



## ADVC1000's "PerfectSync" Feature (Patent Pending)

### 1 Why is external synchronization important?

Live realtime switching of video equipment is essential for broadcast studios or post-production facilities where all input/output video signals (frame frequencies) must be perfectly synchronized. In these environments, an external sync or "house" signal is used to synchronize all video equipment to a common external reference signal. All professional video equipment, including video decks, can output video signals with the exact same timing, enabling smooth switching without signal disturbance, frame skips, or duplications, even while the machine is operating.

### 2 How do other DV / SDI converters deal with external synchronization?

A computer's IEEE 1394 (FireWire) interface typically outputs the DV signal using its own clock, making the video frame rate and timing independent from any external control. Many of the current DV / SDI converters adjust the output by skipping and/or duplicating frames in order to synchronize the DV signal to an external sync signal's frame frequency. In these converters, there is no guarantee that all input frames will output to SDI accurately without frame repetition and/or frame drops.

### 3 How does the PerfectSync control feature work?

ADVC1000 can control the maximum transfer rate of the computer's OHCI chip to ensure perfect synchronization of SDI output with the frame frequency of an external reference sync signal. When the computer's FireWire interface outputs a DV stream to the ADVC1000, the ADVC1000 becomes the "cycle master." By controlling the transmission timing to the OHCI chip relative to the external reference signal, ADVC1000 guarantees perfect output synchronization. This feature is called PerfectSync and its patent is pending.

### 4 What is the advantage of the PerfectSync feature?

Frame accuracy is essential for accurate offline / online editing. For example, when editing DV-to-SDI converted video data and a cut-in frame is either a duplication of another frame or a frame was skipped, it will cause a contradiction in the EDL data and may force the user to review the time code data or redo the work. If a video effect with a different playback speed is applied to the clip and the conversion was inaccurate, frame duplication or drops will be more apparent and clearly shown. With its revolutionary PerfectSync feature, ADVC1000 overcomes these issues and can be used in professional video environments that require a demanding level of accuracy.

### 5 Are there any limitations to PerfectSync's functionality?

The PerfectSync feature is only available when ADVC1000 is connected to a computer using either an on-board FireWire port or an OHCI FireWire card. In addition, when dealing with NTSC video, this feature is only supported with Windows® XP or Mac OS X. For NTSC video conversion using Windows 2000, PerfectSync operation cannot be guaranteed due to limitations within the operating system. PerfectSync is supported by Windows 2000, Windows XP and Mac OS X when converting PAL video. When the PerfectSync feature is unavailable, ADVC1000 will drop or duplicate video frames to guarantee external sync.