NOW THERE ARE TWO WAYS TO STORE MORE

WSD/HDi and WSD/HDe

THE PERFECT UNCOMPRESSED SD AND HD REAL-TIME VIDEO I/O AND STORAGE SOLUTIONS.
Accom, the company that invented the desktop digital video disk recorder over 15 years ago, is proud to present its two latest products in the WSD product line — WSD/HDi and WSD/HDe Universal Format Multi-Definition Digital Disk Recorders.

The WSD/HDi and WSD/HDe each feature a built-in disk storage array, and provide the most robust feature set of any professional uncompressed digital disk recorder (DDR) on the market today. Each disk recorder captures both Standard Definition (SD) and High Definition (HD) uncompressed video content, provides real-time playback for rendered material, and is operationally plug-and-play. There’s no need to add boards or partition a drive. With a simple click of the mouse, users can immediately switch between SD or HD projects without ever having to reboot the disk recorder. It’s that easy and it’s that flexible! So, whether you’re working on an SD or HD project, the WSD/HD platform is the perfect uncompressed real-time video I/O and storage solution.

If you work in any of the following environments:

- Animation
- Digital Cinema
- Digital Cinematography
- Editing
- Graphics
- Large Venue Presentation
- Live-to-Air Playout
- Media Encoding
- Scientific Visualization
- Special Effects
- Telecine
- Video Compression Research

…the WSD/HD platform is the best tool for you!

**AWESOME FEATURE SET**

Don’t let the low cost of the WSD/HD platform fool you — these machines have a feature set that will satisfy even the most demanding applications. With the Import/Export utility as a standard feature, the WSD/HDi and the WSD/HDe can each easily interface with a network of graphics rendering computers and film printers without concern for proprietary file formats. This eliminates the need for complex transfer scripting or the need to use QuickTime® file wrappers. The Import utility can monitor up to five user-defined directories for the arrival of single-frame image files. As soon as the first image file arrives, the Import utility goes to work by automatically creating a clip having the same name as the image file, and inserts the frame into that clip. The remaining frames arriving in the import directory are then automatically inserted into the same clip. This import process typically runs faster than the rendering operation that’s creating the image files, thus providing a ready-to-play clip immediately after rendering is finished.

On the export side of the equation, while the WSD/HD platform is busy recording real-time input video into a stored clip, the Export utility can transfer individual frames from that clip (or from any other stored clip) to any computer, disk drive or film printer on the computer network. For both import and export, all popular image file formats are supported, such as SGI, RGB, TGA, TIFF and PSD — just to name a few.

**ENCODE TO YOUR HEART’S CONTENT**

Both WSD/HDi and WSD/HDe have built-in Windows® Media Encoder 9 Series™ capability. This allows recorded footage to be conveniently encoded for remote delivery, for a variety of needs. For example, digital dailies can be created, DVD content can be authored, or web video streams can be produced directly from the WSD/HD platform. Customizable encoding profiles allow clips to be delivered in a range of file sizes — from compact VHS-quality up to 19Mbps (megabits per second) high-definition clips for high-quality production review, web-tailers or DVD content.

**NETWORKED PRODUCTION ENVIRONMENTS**

WSD/HDi and WSD/HDe were both designed specifically for today’s highly networked production environments, catering to the complex interactions of a multi-user collaborative workflow — even when an installation has a mix of Windows®, Irix®, Linux and Macintosh® OS X operating systems. This workflow is especially relevant when creating graphics and effects for HDTV and electronic film.

**THE COMPETITION JUST CAN’T MATCH UP**

Unlike its competitors, Accom’s WSD/HDi and WSD/HDe each record both Standard Definition (525/625) and High Definition uncompressed video formats with optional uncompressed digital audio — all at the same time, all in the same machine. Clips with different video formats and different line standards can all co-exist in the media storage array, always available for virtually instant recall and playback.

**MULTIPLE FORMATS / MULTIPLE APPLICATIONS**

Whether creating animations and special effects for electronic film, editing for television, or recording and playing clips in live production, the WSD/HD platform sets the standard for reliable, high-quality performance. By a wide margin, the WSD/HDi and WSD/HDe provide the perfect uncompressed recording solution for HD VTR replacement in a variety of applications.

**VTR — DDR TRANSFERS**

WSD/HDi and WSD/HDe each feature two RS422 serial control ports with Sony protocol, one master port for frame-accurate control of an external VTR, and one slave port for control by an external edit controller. The convenient Auto Edit feature allows you to capture media from videotape into the disk recorder for editing tasks, graphics work, effects work and media encoding — or Auto Edit can be used for transferring finished computer graphics and effects work to videotape for archiving or client distribution.
THE DIFFERENCE BETWEEN THE TWO — YOU MAKE THE CHOICE

Making the choice between the WSD/HDi or the WSD/HDe is a matter of simply determining your typical media work project size, and whether you need Video+Key and/or 4:4:4 RGB recording capability.

WSD/HDi

This version of the WSD/HD platform is ideal for a variety of projects. Whether you’re involved in short form, medium form or long form productions, WSD/HDi has a storage capacity that will fit your needs and your budget. With storage capacities ranging from 7.5 minutes to 240 minutes, this system is designed to accommodate your workflow. WSD/HDi provides an option for recording and playback of Video, Key and Audio (VKA) in a single operation, under a unified clip identity. VKA capability dramatically streamlines many production and post applications, and simplifies clip management. This same option allows the WSD/HDi to record and play "dual-link" 4:4:4 RGB video, which is output by the latest digital cinematography film-replacement HD cameras. The alternative "V+V Dual-Stream" option allows the WSD/HDi to record two streams of video that are always locked together — providing a means to record either two video tracks or to record proprietary high-definition video formats. A final option allows users to record LTC timecode with incoming media, and to choose whether to preserve timecode discontinuities or replace them with internally-generated timecode.

WSD/HDe

The WSD/HDe provides the same robust standard feature set as the popular WSD/HDi — but now, the leaders in DDR technology are offering a system that caters to those users who are working primarily on long form projects. The WSD/HDe features an internal disk array with storage capacity starting at two and a half hours at 24P — which makes recording and storing long form projects a breeze. All of this is contained within a nicely designed 4RU chassis. Worried about losing your material? No need. The WSD/HDe utilizes RAID-3 parity protection for video with redundant mirrored disks for audio — which ensures protection against loss of your recorded data in the unlikely event of a failed media disk drive. What about easily removable disk drives? WSD/HDe has them, and they’re totally accessible right from the front of the machine! In this system, the V+K / RGB option is not supported.

POWERFUL CONNECTIVITY TO STREAMLINE YOUR WORKFLOW

Graphics and effects work for HDTV and electronic film require complex interactions with a multi-user collaborative workflow. WSD/HDi and WSD/HDe have been designed specifically for today’s highly networked production environment. Whether you have an installation of one or 100 workstations, have a mix of Windows, Linux, Irix or Macintosh OS X operating systems — or are systems standardized, the WSD/HD platform provides high-speed access to all users, with control through the unique, browser-based NetPanel™ user interface.

The unique NetPanel user interface on the WSD/HD platform is an OS-independent HTML/Java2 applet that runs from Microsoft® Internet Explorer or Netscape® browsers on any Windows, Macintosh, Irix or Linux networked computer (Java2 plug-in required). You can mix Windows, Irix, Macintosh and Linux workstations on the same network as the WSD/HDi or WSD/HDe, with control over the disk recorder from any of these workstations. NetPanel provides simple and easy machine control, clip filing & management, and system setup & configuration. NetPanel can also run on the WSD/HD platform itself for stand-alone operation (user-supplied VGA monitor required).

ETHERNET API

Both of the WSD/HD platforms feature an application programming interface (API) available through the standard gigabit Ethernet port. This API provides the ability to control all attributes of the WSD/HD disk recorder via remote shell (rsh) and remote login (rlogin) commands, and provides image transfer capabilities via remote copy (rcp) commands. WSD/HD platform users and third-party vendors with programming skills, can create user-defined applications to control all aspects of the WSD/HDi or WSD/HDe, including image transfer with external computer graphics equipment. This Ethernet API is built upon the earlier WSD/2Xtreme API, so applications designed for this predecessor WSD product will seamlessly operate on the features common to the WSD/2Xtreme and the newer WSD/HD platform products.

STANDARD FEATURES

- Uncompressed Multi-Definition Digital Disk Recorder Platform
- HDTV and SDTV 10-Bit YUV 4:2:2 SDI Video I/O
- WSD/HDe: RAID-3 Parity Video Storage / Mirrored Audio Storage
- WSD/HDi: JBOD Video & Audio Storage
- Windows 2000 File System
- QuickTime™ Compliant Clip-Based Storage
- HTML/Java2 Graphical NetPanel User Interface
- (2) Sony protocol RS422 ports for VTR Control and Edit
- 10-T / 100-T / 1000-T (Gigabit) Ethernet
- Application Programming Interface (API) including rcp, rsh and rlogin
- Import / Export Utility for automatic import of image files and export to popular image files including RGB, TIF, TGA, SGI, YUV, PNG, JPG, PSD, etc.
- Windows Media Series 9 Encoding with user-defined profiles
- Normal, Looping and Ping-Pong Playback Modes
- Auto Edit for frame-accurate VTR loading and archiving
- Vertical Interpolator for Smooth Slow Motion Playback
- Variable Play Mode with Field/Frame Access
- CineAdd 3:2 Pulldown for 24fps-to-60i on-the-fly
- 24fps-to-25psF Overspeed in Realtime
- Clip Timecode Offset stored with each clip
- Poster Image stored with each clip
- Segment List Play
- Analog Reference for SDTV / Tri-level Reference for HDTV
- Built-in Video Test Patterns and Audio Tones
- Windows Keyboard and Mouse on PS/2
- ShuttlePRO™ Hardware Controller from Contour Design

OPTIONAL FEATURES

- Higher capacity video storage times
- Digital Audio Option *
- (8) Individual Audio Tracks (4 stereo pairs)
- AES/EBU, 24-Bit Resolution with 48kHz Sampling
- Handles AC-3 and Dolby-E Bit Streams
- Four storage capacities available
- Analog Monitoring: Balanced, line-level on (8) XLR connectors via breakout cable, with 16-bit digital-to-analog conversion
- Independent record/edit of each audio track
- LTC Timecode In/Out with (4) GPI In / (4) GPI Out
- WSD/HDi Only: Key Channel / RGB providing 4:2:2:4 V+K or 4:4:4 RGB I/O (conforms to SMPTE 294M and ITU-R/BT.799-2 "dual-wire" SDI link) *
- WSD/HDi Only: Dual-Stream 4:2:2 + 4:2:2 Video+Video I/O *
- Third-Party Fibre Channel Networking *

* Note: When the Key Channel / RGB Option or the Dual-Stream Option is fitted in WSD/HDe, only one of the following three options may also be installed: (A) AES/EBU Digital Audio (B) LTC Timecode (C) Third-party Fibre Channel

OPTIONAL FEATURES
## SPECIFICATIONS

### DIGITAL VIDEO INPUT

**High Definition:**
- SDI SMPTE 292M (10-bit at 1.5 Gb/s) (1) F BNC

**Standard Definition:**
- SDI SMPTE 259M (10-bit at 270 Mb/s) (1) F BNC

### DIGITAL VIDEO OUTPUT

**High Definition:**
- SDI SMPTE 292M (10-bit at 1.5 Gb/s) (1) F BNC

**Standard Definition:**
- SDI SMPTE 259M (10-bit at 270 Mb/s) (1) F BNC

### SUPPORTED VIDEO FORMATS

All Uncompressed with 10-Bit Resolution

**High Definition 4:2:2 YUV:**
- 1920x1080: /60i /59.94i /50i
- 1920x1080: /30p /29.97p /25p /24p /23.98p
- 1920x1080: /30psF /29.97psF /25psF /24psF /23.98psF
- 1280x720: /60p /59.94p

**Standard Definition 4:2:2 YUV:**
- 720x486 (525): /59.94i (ITU-R/BT.601-4)
- 720x576 (625): /50i (ITU-R/BT.601-4)

**High Definition 4:4:4 RGB (with Optional Key Channel / RGB for WSD/HDi Only):**
- 1920x1080: /60i /59.94i /50i
- 1920x1080: /30p /29.97p /25p /24p /23.98p
- 1920x1080: /30psF /29.97psF /25psF /24psF /23.98psF
- 1280x720: /60p /59.94p

**Standard Definition 4:4:4 RGB (with Optional Key Channel / RGB for WSD/HDi Only):**
- 720x486 (525): /59.94i (ITU-R/BT.601-4)
- 720x576 (625): /50i (ITU-R/BT.601-4)

### ANALOG REFERENCE INPUT (LOOP-THROUGH)

- Tri-level HD or Composite Analog SD (2) F BNC

### ANALOG VIDEO MONITOR OUTPUT

- XVGA Connector (1) F D15
  - 72Hz refresh in 24p modes for flicker-free monitoring

### DATA / CONTROL

- RS422 Serial Control, Sony Protocol
  - Master Port (1) F 9D
  - Slave Port (1) F 9D
- 10-T / 100-T Ethernet (1) F RJ45
- 10-T / 100-T / 1000-T (Gigabit) Ethernet (1) F RJ45
- USB 2.0 Hi-Speed "Series A" Receptacle (2) F USB-A
- QWERTY Keyboard (1) F PS/2
- Mouse (1) F PS/2

### MAIN CHASSIS PHYSICAL & ELECTRICAL – WSD/HDE ONLY

- Rack-Mount Configuration Dimensions:
  - W = 19.0 in. / H = 7.0 in. / D = 27.0 in
  - W = 48.3 cm / H = 17.8 cm / D = 68.58 cm
- Maximum Weight: 86 lbs. (39.1 kg)
- Power: 500 Watts / 100-240 VAC / 50-60Hz / 9A
  (Auto-sensing power input)

### MAIN CHASSIS PHYSICAL & ELECTRICAL – WSD/HDI ONLY

- Tower Configuration Dimensions:
  - W = 8.5 in. / H = 19.0 in. / D = 18.0 in.
  - W = 21.6 cm / H = 48.3 cm / D = 45.7 cm
- Rack-Mount Configuration Dimensions:
  - W = 19.0 in. / H = 7.0 in. / D = 18.0 in.
  - W = 48.3 cm / H = 17.8 cm / D = 45.7 cm
- Maximum Weight, Video-Only: 43.5 lbs. (19.8 kg)
- Maximum Weight, Video+Key: 45.0 lbs. (20.5 kg)
- Power: <400 Watts / 100-240 VAC / 47-63Hz / 3A
  (Auto-sensing power input)

### SAFETY & EMISSIONS

- CE, CSA, TUV
- FCC Class A, CISPR22, EN55103

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### Optional – WSD/HDi and WSD/HDe

**Digital Audio Input**
- AES/EBU 48kHz at 24-bit resolution
  - 8-Tracks (4 stereo pairs) (4) F XLR

**Digital Audio Output**
- AES/EBU 48kHz at 24-bit resolution
  - 8-Tracks (4 stereo pairs) (4) M XLR

**Analog Audio Output**
- Balanced, line-level at 16-bit resolution
  - 8-Tracks (4 stereo pairs) (8) M XLR

### Optional – WSD/HDi Only

**Digital Key Input**
- High Definition:
  - SDI SMPTE 292M (10-bit at 1.5 Gb/s) (1) F BNC
- Standard Definition:
  - SDI SMPTE 259M (10-bit at 270 Mb/s) (1) F BNC

**Digital Key Output**
- High Definition:
  - SDI SMPTE 292M (10-bit at 1.5 Gb/s) (1) F BNC
- Standard Definition:
  - SDI SMPTE 259M (10-bit at 270 Mb/s) (1) F BNC

**Analog Key Monitor Output**
- XVGA Connector (1) F D15
  - 72Hz refresh in 24p modes for flicker-free monitoring

**Digital Video Input 2nd Stream**
- High Definition:
  - SDI SMPTE 292M (10-bit at 1.5 Gb/s) (1) F BNC
- Standard Definition:
  - SDI SMPTE 259M (10-bit at 270 Mb/s) (1) F BNC

**Digital Video Output 2nd Stream**
- High Definition:
  - SDI SMPTE 292M (10-bit at 1.5 Gb/s) (1) F BNC
- Standard Definition:
  - SDI SMPTE 259M (10-bit at 270 Mb/s) (1) F BNC

**Analog Video Monitor Output 2nd Stream**
- XVGA Connector (1) F D15
  - 72Hz refresh in 24p modes for flicker-free monitoring

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