

### Headset recording & playback and Analysis



**PRO-303/N** is a 4-channel professional recording system with a playback function which allows listening to your product noise during development, helps to identify sources and checks for improvement through simulation, using filtering and Re-synthesis capabilities.

The portable headset solution for binaural recording replaces an artificial head in any situations where an individual can't be taken out, typically for measurement at the driver location in a car while running. It consists of a BMH headphone with integrated microphones and a 24 bits 4ch compact DAQ system. The software capabilities enables you to analyze and optimize the performance of your product:

- Advanced Filtering capabilities
- Playback equalization
- RPM and order analysis
- Time-frequency edition and signal re-synthesis
- Sound Quality Metrics



### PRO-303/N Key Features...

#### Sound perception solution

- ▶ **Portable** recording & playback
- ▶ 4 input channels (IEPE\*), Tacho input, Trigger input
- ▶ Over 52 kHz sampling frequency per channel
- ▶ 24 bits A/D converter

#### A complete set of tools for data analysis

- ▶ dBFA Recording Software
- ▶ **dB Sonic extended** package for analysis, playback, reporting
- ▶ FFT Analysis, Waterfall and sonogram, sonogram difference
- ▶ Psychoacoustic analysis: Loudness, Sharpness, Fluctuation Strength, Roughness, AI, SII, Tonality
- ▶ RPM recording, RPM extraction from signal, display of all data vs. RPM
- ▶ Order analysis
- ▶ Playback with equalization
- ▶ Advanced real-time Filtering: HP, LP, BP, Notch, 1/n analysis with Digital Filters
- ▶ Advanced analyses: Wavelets, Modulation Analysis
- ▶ Automatic report, exportation capabilities (data, sonogram, metric synthetic tables)
- ▶ Data edition in Matlab for further analyses

#### Options

- ▶ **All of dBFA Suite and dB Sonic software features**
  - ▶ Auditory spectrograms, contour edition (*Gestalt interpretation*), time-frequency edition, sound re-synthesis, ...

#### Applications:

Sound Quality control in vehicles

Transient Analysis

Noisiness evaluation

Noise control simulation

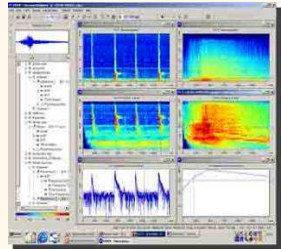
Sound quality diagnosis

Environmental Noise study and Monitoring

Psychoacoustics,

Loudness and related topics

## PRO-303/N Technical Specifications

Features	PRO-303/N
<p><b>BMH - Binaural Headset</b>                      Electro-acoustic transducer principle:                      Frequency range:                      Impedance:                      Microphone cartridge sensitivity:                      Microphone calibration:                      Headband pressure:                      Weight:</p>	<ul style="list-style-type: none"> <li>▶ dynamic, open-air</li> <li>▶ 20Hz - 18kHz</li> <li>▶ 160 Ohm</li> <li>▶ 10mV/Pa</li> <li>▶ a special acoustic coupler allows microphones calibration by means of standard 1/2" acoustic calibrator</li> <li>▶ approx. 1.6N</li> <li>▶ approx. 110g</li> </ul>
<p><b>H42 - In-line ICP converter for BMH Binaural Headphone</b></p> <p>ICP Converter Gain :                      Frequency range :                      Wideband noise level :                      Dynamic range :                      Max output signal amplitude :                      IEPE excitation :                      Headphone Adapter Gain :                      Size:                      Weight:</p>	<p>Two dedicated Input/Output channels for direct BMH connection and Binaural Microphone conditioning. Two IEPE* inputs, Minijack out for Sound card connection</p> <ul style="list-style-type: none"> <li>▶ 0dBV ±0.5dB</li> <li>▶ 1Hz - 100kHz</li> <li>▶ &lt;-90dB</li> <li>▶ &gt;100dB</li> <li>▶ ±5Vpk</li> <li>▶ 2.5 – 5mA constant current / 14-28Vdc</li> <li>▶ 0dB (straight connection)</li> <li>▶ 15mm diameter - 118mm length (excluding cables)</li> <li>▶ approx. 68g</li> </ul> <p>⇒ Four input channels – single ended, simultaneous, 1 Trigger Input, 1 Tacho input, 1 output channel</p>
<p><b>EXT-9837 - 20kHz 4 Channel Analog I/O DAQ system</b>                      Frequency range:                      A/D and D/A conversion:                      S/N ratio:                      THD+N:                      Input impedance:                      Output impedance:                      Input range &amp; gain:                      Output range:                      Tacho Input range:                      Maximum input frequency (tacho):                      Trigger:</p> <p>Size:                      Weight:                      Operational temperature/humidity:                      Emissions (EMI):</p>	<ul style="list-style-type: none"> <li>▶ DC - 20kHz</li> <li>▶ 24 bit (sampling rate up to 52kHz), simultaneous over four channels</li> <li>▶ 106dB</li> <li>▶ &lt;-90dB (0.004%)</li> <li>▶ 1 MOhm</li> <li>▶ 100 Ohm</li> <li>▶ ±10V (gain of 1) ±1V (gain of 10)</li> <li>▶ ±10V</li> <li>▶ ±30V</li> <li>▶ 380kHz</li> <li>▶ 1 LVTTTL</li> </ul>  <ul style="list-style-type: none"> <li>▶ 1 x 24 bit digital I/O available</li> <li>▶ W 100mm; D 189mm; H 18mm</li> <li>▶ 0 / +55°C</li> <li>▶ FCC (Part15), EN55022:1994+A1:1995+A2:1997, VCCI, AS/NZS3548, Class A</li> </ul>
<p><b>Software for Recording, Playback Filtering, Analysis</b>                      dBFA RECORDER:                      dBSONIC BA:</p> <p>dBSONIC PSY:</p> <p>dBSONIC RPM:                      dBSONIC DIF:                      dBSONIC DOC:</p> <p>dBSONIC ED:                      dBSONIC FX:                      dBSONIC PX (OPTION):                      dBSONIC MAT:</p>	<ul style="list-style-type: none"> <li>▶ 2-24 channels recording. Data exportation to <i>cmg</i> files for post-processing in another software</li> <li>▶ Basic Module &amp; Frequency Analysis - Sound signal playback, SPL, Third-octave and FFT analysis - Tonality (Prominence ratio and Tone-to Noise), Basic editing and filtering functions – Project Management, import function for 01dB-METRAVIB, Head Acoustics and OROS sound files</li> <li>▶ Psychoacoustic Analysis - Calculation of Loudness, Sharpness, Roughness and Fluctuation Strength, Articulation Index, Speech Intelligibility Index</li> <li>▶ RPM analysis, Order analysis</li> <li>▶ Spectrogram difference</li> <li>▶ Documentation Module - The tool for comparing time histories and spectra - Multi scalar display and Multi spectra display - Report Wizard, Percentile calculation</li> <li>▶ Signal edition, online and offline filtering capabilities, built up of equalization curves</li> <li>▶ Advanced frequency analysis – Modulation analysis, wavelet analysis</li> <li>▶ Auditory spectrogram, contours (gestalt interpretation), sound re-synthesis</li> <li>▶ MATLAB™ tool for data edition</li> </ul>

\* IEPE: Integrated PiezoElectric Electronic

### Ordering Information:

ACC3144000: Binaural Headphones with microphones

ACC3147000: In-line ICP converter for BMH Binaural Headphone

CAL3009000: Calibrator CAL21, type 1, 94dB, 1000 Hz, PTB approved

SFA4063000: dBFA Recorder

COC3012000, COC3020000, COC3021000, COC3022000, COC3023000, COC3024000, COC3025000, COC3027000: dBSONIC

Extended package including the following modules: dBSONIC BA, PSY, ED, DOC, FX, RPM, DIF, MAT.

The presented characteristics are subject to change without notice. Rev:02/2007

### 01db-Metravib

200, Chemin des ormeaux

F-69578 Limonest Cedex

Tel.: +33 (0)4 72 52 48 00

Fax.: +33 (0)4 72 52 47 47

nvh@01db-metravib.com  
 www.01db-metravib.com

