

# FAQs for HDCAM VTR

## General

### **Q. Are there different models in the HDCAM family of VTRS?**

A. Yes, the top of the line is the HDW-F500 CineAlta™ VTR with both 24P and 60i capability. The HDW-250 is a portable VTR that operates in either 60i or 30P modes, but not in 24P. The HDW-500 was the 60i only predecessor to the HDW-F500; it has been replaced by the HDW-2000. Also, there are two other sister VTRs in the HDW-2000 series: the HDW-M2000 records HDCAM and will playback Sony's 1/2" standard definition legacy formats. The HDW-M2100 is a multi-format player, that will playback HDCAM and 1/2" SD formats.

### **Q. What is the maximum recording time in the HDCAM format?**

A. A large cassette can record 124 minutes of HDCAM material in the 60i mode. However, this capacity increases to 155 minutes if the material was recorded in the 24P mode.

### **Q. Can any of the HDCAM VTRs record any standard definition formats?**

A. Sony decided not to include SD record capability in order to keep the price of the machines lower. Most customers would rather not tie up a high definition recorder in order to make a SD recording. However, there is much value in being able to upconvert from a standard definition legacy format such as a Betacam® tape. The HDW-M2000 and HDW-M2100 both have built-in upconversion.

### **Q. Can HDCAM VTRs record a progressive signal?**

A. Yes, the HDW-F500 can record in five progressive modes and two interlace modes: 1080/23.98, 1080/24, 1080/25, 1080/29.97 and 1080/30. Additionally, it will record at the following interlace modes: 1080/59.94, 1080/60 and 1080/50. One of the advantages of recording at 1080/24 (or 1080/23.98) is that it has become the universal format for international exchange as determined by the ITU. Therefore, it would be easy to downconvert to 720P from a master created at 1080/23.98. In fact, in the near future, the HDW-2000 series will offer an optional 720P/480P progressive card for this very purpose.

**Q. What are the advantages of each of the recording modes?**

A. 23.98 PsF—when a one-to-one frame relationship to film is desired, and a standard definition output is required at the same time. A machine equipped with an HKDV-507 board would be able to supply a *simultaneous* output with the 3:2 pulldown sequence inserted.

24PsF: when a one-to-one relationship with film is needed, but a standard definition output is not needed. The simultaneous 3:2 pulldown sequence provided by the HKDV-507 is also available in this mode, for a 60-field *interlace* signal.

25PsF: In many PAL countries, film is recorded at 25 frames per second, not 24 as is the practice in the U.S. By running the HDW-F500 at 25 fps, a one-to-one relationship with a 25 fps *film* can be established, and a *simultaneous 576 line/50 field* (PAL) standard definition output can be obtained. Moreover, a tape *recorded* at 24 fps can be *played back* at 25 fps (4% faster), and the frame-based relationship to 25 fps film can be achieved. This is one of the bases upon which we claim the HDW-F500 to be a virtual *universal mastering VTR*.

29.97PsF/30 PsF: If a program is being created in Progressive scan mode, where better temporal resolution is desired, these modes should be used. The 29.97P mode will allow a 480i SD output. The 30 P mode will not.

50 Interlace: A program created for distribution in a PAL country, where better temporal resolution is important, would use 50i.

59.94 Interlace: To create a program for broadcast in both the U.S. DTV and NTSC standards, or anytime where a simultaneous 480i output is desired, use this mode.

60 Interlace: A program created for broadcast in the U.S. HD standard, where NTSC output is not required, would use this mode.

**Q. What optional accessories are available for the new HDW-2000 series?**

A. There are the rack mount kit, RM-131; remote control panel, HKDW-101; housing for the remote panel, BKMW-102; and, the control panel extension kit, BKMW-103. The 720P/480P optional output card will be available in early 2002. Its model number will be HKDW-103.

**Q. Can HDCAM VTRs record Metadata?**

A.) Yes. At both NAB 2001 and NAB 2000, we showed HDCAM VTRs handling two forms of Metadata. We showed an HDW-F500 (in 59.94 Interlace mode) playing back Closed Caption data and an HDW-F500 (in 23.98 Progressive mode) playing back Film Key Code data.

Closed Caption data will be a required element of the DTV bitstream for transmission, and Film Key Code is an important element of the off-line editing process for material acquired on film. The HDCAM format's ability to deal with both of these demonstrates its flexibility. Both of these applications of Metadata included hardware from Evertz.

**Video**

**Q. Which models can operate in the 24P model?**

A. The HDW-F500 is the only model that supports 24P.

**Q. Can I get a downconverted signal directly out of an HDCAM VTR?**

A. Yes, the HDW-F500 requires the optional downconvert card, HKDV-501A. The HDW-500 requires the downconvert card, HKDV-501. The HDW-250 portable VTR has built-in downconversion suitable for monitor quality. The HDW-2000, HDW-M2000 and HDW-M2100 come equipped with studio-quality downconversion as standard features.

**Q. Are there various viewing modes for the downconverted output?**

A. Yes, all of the downconverters offer edge crop, letterbox and squeeze modes.

**Q. Which tape formats can be played on the HDW-M2000 and HDW-M2100?**

A. Both models will playback HDCAM, MPEG IMX™, Digital Betacam, Betacam SX®, Betacam SP® and Betacam® tapes. Since the HDW-M2000 is a recorder model, it will record in the HDCAM format.

**Audio**

**Q. Which models will support Dolby® -E and Dolby AC-3?**

A. The HDW-F500, HDW-M2000, HDW-M2100 and HDW-2000 all support Dolby-E and Dolby AC-3. Some of the earlier deliveries of the HDW-F500 may require a minor upgrade for Dolby AC-3. Sony service can help determine, by serial number, if the upgrade for the HDW-F500 is needed.

**Q. What's the benefit of using Dolby-E?**

- A. All HDCAM recorders have the capability of recording four separate audio channels. The U.S DTV broadcast standard calls for "Dolby Digital 5.1", which consists of 6 total channels, 5 program channels, and an "effects" channel, (known as the ".1" channel) which usually carries a very low frequency "sub-woofer" signal. This combination is also known by the encoding system used to transmit it, "Dolby AC3".

However, Dolby AC3 (Dolby Digital) has a limitation for professional use. It is not optimized for more than one encode/decode cycle. Editing Dolby AC3 may result in short mutes in the program. To remedy this, another encoding scheme, Dolby E, was developed. While Dolby E and Dolby AC3 are similar, there is an important difference—Dolby E's "frames" of audio data coincide with HDCAM's video frames, making repeated editing possible. This allows a post house to create a Dolby E master tape with up to 8 channels of audio, which, in turn would fit onto two of the HDW machine's audio tracks. This tape could be edited, and two program channels would still be available for such things as a foreign language track, or standard stereo mix, in addition to the 5.1 (or more) audio.

**Q. Can HDCAM VTRs support more than 4 channels of audio?**

- A. Yes, by using Dolby-E, an HDCAM VTR can support up to 8 channels on one pair of AES/EBU channels and use the remaining pair of channels for traditional audio tracks. Dolby-E is supported on the following models: HDW-F500, HDW-2000, HDW-M2000 and HDW-M2100

**Operational**

**Q. Can HDCAM VTRs perform pre-read editing?**

- A. Yes, Sony customers have required this capability in HD just as it has been required in our SD VTRs.

**Q. Will the HDW-2000 series fit inside a Flexicart® or LMS system?**

- A. Yes, the HDW-2000 series will work in the Flexicart environment. Compatibility with the LMS system is under review at this time.

**Q. Which HDCAM models are compatible with the new TeleFile™ system?**

- A. The HDW-2000 series, HDW-F500 and HDW-500 are all compatible with the TeleFile system. However, the HDW-500 and some of the earlier deliveries of the HDW-F500 may require a minor upgrade. Sony service can help determine, by serial number, if the upgrade for the HDW-F500 is needed.