

**Exh. H**

Wouldn't it be great  
if somebody developed  
a TV post-production  
audio editing system  
that cut sweetening  
time in half?

That made razor-perfect  
edits instantly?

That eliminated tape  
shuttling?

That provided instant  
random access storage?

Somebody has...

The CompuSonics DSP-2002

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## **Harnessing the Power of the Computer Without Changing The Way You Work**

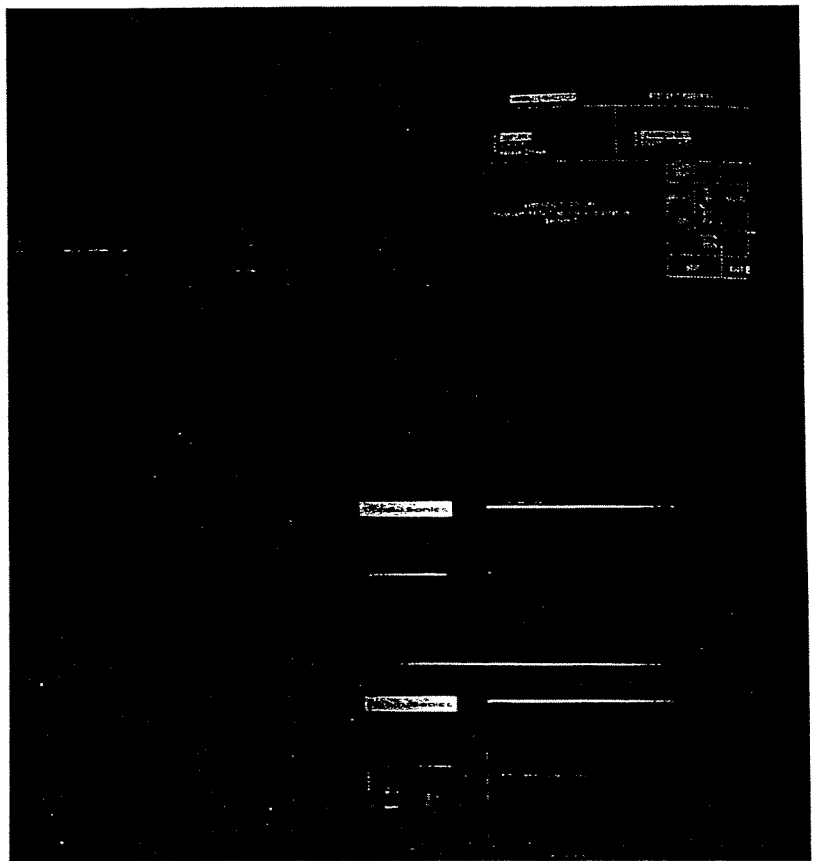
Most people are gun-shy about products that claim, "Our new system is so superior it'll make your old way of doing things obsolete." That's why the Compu-Sonics DSP-2002 is such a refreshing change. Designed by audio professionals, it harnesses the power of computers to TV post-production audio, enabling you to edit and sweeten easier and faster without forcing you to change the way you work.

To the eye, the DSP-2002 looks like a standard computer: a "black box" with the usual hardware, a CRT and a keyboard. But the DSP-2002's unique software and customized hardware make it an AUDIO computer. Music, narration, sound effects or applause—in fact, any sound from 20 to 20,000 Hz—can be transformed into computer data and be manipulated with the ease and accuracy only a computer can provide. And because it's an expandable system, new software is constantly being developed to enhance or add to its capabilities.

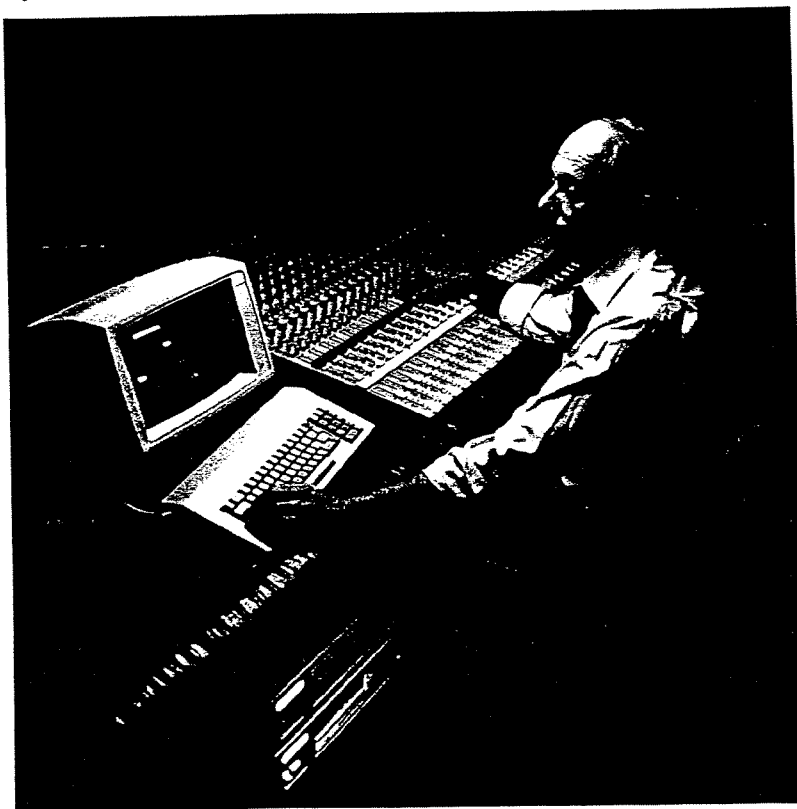
For the working audio editor or sweetener, it means you can now record, edit and store sound digitally with all the speed and flexibility that an all-digital system can bring:

- Random access storage.
- Instant editing.
- Video sync and SMPTE compatibility.
- Elimination of tape shuttling.
- Digital audio interface to the Sony PCM-1610.

Most important, the DSP-2002 is fully interfaceable with your present equipment. And it's no pie-in-the-sky system: the DSP-2002 is available now.



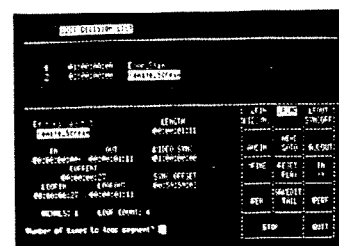
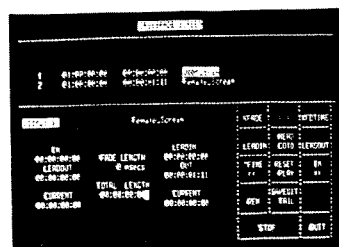
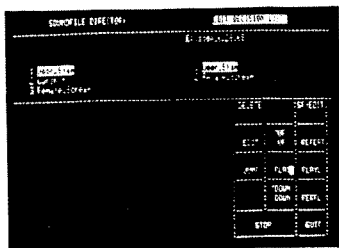
CompSeries



"A lot of our work for network television and cable involves laying in announcer voice-overs, sound effects, music cues and sweetening. The instant accessibility and editing features of the Compu-Sonics DSP-2002 have resulted in cutting our production time in half and at the same time giving us a remarkable improvement in sound!"

"We're currently sweetening network and animated half-hour childrens' shows, and our production schedule requires us to complete a show a day. The Compu-Sonics DSP-2002 speeds up our sound effects prelay process tremendously, allowing us to accomplish the same work in half the time it was previously taking us!"





### Superior Recording Quality

The bottom line, of course, is how does it sound? Take the word of renowned sound mixer Bob Liftin, of Regent Sound in New York: "You don't have to sit there and examine it and pull it apart. The minute you play it, you know it's right. And its reliability is almost scary!"

Using precision 16-bit A-to-D converters, the DSP-2002 is a full frequency response stereo or mono digital recorder. All recording controls are in simple English (PLAY, STOP, RECORD), and put into action by a single keystroke. Signal to noise ratio exceeds 92 dB. Because it's digital audio stored on disk, there's absolutely no wow or flutter, and no tape print-through.

### Instant-Access Storage

Say goodbye to endless loading or unloading of tape reels or carts. With the DSP-2002's disk-based storage system, your sound effects or music can now be located by high-speed random access. Now you can cue, recue, splice from widely separated sources or lock up to sync almost instantly. (CompuSonics synchronizes to any standard external sync source such as SMPTE/EBU time code and video sync)

The standard system comes with a 143 megabyte hard disk capable of holding at least 18 minutes of mono or 9 minutes of stereo. With the addition of optional hard disks, also available from CompuSonics, over five hours of stereo or nearly 11 hours of mono can be stored at one time. Moreover, by recording with CompuSonics patented CSX™ encoding system, storage can be significantly increased with total bit-for-bit preservation of the recorded information. (See table.)

For greater flexibility, sound can be loaded or off-loaded via a high-speed computer streamer tape in a half to a third of real time with no loss of quality. You also have the option of storing audio on floppy disks.

For studios maintaining digital audio libraries recorded with the Sony PCM-1610 encoder, you can digitally interface with the 1610 to dub any encoded audio to and from the DSP-2002.

### Effortless Editing, Superior Sweetening

The DSP-2002 gives you precision control over audio editing and sweetening with a speed almost beyond imagination. To understand the system you need only know a few basics:

Any sound you want stored in memory is placed in a "soundfile." Your collection of soundfiles then stands ready to be your random access on-line sound library whenever you want it.

Any edit or sequence you want to build from your soundfiles is placed in a numbered "editlist" with a name of your choosing attached to each activity. Then you summon the sequence by number or name and perform the edit or cross-fade. You can manipulate the order, length or SMPTE time code sync points of these edits.

Because you are now dealing wholly within the digital domain, the DSP-2002 lets you take advantage of the following features:

**No generation loss**—You can edit, re-edit and change the positions of pieces without dubbing down. Despite building sequences with many generations as you would in conventional editing, your final master is always first-generation because you never "touch" the original.

**Real-time trial edits**—Since the original material always remains in memory and is never physically moved, you can perform numerous trial edits virtually in real time with few keystrokes. No more chopped pieces of tape decorating the walls of your editing suite.

**Razor-sharp edits, butt splices and cross-fades**—CompuSonics' proprietary software enables you to pare down a sound to fractions of a second with a few keystrokes. You can trim a music track to fit an 11-frame hole, switch edits from A to Z and back again, or even scissor out a mic pop. Even butt splices and cross-fades can be made instantly and cleanly.

**S-t-r-e-t-c-h a sound**—Any sound can be put into a tape loop of any size or duration, extending a sound bite almost infinitely. It also allows you to fine-tune your panning and perspective for stereo effects without recueing.

**Editing and syncing with your own equipment**—CompuSonics is developing RS-422 serial interface protocols in SMPTE-EBU and other popular formats which will let your edit-controller control the DSP-2002. You can have your cake and eat it too: the advantages of CompuSonics software and the comfort of performing edits and sync using your own equipment.

**CompuSonics and The Future**

The DSP-2002 has been designed as a practical tool for today and the basis for tomorrow's all-digital production/post-production studio environment. Currently in development at CompuSonics' research and development laboratories are software and hardware that function as multi-track recorders, multi-track mixing consoles, music synthesizers, harmonizers, frequency analyzers, noise removal processors and sound effects simulators.

**Factory Support and Service**

We maintain a close working relationship with our customers and provide complete factory support, including custom software support.

All CompuSonics hardware and software is sold under a one-year parts and labor warranty. DSP-2002 owners also receive free software updates for a year including modifications and improvements to all operating systems and programs. Customers may choose from a variety of ongoing maintenance and customer support agreements.

**Take a Test Ride**

The final judge of how well the system works is you. And the best way to test it is a hands-on demonstration. Call us at the number below for more information and for the name of the dealer in your area.

For Dealer Information call: 1-800-223-1821.

**Specifications**

**Audio Performance**

Sampling rate . . . . . 50, 48, 44.1, 44.056 kHz (other rates optional)  
 Resolution . . . . . 16 bits linear  
 Gain control . . . . . trim control  
 Signal to noise . . . . . better than 92 dB  
 Frequency response . . . . . 20 to 20,000 Hz  
 Wow and flutter . . . . . unmeasurable  
 Distortion (at 1 kHz, at 1 volt peak to peak) . . . . . less than .01%  
 Channel separation . . . . . better than 90 dB at 1 kHz

**Computers and Processors**

Motorola MC68000 based single board computer with 1 Megabyte RAM  
 Signal processing board containing dual-TI TMS320 processors  
 Graphics board with Motorola MC68000 and NEC 7220 processors (optional)

**Disk Storage**

Hard disk drive . . . . . 143 Megabytes (unformatted)  
 Superfloppy disk drive . . . . . 3.3 Megabytes (unformatted)  
 Additional disk drives are optional. A total of 32 drives can be supported.

**Interfaces and Peripheral Equipment**

Sync input for frame-lock to video and composite sync  
 Direct digital audio connection with Sony PCM-1610  
 Optional Digital Cartridge Tape Drive and interface; removable 500 megabyte type

**Displays**

Monochrome 12" CRT with detached keyboard  
 Color 19" CRT (optional)

**Control Interfaces**

2 RS-232 or RS-422 serial ports  
 Up to 8 additional RS-422 serial ports (optional)  
 Custom control panels (optional)

**Software**

Audio for Video system software  
 SMPTE/EBU control protocol driver  
 Driver software to interface to SMPTE timecode readers  
 Regulus (a licensed AT&T Unix V7, System III Operating System)  
 Signal Processing Library (optional)  
 Graphics Library (optional)

**Audio Storage and CSX Encoding**

Use of CompuSonics' proprietary CSX™ encoding is optional when making recordings on the DSP-2002. The following table shows the storage capacity of one hard disk for various CSX formats and sampling rates. Storage capacity is given in minutes, assuming mono operation (for stereo, divide by two).

	Encoding Format	CSX-1	CSX-2+	CSX-4	CSX-8
Sampling Rate	50 kHz	18	76	72	144
	48 kHz	19	38	76	152
	44.1 kHz	20	40	80	160
	32 kHz	28	56	112	224

**CSX-1**

No processing. 16-bit linear audio samples are recorded directly to disk.

**CSX-2+**

Extends storage capacity by approximately 2X with total bit-for-bit preservation of recorded material. Actual storage capacity gained depends on program material, and is usually in the range 1.5X to 3X.

**CSX-4**

Extend storage capacity by approximately 4X, and provides excellent results for sound effects, music, and speech.

**CSX-8**

Extends storage capacity by approximately 8X. Limited bandwidth performance is primarily useful for voice or predominantly low frequency audio material.

All specifications are subject to change without notice.

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