

# Terrasonde Audio Toolbox Plus

If the original Audio Toolbox dispelled some of the socks and sandals image for test sets then its latest incarnation has ushered in positively haute couture. It now comes with added Contractors software too. **ROB JAMES**

**A WISE VAMPIRE HUNTER** goes well equipped. A knapsack with map, a mirror, some stakes, holy water and a bit of garlic are de rigeur. You could just wander round the Carpathians with your attractive assistant but chances are you'd never find the Count or come out on top at the denouement.

Tracking audio problems also requires equipment. Whether the problem is acoustic or in a cable you need appropriate devices to support hearing and experience. If several useful tools come in one portable package, so much the better. The original Terrasonde Audio Toolbox is exactly this, a functional and valuable piece of kit, but only its best friends would describe it as attractive. The Audio Toolbox Plus is a totally different proposition. Hewn from hefty chunks of alloy and steel, with a much larger screen, it begs to be picked up and used. For contractors and consultants it makes the ideal escort.

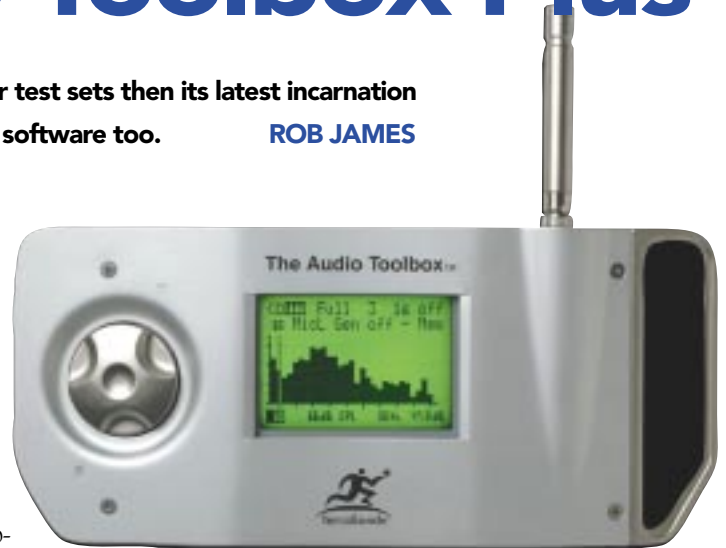
Supplied in a foam-lined plastic carrying case, the Plus comes complete with mains adaptor, a measurement microphone and a six-foot extension cable. The mic is

slim and terminates in a BNC plug. A simple mechanical and electrical connection; just don't drop the unit with the mic attached. An optional, higher performance, Precision Microphone System is also available.

Power is supplied by a sealed lead-acid rechargeable battery which gives between 1½ and 3 hours of operation depending on back-light usage. The Contractor's Software eschews several music functions in favour of more audio-analysis tools. As the name implies, several of these will be of considerable interest to installers in all fields from domestic to railway stations. If you need MIDI and the other functions, the standard software can be loaded from a PC via the supplied interface cables.

The new Terralink Software for PC and Mac is optional. It allows all 40 memories to be imported or exported in around five seconds. Data can be plotted, overlaid, printed and further manipulated. Real-time display of data from RTA, smoothed curve FFT, or Energy-Time Graphs is also possible.

The Toolbox Plus is useful within moments of switching on. Held in both hands the encoder dial falls naturally under your left thumb and using it soon becomes second nature. Turning the chunky shaft-encoder knob scrolls through choices, pressing it selects. Navigation is fast and intuitive. Many of the acoustic tools need experience and knowledge to set up and interpret correctly, but a great deal of useful insight can be gained with a little practice.



Apart from confirming some previous findings about my room acoustics I used the Plus to check out numerous interconnects and to successfully investigate a time code problem.

This unit is tactile and pretty with massive scope. People are going to want it even if they don't need half its functions. ■

**PROS** Thoroughly capable analogue analyser; seriously pretty.

**CONS** No digital audio functions.

## Contact

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The complete list of functions available in the contractors software is too extensive to list here so these are my highlights.

**FFT analyser:** Displays a 17dB or 35dB window. Uses multiple-FFT analysis to show the energy across the audio spectrum. Like the RTA the audio spectrum is divided into bands shown graphically as vertical bars on the screen. As the function runs, the display is updated around twice per second. A cursor shows the actual dB (SPL) level and centre frequency of the selected graph bar.

**Frequency range:** 20Hz to 20kHz, or 10Hz to 332Hz in 1/3, 1/6, or 1/12 octave bands. Decay can be averaged in three ways. Exponential is weighted to the most recent events. Useful for analysing music, or EQ adjustment in real-time. In Equal Weighted all events count equally over the entire measurement time. With manual start and stop this is useful for averaging results at several locations in a room. Peak hold has no decay and is used to monitor maximum sound levels by frequency over time.

**Weighting:** The display can be overlaid with A, C or X (cinema) curves. A further field shows the frequency of the current highest level band, SPL, SPL A or SPL C.

The box computes RASTI (Rapid Speech Transmission Index) by analysing the modulation transfer function of nine modulated 500Hz and 2kHz octave-band, pink noise signals.

**%ALCONS (Percent Apparent Loss of Consonants)** is one of several ways of determining speech intelligibility. Computed from RT60 time of octave-band pink noise and room dimensions. The correct formula is selected based on the speaker-to-listener distance. It shows ANSI balanced NC curves, displays limiting band and SPL by octave band and includes Speech Interference Level mode.

Noise criteria and speech interference level are used to measure the background noise level in a room.

Noise Criteria is based on an ANSI standard. The spectrum is divided using ANSI Class 1 octave-band filters into nine octave bands, and the SPL of each band measured. Results are compared to a table of values defined in the specification. The NC band is defined as the lowest band number which has none of the SPL values for the octave bands in that row exceeded.

Another part of this spec defines Speech Interference Level. This is the average of four octave bands: 500Hz, 1000Hz, 2000Hz, and 4000Hz.

This gives an alternative method for evaluating room noise. For example, to meet THX specs theatres must have an NC number below 30.

Polarity determines absolute physical polarity of speakers, microphones or any signal chain. Some people, myself included, feel it is important to know that the initial sound wavefront hitting the microphone will result in a forward cone excursion of the speaker at the other end of the chain.

