

Multiple format capture interface with four programmable inputs

**Digital Video:** Two HDMI 2.0 and two 1.4b, up to two 4K/UHD, or four HD or SD inputs

-Input image formats up to 4096x2160p60 YCbCr 4:2:2 10-bit on Type A HDMI

**Digital Audio:** 8 channels per program input **HDR Metadata:** CTA-861.3, CTA-861-G

**Digital Video Formats:** Same as CV-SDI-IO-3G

**Digital Audio Formats:** 16 and 24-bit, embedded HDMI audio, 48 KHz, synchronous per HDMI input

### RTM Player and RTM-P1:

RTM Player for test review playback is included. \*RTM-P1 is the source playback option for uncompressed sourcing during RTM test operations, single instance only, RTM-P1 includes SMB-BNC loop cable

**RTM-Player and RTM-P1 Video Output:**

-Playback with supplied loop back cable for SDI systems to source input for HD, or SD video format testing in RTM 3RU

-The RTM-P1 option is not applicable to the ST 2110 interface

**Control:** Via RTM Player GUI, Command Line, or REST API

**Digital Video Formats:** 525i 59.94Hz, 625i 50Hz,

720p 60, 59.94, 50Hz, 1080i 60, 59.94, 50Hz,

1080p 60, 59.94, 50, 30, 29.97, 25, 24, 23.98Hz

4K Option: 2160p 60, 59.94, 50, 30, 29.97, 25, 24, 23.98Hz

**Digital Audio:** 16 channel, 24bit, 48KHz PCM, or DD+

**VANC:** All VANC lines playback

### CV-IP-IO-UHD Module Option:

25G IP media interface module requires one or two SFP28 purchased separately and applied for input/output  
Note: IP only system available as model RTM-S8085-IP

**Video I/O:** 25G Ethernet applying SMPTE ST 2110-20 and 2022-7 media transport

- Up to 2 UHD, HD, or SD video/audio programs input or simultaneous one in / one out

- Up to 2 UHD, HD, or SD video/audio programs output with ClearView application

Note: Multiple input and output functions for UHD formats are system dependent

**Media Transport Interface:** 2 x SFP28 Cages - SFPs not included

**Reference Input:** Integrated hardware for network PTP according to ST 2059-2

**VANC and Timecode:** SMPTE ST 2110-40 record and play

**Digital Video Formats:** 525i 59.94Hz, 625i 50Hz

720p 60, 59.94, 50Hz; 1080i 60, 59.94, 50 Hz

1080p 60, 59.94, 50, 30, 29.97, 25, 24, 23.98Hz

2160p 60, 59.94, 50, 30, 29.97, 25, 24, 23.98Hz

**Digital Audio I/O:** 16 channels input and output

- Formats - 24bit, 48KHz PCM, or Dolby Digital+

- According to ST 2110-30 and ST 2110-31