

# CEDAR DH2

The release of CEDAR's first stand-alone de-hisser represented a breakthrough in real-time audio-restoration technology and an important lead for the company. **DAVE FOISTER** gets an exclusive look at the second generation DH2

**CEDAR IS NOT** the company to let the grass grow under their feet. Already this year it has launched a major new product in the form of CEDAR for Windows (*Studio Sound*, July 1996), and it is less than two years since its award-winning DH1 hiss removal processor first appeared. Nevertheless, the DH1 now gives way to the DH2, which is a major rewrite rather than new revision software.

The DH1 broke new ground in making hiss removal a self-contained real-time process in a box, joining the existing CEDAR modules derived from the big PC system. It had only three controls and was simplicity itself to set up to produce striking results, free of both noise and unwanted side-effects. If it had a drawback it was a tendency to be a bit particular about how it was set up for a given recording; some users found it hard to achieve the radical noise removal they wanted in some instances without affecting the wanted signal, and it was also found that music with an especially wide dynamic range would cause problems as the optimum setup for the loud parts would not be quite right for the softer passages.

Accordingly, CEDAR set about improving the DH1 and the result was a significant rethink that the designers feel is getting ever closer to their ideal. It uses the latest multiresolution techniques, similar to wavelet transforms, and combines a more coherent set of algorithms to make up what is in some ways a simpler system than its predecessor. No more than half the original software is carried forward to the DH2.

**ALTHOUGH** the internal engineering and board construction have been upgraded, the DH2 is virtually indistinguishable in appearance to the other CEDAR modules. The front panel logo goes blue in recognition of the new generation of software, whereas the other modules will retain the red logo despite adopting the new hardware construction. The only other outward sign of the new process is revealed when it is switched on and the main control screen is seen to carry an altered set of parameters.

The first two of the three adjustments remain the same and provide the fundamental control over how the unit removes noise. The first is called simply Level and allows the user to tell the system what to regard as noise; with the attenuation at its most extreme the LEVEL control is adjusted until the noise is gone,




regardless of any other side effects which may appear at this stage. The Attenuation is then reduced to a value which removes the noise without eating into the wanted signal, and, as with the DH1, this value is generally in single-figure dBs, 7dB to 9dB of attenuation often being quite sufficient to get rid of the hiss in even quite noisy sources. Having said that, the first sign that things have changed is the fact that the attenuation can be pushed much further still—often to 40dB—without sacrificing anything like as much as would have been the case on the DH1. I remember when the DH1 was first demonstrated to me thinking that the CEDAR people using it were being rather cautious, leaving audible traces of hiss rather than risk compromising the wanted signal even slightly; the need for such caution seems now to have been eliminated. Even more radical noise removal is now possible with few trade-offs and a more musical end result even when the process is deliberately overdone.

This is partly made possible by the new software's better transient analysis and in particular its improved algorithm for dealing with ambience. The DH1 had an Ambience control which helped the process distinguish between low-level information, such as reverberant tails, and genuine noise, but the DH2 is so much better at doing this by itself that this control has gone. In its place is a parameter called Brightness, to my mind a slightly dangerous label as it suggests (a) that the noise-removal process removes treble and (b) that the DH2 bodes it back in afterwards. Neither is true; the Brightness adjustment ensures that the

**Although virtually indistinguishable from its predecessor, the DH1, the DH2 houses a major software rewrite**

process treats transients properly and is an integral part of the setup, not a compensatory device following it. Its theoretically correct default setting is in fact 50%, allowing it to be reduced as well as increased, and unusually it gives a little more creative control than most CEDAR restoration processes as it is possible to make certain signals, particularly those with strong percussive elements, sound more punchy and dynamic than the originals, still without the noise.

I suggested to CEDAR at one point that trying to get the noise out of an audio signal was a bit like trying to get the milk out of a cup of tea, and to my surprise they agreed; CEDAR processors have nevertheless been getting the milk out for years, and the accumulated expertise shows in the DH2. It is at once even easier to get right than its predecessor and more impressive, to the point of spookiness, in its ability to do its job. 

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