

# CEDAR CR1

Launched at this year's APRS, the *CR1 Stereo DeCrackler* joins the *DC1 DeClicker* in a new departure for CEDAR—the production of stand-alone rackmount units containing the essential modules of their established audio restoration system. These two units (physically almost identical), can be used individually, as a pair, or in conjunction with a full-blown CEDAR system for additional processing power, the combination required depending on the job in hand.

CEDAR have identified various distinct tasks for which their systems have been used, and not surprisingly there are applications which predominantly require one particular module of the software and make less (or no) use of the rest of the system. CEDAR therefore believe there is a market for the individual modules in a convenient, easy-to-use format for those whose principal work does not require the purchase or learning curve of the complete system.

Declicking has always been a fundamental part of the CEDAR process, quite distinct from the removal of steady-state noise, and it comes as no surprise to find that other intrusions such as buzzes, hums, distortion and general crackle are treated separately with a variation on the process. The kind of faults targeted by the *DeCrackling* software include thyristor buzz and other stray mains-induced noises, certain types of distortion—the spec

cites overloaded analogue inputs, overdriven microphones and digital clipping—and the degree of scratchy noise found on a vinyl LP. This last should be of interest to the CD, DCC and MD remastering market in cases where no playable original tape exists.

I approached this review with a DAT full of transcriptions from 78s, and it will now be clear that this was not ideal test material for the *CR1* alone; however, the addition of a *DC1* to remove the major clicks first allowed the *CR1* to tackle the remaining crackles. (CEDAR have a tape of samples of actual jobs they have undertaken which can be run through the *CR1* to show what it can do.) The biggest initial surprise was the simplicity of the unit, and how little adjustment is needed to produce the required results. I was expecting some considerable complexity, with page upon page of options to be set and parameters to adjust, but in fact there are only three pages on the unit's clear, bright display, of which only one is needed for this operation.

The basic principle of the CEDAR system involves the splitting of the signal into two parts, one containing the offending noises and the other containing the unaffected signal. The work is then done on the first part before recombining it with the second to produce the final result. The first job, therefore, is to establish the split between these two parts, and this is done with the Detect Level controls

while monitoring the part which will not be processed. When the monitored signal contains nothing but wanted signal (albeit sounding rather odd at this stage) then clearly all the crackle is being sent to the processor.

All that then remains to be done is the setting of the Threshold parameter, which determines the point at which the unit will distinguish between wanted and unwanted signals. This again is best done by ear, although in both cases clear bargraph meters and direct read-outs show the chosen values. Two decrackling algorithms are provided, with *Crackle2* more extreme than *Crackle1*, and it is easy to switch between them to hear which is more appropriate.

That is all there is to it—two simple adjustments—and the results are quite dramatic. My own test material, badly damaged though it was, came through with all the surface mush completely removed, leaving only the steady hiss of the (surprisingly low) noise floor of the original recordings. The wanted signal, however, survived intact, with no apparent ill effects whatsoever. CEDAR's own test material, with much subtler faults, was dealt with even more easily, and it was uncanny to hear slightly peaky distortion and constantly varying mains harmonics disappear completely without side effects.

Another surprise was how difficult it is to misadjust the unit, even deliberately. At one extreme it simply does nothing, while at the other it starts to eat into the ambient information—reverberation, background noise and other low-level signals start to pump and breathe slightly. At worst, transients can be damaged—a hi-hat loses its sparkle,

for instance—but this is so easily avoided by correct setting that there is no excuse for any significant degradation.

The *CR1* supports both AES-EBU (up to 24 bits) and SPDIF digital I-Os, complete with a digital output attenuator in case the internal 40-bit processing produces higher levels than were present at the input. Balanced and unbalanced analogue I-Os are also provided. MIDI and RS232 remote control facilities are incorporated, and SMPTE sockets anticipate future control upgrades.

Even though the *CR1* costs nothing like as much as a full-blown CEDAR system, you will have to be pretty serious about restoration to afford one; those who are, however, need be in no doubt that it will do the job. The whole CEDAR process seems to be chiefly associated in most people's minds with the problems of archive material, and it is interesting to see its potential for other applications, such as rescuing hum-plagued live recordings, salvaging that one magic take where something went briefly into clipping—problems most facilities will encounter from time to time which are virtually insoluble by conventional means.

CEDAR have suffered in the past from problems with their image, but this appears to be a thing of the past. Certainly products like this, delivering the goods in a simple, fast, unfussy way, should win many friends. ■

**Dave Foister**

**UK:** HHB Communications Ltd, 73-75 Scrubs Lane, London NW10 6QU. Tel: 081 960 2144. Fax: 081 960 1160.

**US:** Independent Audio, 295 Forest Avenue, Suite 121, Portland, Maine. 0401-2000. Tel: +1 207 773 2424. Fax: +1 207 773 2422.



Cedar *CR1*—difficult not to use well