SYMPHONIE

Dual channel real-time sound and vibration measurement system

01 dB
MVI technologies group

Overview

Symphonie consists of one or two transducers (microphones, accelerometers or intensity probe) connected to a small acquisition unit (single or dual channel), which transfers data in real-time to a notebook computer.

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

Symphonie replaces at the same time the traditional measurement instruments (sound level meters, frequency analysers, digital tape recorder, intensity meters, etc.…).

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

Audio recordings can be played back directly from a time history plot through the computer sound system.

This ability, unique in the marketplace, guarantees a complete and powerful analysis of any noise and vibration environment.

The numerous data processing functions of Symphonie noise and vibration application software packages allows the user to quickly and efficiently generate a measurement report.

SYMPHONIE
main functions

The Symphonie system features many assets for noise and vibration measurements, offering the user a great flexibility while using the instrument:

- Multiple transducers : microphones, accelerometers, sound intensity probe, etc.
- Signal conditioning of most types of transducers
- Digital inputs / outputs (remote controls)
- Signal generator (white and pink noise, sinus, loop)
- Dual channel
- FFT and digital filtering Class 0 (IEC 1260)
- Manual or remote automatic calibration
- Tachometric measurements

The following real-life applications may be addressed with 01dB application software packages:

- Noise and / or vibration monitoring
- Digital tape recorder
- Real time spectra in octaves and third octaves from 20 Hz (option 1Hz) to 20 kHz
- Real time spectra in narrow bands
- Sound intensity spectra and sound power determination according to ISO9614
- Transient signal analysis
- MLS acquisition mode and impulse response calculation for room acoustic analysis
- Noise source event coding
- Multitasking with external applications (weather parameters, remote access and control of the system by modem, etc.)
- Analysis down to 1/48th octave bands
- Loudness, PNL, PLNT in real-time, EPNL
- Sound quality

SYMPHONIE
software packages

dBenv32

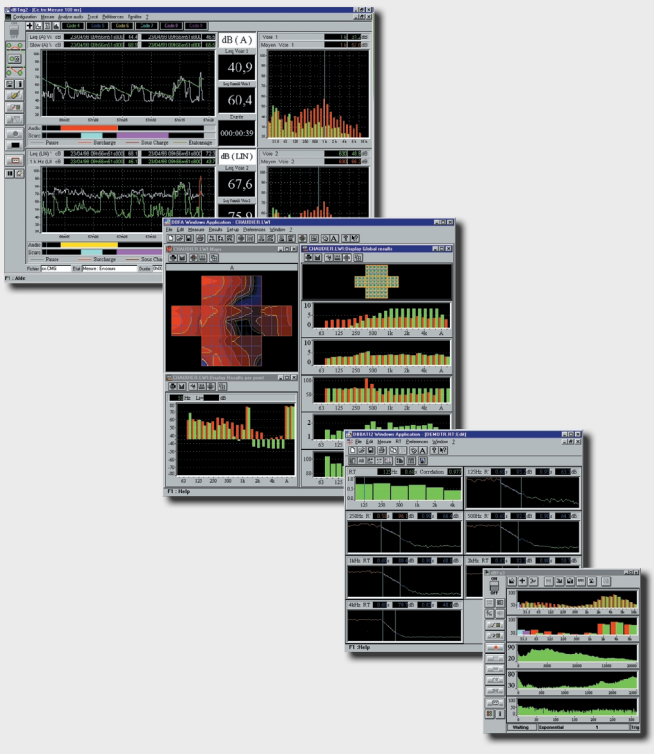
Environmental noise :

Symphonie transforms your notebook into an intelligent long term noise and vibration monitoring centre.

With the **dBENV32** software package, it combines the features of a data logging integrating sound level meter, a digital tape recorder and a real-time frequency analyser at the same time. Overall levels can be therefore be acquired simultaneously to third octave spectra and the raw signal over long periods of time.

Audio recordings are stored on the computer hard disk and may be played back through the computer sound system, for noise source identification, directly within the data processing module **dBTRAIT32.**

The **dBENV32** environmental noise package, consisting of **dBTRIG32** and **dBTRAIT32** modules, combined with the **Symphonie** system is a powerful investigation tool that can be used for a wide range of applications, such as noise complaints, impact noise studies or surveillance of noise in urban areas, with identification and quantification of the significant noise sources.



dBfa32

Industry :

With the **dBFA32** software package, **Symphonie** becomes a real-time narrow and broad (1/N octaves) 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, etc.

Symphonie 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, **Symphonie** 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 specifications.

With its optional MLS acquisition mode, **dBBATI32** can also calculates most room criteria (intelligibility, etc.)

SYMPHONIE
The hardware

Symphonie hardware is a powerful two DSP low consumption acquisition unit powered by the Notebook PcCard (PCMCIA) interface. The design of the unit allows the system to fufil type 1 specifications of IEC651 and IEC804, while the digital filters fulfil class 0 specifications of IEC1260.

Technical specifications

General characteristics

Connexion	To the computer, interface PC CARD Type II (PCMCIA)
Power supply	From the computer
Dimensions	85 x 35 x 220 mm
Weight	560 grams
Computer	Pentium, RAM 16 MB, Windows 95/98 and PCCard Type II

Analogue section : Inputs

Impedance	1 Megohms
Coupling	DC or AC
Connections	Two 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
Noise	Electrical : 5 dB(A)

Analogue section : A/D conversion

Resolution	18 bits sigma/delta.
Sampling	51.2 kHz max. with an oversampling factor of 64
Anti aliasing	Butterworth, 120dB/octave
Offset	Automatic adjustment
Overmodulation	Indicated
Signal / Noise	> 90dB per range
Amplification	Up to 65dB in steps of 1 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 18 bit at 51.2kHz / Sigma delta digital/analogue Synchronous recomposition per channel
Max. voltage	Peak to peak: 5V
Other	Insert voltage for calibration reference

Digital section

Connections	Two input and two output channels
Processors	Double TMS320C31 + 1 TMS320C203
Performance	100 MFLOPS
Words	32 bit coding
SRAM	128K x 32bits
RAM	Dual port 48K x 8 bits
Connector	Mini Din (PS/2)

Sound level meter mode (dBTRIG32) *

Functions	Lp, Leq, Peak, Slow, Fast, Impulse
Freq. analysis	Spectra in octaves and third octaves by digital filtering from 20 Hz up to 20 kHz in real-time
Audio	Acquisition up to 20kHz
Weightings	A, B, C, G, Lin
Time base	Down to 20 ms in real-time, down to 1 ms in post-processing
Options	Dual-channel acquisition, 115dB 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 octaves Psychoacoustics (PNL, PNLT, in real-time), expert mode

Building acoustics mode (dBBATI32) *

Functions	Spectra acquisition, measurements and analysis of reverberation times, computation of sound insulation (ISO717)
Freq. analysis	Spectra in octaves and third octaves by digital filtering from 20 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
Options	MLS signal generator, room criteria (RASTI, etc.)

Analyser mode (dBFA32) *

Functions	Spectra acquisition and analysis (narrow and broad bands) Signal acquisition and signal edition
Freq. analysis	Spectra in octaves and third octaves by digital filtering from 20 Hz up to 20 kHz in real-time
FFT analysis	Autospectra and cross-spectra (1 pass and 2 passes)
Time acquisition	Up to 20 kHz (on two 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, tacho recordings cepstrum, 3D display, MATLAB objects

** See appropriate datasheet*

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SYMPHONIE

Benefits

- Dual channel
- Type 1 approved with dBTRIG (PTB)
- Sound level meter, digital tape recorder, analyser
- 115dB dynamic range
- Real-time
- Multi-tasking
- Multiple transducers
- PC based system

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