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SlowMotion

Instant replay, slow motion server with highlight editing tools



SlowMotion is an SD/HD, slow motion video server designed to meet the growing challenges of live sport productions. SlowMotion provides up to 8 I/O channels of high quality Motion JPEG2000 ingest, synchronized slow motion replay, and powerful yet simple editing tools.

SlowMotion – the controller

SlowMotion's controller is designed to enhance the production workflow, while providing the operator with familiar and intuitive surroundings.

SlowMotion's controller can support up to 6 inputs and 2 outputs with PVW/PGM capabilities. In addition, it supports super SlowMotion configurations including mixed super slow and standard recording at the same time, as well as seamlessly mixing them on the output.

The SlowMotion controller's advanced architecture provides a user-friendly display, local database management, and sophisticated sorting tools. SlowMotion's programmable LCD buttons change appearance and functionality according to server status, providing more features, while keeping the controller interface simple. For example, when a clip is loaded, the buttons change label and functionality to allow "delete", "rename", "copy" etc.

Equipped with a 5.7 inch colour touch screen, SlowMotion allows quick and easy access to the server's controls and configuration tools. Sort lists by selecting relevant columns, type in text using the virtual keyboard, and control the entire setup from the touch screen.

The SlowMotion controller includes a heavy-duty and configurable Jog and T-bar, and highly reliable, illuminated tactile buttons.

Instant replay

With its synchronized recording of inputs, once an "in" point is set, switching to a different input recues to the same "in" point, allowing replay of the same event from all recorded inputs. If necessary different "in" and "out" points can be set for each input.

Clip management

Clips can be saved easily by pressing the Enter button, or by setting a clip number using the smart keypad. The SlowMotion smart keypad indicates used or available clip slots, preventing operation mistakes and accelerating operation speed.

To enhance the workflow, event types (goal, corner kick, offside, etc.) can be set for each saved clip, by selecting one of the 12 event buttons. Events can be assigned to the buttons from pre-defined categories, according to sport disciplines, or can be custom defined. This allows easy sorting of different events for immediate replay.

Huge capacity

In order to provide increased storage with high data rates, advanced SATA technology is used. Slow Motion uses 8 X 1 TeraByte disks, which provide over 60 hours of HD recording in 100mbps, or 120 hours of SD recording in 50 mbps.

High reliability

The video data on SlowMotion is protected with RAID 6 technology, ensuring that even if 2 disks are down, no data is lost and there is no degradation in server performance. The video disks can be easily accessed from the front panel, without removing the server from the rack. To further ensure server reliability and redundancy, SlowMotion uses a hot swap power supply and runs on the reliable Linux operating system.

3D stereoscopic support

With its unique 8 channels configuration, SlowMotion can provide up to 4 stereo channels with flexible I/O configuration, while maintaining the existing workflow.

Superior image quality

In order to provide the best available image quality, motion-JPEG2000 encoders are used. Motion JPEG2000 uses a wavelet-based transform to achieve better compression, providing superb image quality and high error resilience. The JPEG2000 fast encoders also provide very short latency, which makes SlowMotion very responsive to operator commands. SlowMotion implements 2 line/4 line interpolation to provide high quality slow motion replays at any speed.

8 in video splitter

SlowMotion can be provided with Studiotech's Multiviewer - a 1U rack mount unit with up to 8 inputs and both SDI and full HD DVI outputs. Multiviewer supports both SD and HD SDI inputs, 50hz or 60 HZ, and can switch between various pre-programmed screen configurations (4 in/ 6in).



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SlowSlowMotion

Features

SlowMotion Key Feature - server

- Up to 6 in 2 out (2PGM or PVW/PGM)
- Multi format, SD/HD
- 3D stereoscopic support
- Super slow-motion support
- Up to 200mbps, variable JPEG2000 CODEC
- Over 60 hours of HD recording (@100mbps) 120 hours in SD
- Uncompressed audio, 8 stereo channels per input
- 8 stereo, AES and analog audio inputs and outputs
- RAID 6 redundancy
- Synchronized, field accurate editing and playout
- Fast response
- High quality slow motion (2 or 4 line interpolation)
- On screen display for preview monitor including audio meters
- Redundant hot swap dual power supply
- Preserve material on power loss

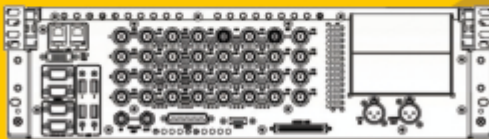
SlowMotion Key Feature - controller

- 1000 cyclic cues, 4000 clips, 100 play lists
- Multi input clips, with separate in/out option per input
- 5.7" color touch screen
- LCD programmable buttons for advanced features
- Fast sort-by-event tools
- Robust T-Bar with programmable ranges
- Smooth response in fast jog search mode
- Powerful Linux operating system
- Smart keypad for errorless clip save and load
- Synchronized and non-synchronized switch between inputs



Graphic user interface

Hardware Specification



Technical specifications - Controller

Channels configuration	3 in - 1 out 2 in - 2 out - (PVW-PGM/2PGM) 4 in - 2 out - (PVW-PGM/2PGM) 2 in - 2 out - (1 in as SSM + PVW-PGM/2PGM) 6 in - 2 out - (PVW-PGM/2PGM) 4 in - 2 out - (1 in as SSM + PVW-PGM/2PGM)
Super slow motion configurations 50 frames & 75 frames	Up to 3 SSM 50 or 60 frames (50hz /60hz) Up to 2 SSM 60 or 90 frames (50hz /60hz) Combined with single camera recording channels
Data interfaces	1x Serial 2x USB 2x Ethernet (1Gb) 1X VGA
Chassis	Height - 180mm Width - 280mm Depth - 285mm Weight - 4.8kg (approx.)
CPU	Atom N270
Operating system	Linux
RAM	1GB
System hard drive	8GB solid state drive
LCD	5.7" 640X480 TFT color touch screen
Push buttons	Illuminated, 3 million operations minimum
Input devices	Support for external USB keyboard & USB mouse
Power supply	60W (max) 100-240V 47-63hz
Environmental condition	Operating temperature: 5c - 40C Storage temperature: -40c - 70c Humidity: 90% max

Technical specifications - Server

Supported video formats	HD: 1080i 59.94Hz SMPTE 274 29I 1080i 50Hz SMPTE 274 25I 720p 59.94Hz SMPTE 296 59P 720p 50Hz SMPTE 296 50P SD: PAL/NTSC - CCIR 601 525/625
Video bit rate SD	Scaleable 30 to 200 mbps - default 50
Video bit rate HD	Scaleable 50 to 200 mbps - default 100
Recording capacity SD	Over 120 hours (at 50mbps)
Recording capacity HD	Over 60 hours (at 100mbps)
Channels configuration	2 channels: 1 in > 1 out 4 channels: 2 in > 2 out, 3 in > 1 out, 1 SSM in > 1 out 6 channels: 4 in > 2 out, 5 in > 1 out, 1 SSM + 1 in > 2 out 8 channels: 6 in > 2 out, 1 SSM + 3 in > 2 out, 2 SSM in > 2 out 2 outs allows PVW/PGM or 2 PGM work modes
Compression	JPEG 2000
Embedded Audio	Embedded audio - PCM, Dolby E, ancillary data fully preserved Up to 8 stereo audio channels per video channel
Analog/AES audio	Up to 8 in & out stereo channels, using an external 2U breakout box, with software router for internal distribution
Video inputs	SDI / HD-SDI
Video outputs	SDI / HD-SDI, (Component preview)
Video outputs monitoring	2XSDI / HD-SDI with OSD output option
Genlock	Analog Black Burst / tri level 75Ω with loop through
Time code input	Internal free run LTC - XLR Embedded VITC / ATC (RP-188)
Time code output	Internal free run as VITC / ATC output Embedded LTC Embedded VITC / ATC
Data interfaces	2x Serial (6x - optional) 4x USB 1X external SATA 2x Ethernet (1Gb) 1X VGA/DVI 1X XLR LTC input
Chassis	Rack 19" 3U Height - 130mm Width - 443mm Depth - 631mm Weight - 28kg (approx.)
CPU	2.33 ghz Intel quad core Xeon
Operating system	Linux
RAM	2GB
System hard drive	2X80GB mirrored
Internal disk storage	8 x 3.5" 1TB SATA 2
Hard Disk Redundancy	Raid 6 (striped disks with dual parity)
Power supply	Redundant power supply 2X 600W (max) 100-240V 47-63hz
Environmental condition	Operating temperature: 5c - 40C Storage temperature: -40c - 70c Humidity: 90% max