



Kevin Nice, already a regular user of bhi's first d.s.p. noise reduction product the NES10-2, tries out their brand new noise reducer - the NEIM1031 In-line module.

# NEIM1031

## Noise Eliminating In-line Module

I have been using the bhi Noise Eliminating Speaker for about five months now ever since I wrote about it for last September's *SWM*. Since then, it's become one of those items of equipment that I'd really rather not be without. It's rather like my Wellbrook active loop antenna, I just don't know what I did before acquiring one.

With this in mind, I guess it will come as no surprise to learn that I was keen to try the new offering from the Sussex based sound engineering solutions company bhi. This new module differs from its predecessor in that it has no loudspeaker built in to its enclosure.

Instead the NEIM1031 is housed in an ABS box measuring some 170 x 85 x 34mm input and output sockets at one end, a 3.5mm headphone socket is on the opposite face. The top panel, which houses the Noise Eliminating In-line module's controls is also home to a finger proof back printed legend label, which really looks good and tackles the age old problem of panel wear induced by much finger activity



over the life of the product. You only have to examine the like of some hand-held scanners and computer keyboards to see the effect repeated pressing and rubbing has on the legibility of idents. Graham Somerville, bhi's Sales and Marketing Director, was keen to inform me that the NEIM1031, due to customer demand, has both landscape and portrait versions of this top panel label available. This allows the unit to be operated either way round and the legends still being easily read. Customers can retrofit the labels should they feel the need.

### Noise Reduction

So much for aesthetics and ergonomics, how does this digital signal processing unit perform? The NEIM1031 appears to utilise the same internal circuitry, but with the addition of the level controls and in/out sockets as the Noise Eliminating speaker. The aggressiveness of the unit's algorithms is preset to eight selectable levels, which are set via a rotary control which, at a guess, is a binary encoded switch rather than the dual in line (d.i.p.) switches of the NES10-2. The Noise Eliminating In-line module offers more flexibility as both the input and output levels can be varied by adjustment of rotary potentiometers. There are also level indicating l.e.d.s to show that there is sufficient audio drive for the processing to take effect and a red l.e.d. overload indicator to warn of when the input level is too high for the unit. To set-up the NEIM1031 for use requires a power source to be connected to unit. There is no p.s.u. supplied with the unit but there is an optional 12V 500mA 'wall wart' available from bhi. What is included in the standard package, are both a fused power lead with a suitable coaxial power connector fitted one end, to match the power socket of the NEIM1031, and just stripped tinned ends at the other. Plus there is a 1.2m long screened audio lead with 3.5mm jacks at both ends.

Thoughtfully, bhi have provided two inputs and two outputs for

interconnecting the NEIM1031 noise reducer to the other equipment in the audio path. Two connector types have been utilised, for low level signals phono sockets have been used, for low impedance higher level signals, such as those directly taken from your receiver's external speaker socket, for example, use 3.5mm jacks. One of the two input sockets is selected by a small slide switch. Both outputs are fed in parallel. The high level output, which is capable of delivering 2.5W of audio into an 8Ω load is interrupted when headphones are connected to the socket at the front, the low level line-out is however, is unaffected.

Just like its predecessor, the NEIM1031 is extremely easy to use and effective at dealing with audio from all the sources in my shack.

In use, once you've adjusted the audio input level high enough to ensure the illumination of the 'OK' l.e.d. and low enough to prevent the 'Overload' from flashing on peaks and the output level to suit your needs, you're off. One attribute of the unit that doesn't seem to be mentioned by bhi, is the ability to significantly reduce the level of heterodyne tones, I found this to be most useful monitoring weak s.s.b. signals on h.f., it even works well with c.w. Add this ability to the general reduction in random noise and the NEIM1031 transforms the audio of even the my RA1792, which has to be one of the quietest sets with no traffic I used, to a much quieter ambient level. When stations transmit, the effect is rather like having some in the room who had previous sat tight lipped and silent having suddenly having something to say. The effect is impressive.



### No Squelch

Something I didn't mention back in September, is the ability of the bhi units to allow the use of an a.m or f.m. receiver with an open squelch and allow the d.s.p. unit to reduce the no signal noise to a low level. Clearly this doesn't allow scanning as most receivers will not move on to the next channel with an opened squelch. There are a few radios that will though.

Lastly I must mention the d.s.p. aggressiveness control. This seems to be most effective for me set to between positions 4 and 6. At the most aggressive setting the delay in initial noise reduction is greatest and due to the unit's increased level of 'number crunching'. I did notice a tiny amount of audio artefacts with no input at the max. setting, these are sounds that the unit's algorithms are generating from the random noise alone, that are not significant and don't really detract from the excellent job that the NEIM1031 performs.

Returning to my opening statement, how did I manage without a d.s.p. unit like this?

*SWM*