



# CEDAR FOR WINDOWS

Making the leap from the dark ages of DOS, CEDAR is now ready to run on a PC under Windows. **DAVE FOISTER** offers an overview of the new system and the benefits gleaned from CEDAR's latest stand-alone processors

**IT HAD TO HAPPEN** sooner or later. CEDAR's audio restoration technology has been through several incarnations, most recently the breaking down of the various elements of its PC-based system into stand-alone processor modules which then saw further developments of their own and fed back into the main system. The inevitable (though nonetheless impressive for that) next step was a recombining of the processes into a single flexible multitasking system, and that is what we

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now have in the shape of CEDAR for Windows.

If the original PC platform can be said to have any drawbacks, the biggest is its inability to provide more than one process at a time. The number of available processing modules has been increasing all the time, and was recently augmented by the addition of powerful EQ and dynamics packages on top of the existing dedicated restoration processes, but the

platform can only run one of them at any one time. Switching between them is straightforward and fast, and, of course, all the processes are real time, but some awkward material may require, for example, declicking and noise removal, or even declicking and decrackling, to eliminate all its problems, and this will require two passes. There is then an added complication that the action of one may reduce the demands made on another and separate passes cannot allow for this potential interdependence. This was one benefit of the separate hardware boxes that sprang from the system, in that they could be daisy-chained together (by those who could afford the full set) in the digital domain and provide multiple treatments simultaneously.

Another small complication with the main system is the elaborate copy-protection procedure, stemming from the days when the DSP cards were off-the-shelf, third-party units and piracy was therefore quite feasible. CEDAR's way round this was preformatting of the PC's hard drive, which had to be done by CEDAR personnel either at CEDAR or on site, making the business of purchasing and settling up a new system more involved and long-winded than it might have been.

Both these aspects and more have been addressed by the new package, which can run multiple processes

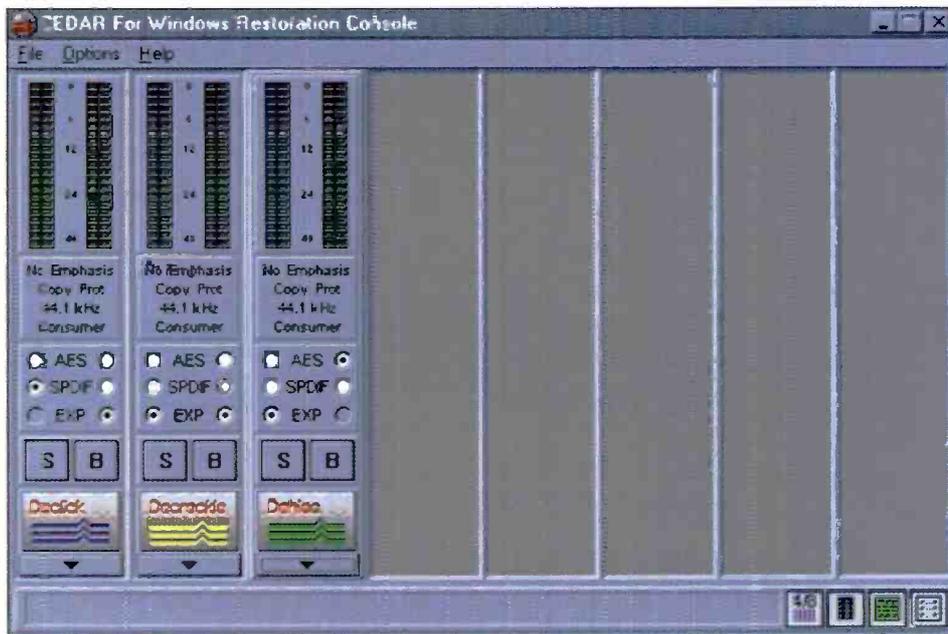


simultaneously under Windows (3.1 or 95) using CEDAR's own proprietary ProDSP/R-20 boards. These boards have already replaced the old cards in the main system and were designed with this latest development in mind from the beginning. The minimum requirement is for one of these boards, the controlling Console software, and one processing software module chosen from the range

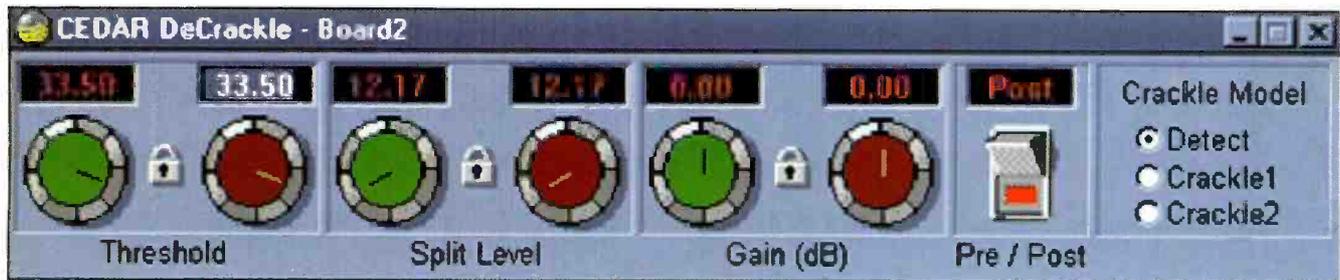
Multiple processing is now possible through the use of multiple ProDSP/R-20 boards

**THE CONSOLE SOFTWARE** is the heart of CEDAR for Windows. It provides control, from a single window, of up to eight DSP boards, defining the function of each and the routing between them while showing each board's signal levels on a pair of large meters and allowing access to the controls for the processes in use. The Console window looks a bit like a set of channel strips where each represents a DSP card, with a big button showing the currently-assigned process and opening the associated control window when pressed. Any board can have any of the installed processes assigned to it, which means for one thing that you only have to buy each software module once but can then use it on all the boards in the system simultaneously.

The routing provided by the Console is what gives the new system its flexibility. Each board has AES-EBU and SPDIF inputs and outputs for independent operation, and also has a daisy-chain ribbon cable to adjacent boards. The Console determines whether each board's signal is derived from or sent to its own local I-O or the board before or after it, giving the possibility of eight simultaneous independent stereo processes, a single



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Detail of the Decrackle control panel

signal path with eight processes in series, or anything in between. For instance, given six boards, two chains of DeClick, DeCrackle and DeHiss could be set up to run simultaneously on separate signals under independent control, all accessed from the Console.

These three processes in fact comprise the currently available range. The techniques are familiar from previous CEDAR systems, but rather than coming from the main PC system, the software involved is virtually identical to that in the Series 2 stand-alone processors, which has seen various developments since its separation from the main system. All the Series 2 units are controlled from a single screen of functions and displays, and this is carried over into the relevant windows for the new equivalents, although in some cases the labelling has been changed.

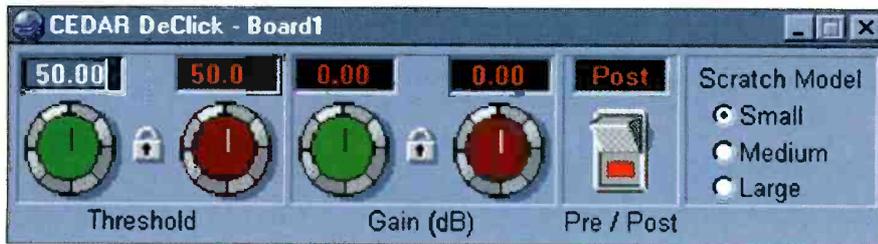
All three processes are simple to operate, and the simplest is the DeClick module, providing the fundamental treatment primarily associated in many minds with CEDAR, the removal of record scratch-type clicks. The DeClick window contains

two pairs of controls, a rocker switch representation for selection between preprocess and postprocess signals, and selector buttons for the three types of scratch model the process offers, each algorithm dealing differently with disturbances in the audio depending on the size and nature of the click. The window scores over the hardware box in having the algorithm selection available alongside the other controls—the DC1 uncharacteristically has it on a separate page. This selection and a THRESHOLD control are all that is required to get rid of clicks, and the variable controls, like all the others in the new system, are shown as rotary knobs which open up a long-fader graphic when clicked. A small display above each control shows its currently set value as confirmation of the position of the 'knob' and the pair can be locked together for true linked stereo operation. The only other controls on the DeClicker are for gain, a feature on every process as there is always the possibility that the processing can give rise to higher peaks than were present in the original signal.

DeCrackling is slightly (but only slightly) more complex, and again all the controls and switch options are shown simultaneously in the window. This treatment works by splitting the signal between the portion which contains the problems and the portion which is louder, treating the problem area and then recombining them. Its controls allow you to identify the required split point, helped by a Detect monitoring mode, and then decide on a Threshold level for removal of whatever artefacts are in the problem area. Such is the power of the DeCrackle process that these artefacts can include LP surface noise, thyristor buzz, and even some forms of distortion, and again two algorithms are available to deal in different ways with different types of problem.

Auto DeHiss is the most recently introduced of CEDAR's stand-alone processes, and the one even they once thought would be impossible as a real-time treatment. Its window contains an extra pair of controls again, but the procedure for using it remains very simple. Again, a Threshold is set identifying your perception of what constitutes the

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Detail of the DeClick control panel

noise in a given signal, and an attenuation control decides how much of the identified noise is to be removed. The process is in fact building a model of the noise, basing the model partly on the information provided by the user, and it gets further assistance from the final control, labelled AMBIENCE. This helps it distinguish between wanted low-level HF, reverberant tails or other noise-like elements and the noise itself before carrying out the noise removal—this is not a control for restoring or compensating for lost information after processing.

Being Windows-based, the new system can have all these little control panels available on screen at the same time, and if any of them should disappear behind another one a single click on the relevant Console channel's button brings it back. This is particularly useful for handling a chain of processors, where the settings of one can quickly be optimised for the effects of another.

The other existing CEDAR processes will be available for the Windows system before too long, adding the aforementioned EQ and dynamics as

well as azimuth correction. On a fully fitted system this will provide enormous corrective and creative power, making it a unique and very flexible mastering system.

Also in the pipeline is integration into PC-based editing systems, making the various processes available to the audio within the editor. CEDAR's link with Studio Audio is already established, with a noise removal module promised for the forthcoming v3 of SADIE, and the new Windows system will extend the possibilities still further and make them available to other systems.

The point about copy protection is small but worth making; CEDAR for Windows will only run on the new boards, so the procedure is simpler and consists of the issue of a password from CEDAR—via fax or e-mail if necessary—tying the software to the serial numbers of the boards and registering the user for further support.

CEDAR has evidently put a lot of thought into making the best use of the Windows environment for the new system, and the end result is a set of tools which could really hardly be simpler to use. CEDAR's concern as a result is that in terms of

knobs, switches and other complexities, CEDAR for Windows may leave some prospective purchasers wondering where their money is going, because in the best CEDAR traditions the system is far from cheap. It seems strange, and a worrying reflection on our supposedly mature industry, that such a consideration should be seen as a problem; actual use of the system and experience of its uncanny ability to eliminate problems without any side-effects whatever should leave no doubt where the money has been spent and that the asking price is more than justified by the sheer power of the system. CEDAR for Windows appears to represent a major step forward for what was already a unique system. 

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