

General characteristics

Connection	To the computer, interface PC CARD Type II (PCMCIA)
Power supply	From the computer
Dimensions	110 x 35 x 220 mm
Weight	700 grams
Computer	Pentium, RAM 16 MB, Windows 95/98 and PCCard Type II

Analogue section : Inputs

Impedance	1 Megohms
Coupling	DC or AC
Connections	Four 7 pin LEMO connectors
Conditioning	Microphone preamplifier (28V-10mA), condenser microphone (0 or 200V), ICP® accelerometer (4.3 mA), direct input for voltage signals
Counter	Tachometer (accuracy 0.02 %) / TTL external input
Max. voltage	Peak to peak : 20V, Overload protection
Phase match	< 0.1° if channel 1 gain = channel 2 gain < 0.5° if channel 1 gain <> channel 2 gain
Filters	High pass filter from 0 to 10 Hz, low pass filter 2 kHz
Noise	Electrical : 0 dB(A)

Analogue section : A/D conversion

Resolution	20 bits sigma/delta
Sampling	51.2 kHz max. with an oversampling factor of 64
Anti aliasing	Butterworth, 120dB/octave
Offset	Automatic adjustment
Overload	Indicated for all channels
Signal / Noise	> 90dB per range
Amplification	Up to 60 dB in steps of 5 dB

Analogue section : Outputs

Type	Parallel during acquisition
Sampling	From 100 Hz to 51.2 kHz
Connections	One 4 pin LEMO connector
D/A converter	Dual channel 20 bit at 51.2kHz / Sigma delta digital/analogue Synchronous recomposition per channel
Max. voltage	Peak to peak : 5 V

Digital section

Connections	Four input and two output channels
Processors	Double TMS320C31 + 1 TMS320C203
Performance	100 MFLOPS
Words	32 bits coding
SRAM	512 K x 32 bits
RAM	Dual port 64 K x 8 bits

Sound level meter mode (dBTRIG32) *

Functions	Lp, Leq, Peak, Slow, Fast, Impulse
Freq. analysis	Spectra in octave and third octave by digital filtering from 20 Hz up to 20 kHz in real-time (1 Hz optional) Acquisition up to 20 kHz
Audio	
Weightings	A, C, G, Lin
Time base	Down to 20 ms in real-time, down to 1 ms in post-processing
Options	Dual-channel acquisition, 120 dB maximum dynamic range Digital filtering from 0.5 Hz to 20 kHz and overall vibration levels according to ISO2631, frequency analysis down to 1/48th octave Psychoacoustics (PNL, PNLT, in real-time), expert mode

Building acoustics mode (dBATI32) *

Functions	Spectra acquisition, measurements and analysis of reverberation times, computation of sound insulation (ISO717-140)
Freq. analysis	Spectra in octave and third octave by digital filtering from 12.5 Hz up to 20 kHz in real-time
Time base	Down to 20 ms in real-time, down to 1 ms in post-processing
Generator	Pink and white noise

Analyser mode (dBFA32) *

Functions	Spectra acquisition and analysis (narrow and broad bands) Signal acquisition and signal edition
Freq. analysis	Spectra in octave and third octave by digital filtering from 1 Hz up to 20 kHz in real-time (on four channels)
FFT analysis	Up to 3200 lines Autospectra and cross-spectra (on four channels)
Time acquisition	Up to 20 kHz (on four channels)
Trigger	Manual, automatic or by remote control
Generator	Pink noise, white noise, sinus, loop
Results	Storage, print, copy/paste, exportation, etc.
Options	Psychoacoustics module, transient analysis module, sound intensity and sound power (ISO9614) modules, signal edition, tach recording, order analysis, 3D display, MATLAB data link, DDE interface

* See appropriate datasheet

HARMONIE

Benefits

- Four channels
- IEC 651-804 Type 1
- Sound level meter, digital audio recorder, spectrum, analyser
- 120 dB dynamic range
- Real-time
- Multi-tasking
- Different transducers
- PC based system



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HARMONIE

Four channel real-time sound and vibration measurement system



The **Harmonie** system consists of one or more transducers (microphones / accelerometers / intensity probe / etc.) connected to a small acquisition unit (four channels) which transfers data in real-time to a notebook computer.

Harmonie is the latest development in the range of systems from 01dB. Its real-time performance allows simultaneous analyses in both time and frequency domains.

In one step, **Harmonie** replaces many traditional instruments (sound level meter, frequency analyser, digital tape recorder, intensity meter, volt-meter, etc....).

Harmonie combines many instrument functions, recording the raw audio signal (like a **DAT recorder**) while measuring the complete noise level time history (like a **data logging sound level meter**) and showing the changing real-time spectrum (like a **frequency analyser**).

Audio recordings can be played back directly from a time history plot through **Harmonie**, or through any PC sound system.

These abilities, unique in the market, guarantee a complete and powerful analysis of any noise and vibration environment.

The many data processing functions of **Harmonie** software packages ensure an efficient analysis of the environment and fast preparation of the measurement report.



HARMONIE main functions

The **Harmonie** system features many possibilities for noise and vibration measurements, offering the user great flexibility in the field :

- Support many transducers types : microphones, accelerometers, sound intensity probe, tacho probes, ...
- Signal conditioning of most transducers
- Digital inputs / outputs (remote control)
- Signal generator (white / pink / sines / loop)
- Four channels in real-time
- Narrow band FFT real time digital filtering fulfilling IEC 1260 Class 0
- Manual or remote automatic calibration
- Tachymetric input for order tracking analysis

The following real-life applications can be addressed by the 01dB application software packages :

- Digital tape recording
- Real time analysis in octave and third octave from 20 Hz (option 1Hz) to 20 kHz
- Real time spectra in narrow bands
- Sound intensity spectra and sound power according to ISO9614
- Transient signal analysis
- Time-frequency analysis
- Order analysis
- Noise and / or vibration monitoring
- Noise source event coding
- Multitasking with external applications (weather data, remote access, modem control, GSM, etc...)
- Detailed analysis down to 1/48th octave bandwidth
- Loudness, PNL, PLNT all in real-time, EPNL
- Sound quality
- Psychoacoustics

HARMONIE software packages

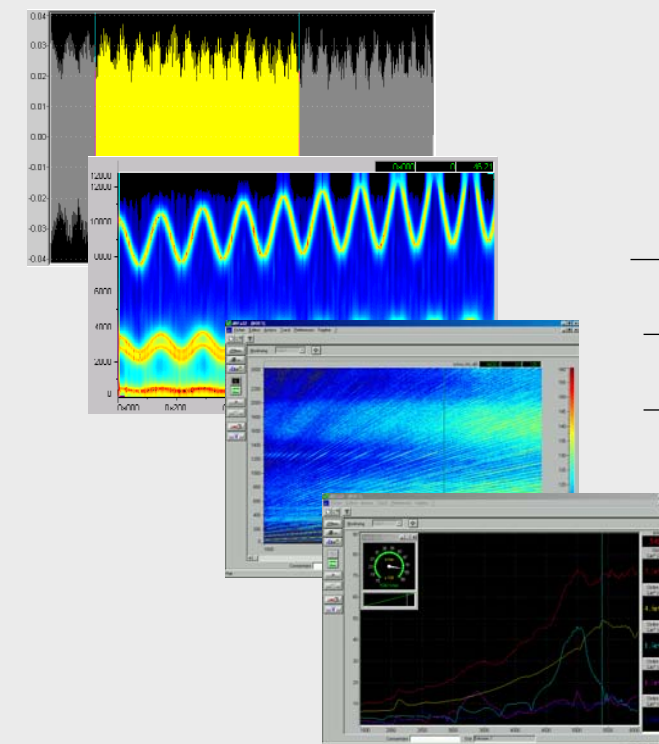
dBENV32 Environmental noise

Harmonie with **dBENV32** transforms your notebook computer into an intelligent long-term noise and vibration monitoring terminal, with up to 4 dynamic and 4 low frequency channels.

dBENV32 combines the functions of a datalogging integrating sound level meter, a digital tape recorder and a real-time frequency analyser, all running at the same time. Therefore, overall levels, as well as third octave spectra and audio data, can be acquired over long periods.

Using **dBTRAIT32**, the processing module of **dBENV32**, audio recordings stored on computer hard disk can be played back through the PC's sound system for identification of noise sources.

The combination of **dBENV32** and **Harmonie** is a powerful investigation tool which can be used for a wide range of applications, such as noise complaints, noise impact studies or monitoring of noise in urban areas, with quantification and identification of offending noise sources.



dBFA32 Industry

With the **dBFA32** software package, **Harmonie** becomes a real-time narrow and broad (1/N octave) band analyser designed for industrial noise and vibration applications.

The **dBFA32** software suite consists of a large number of modules such as real-time analysis, digital signal recording, sound intensity and sound power measurements (according to ISO9614), transient signal and impulse response analysis for modal investigations or acquisition of an additional tachometric channel.

Several analysis modules for post-processing are also available : psychoacoustics analysis in order to obtain subjective criteria information, signal edition, various spectra operations, time frequency analysis, ...

Harmonie complies with the requirements of the legislation regarding noise at the work place, noise control of industrial areas and machinery noise labelling.

dBbati32 Building acoustics

With the **dBbati32** software package, **Harmonie** becomes an efficient building acoustics analyser.

The **dBbati32** software package allows the user to perform a complete study of any building, including reverberation time and spectrum measurements. Calculations of airborne and impact sound insulation criteria are made according to ISO717-140 specifications.

HARMONIE the hardware

Harmonie hardware is a powerful two DSP low consumption acquisition unit powered by the Notebook Pcard (PCMCIA) interface.

The design of the unit allows the system to fulfil type 1 specifications of IEC651 and IEC804, while the digital filters fulfil class 0 specifications of IEC1260.

