



***dB*BATI32**

Building acoustics analysis



01dB-Stell
MVI technologies group

dBBATI32 is a software for measurement of acoustics in buildings. When used with Jazz, Symphonie or Harmonie measuring systems, **dBBATI32** adds to your computer the capabilities of a digital audio recorder, a Type 1 sound level meter, a frequency analyser and a system optimised for measurements in buildings.

Also compatible with the SIP95 sound level meter, **dBBATI32** allows the transfer and calculation of reverberation times and decays, as well as frequency analysis for the determination of, primarily, raw and standardised insulation.

dBBATI32 incorporates all the existing international standards, as well as European directives for product noise labelling, both in the laboratory and in the field.

dBBATI32 can be configured in single channel for simple measurements, dual channel for simultaneous capture of source & receiving room levels, or in four channels for laboratory tests.

Advanced averaging functions for measurements between several channels, automatic triggering and analysis, editing the measurement report, are all part of the capabilities of **dBBATI32**.

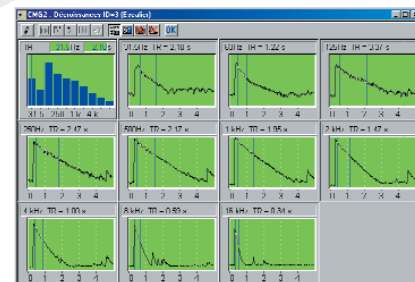
dBBATI32 also offers an integrated noise generator, with remote control and programming of the noise source.

Any user, casual or expert, can customise **dBBATI32** to create a tool which is easy to use, quick, powerful and adapted to each situation.

Also, **dBBATI32** now offers new functions for the measurement of spectra and reverberation using the MLS technique which still works perfectly in noisy environments !

By calculating the impulse response of a room, you can extract all the criteria such as **STI**, **RASTI**, **Clarity**, ... giving an unrivalled tool for the study of the acoustics of concert halls, sports stadiums, movie theatres, or any public gathering place.

Coupled with a choice of 01 dB-Stell acquisition platforms, **dBBATI32** becomes a tool unique on the market, both simple and powerful, ready to produce a clearly presented in-situ measurement report.



dBBATI32 main functions

- 1 to 4 measurement channels
- 90 dB dynamic range with autoranging
- A and Lin weighting
- Real-time in 4 channels from 12.5 to 20000 Hz
- Frequency analysis in octaves and 1/3 octaves
- Measurement of time weighted Lp and/or Leq
- Audio recording for post-processing
- Built-in automated generator
- MLS generator (Symphonie only)
- Customisation of measurement set-ups:
 - source & receiving room spectra, background noise
 - reverberation time and associated decays
 - impulse response and room criteria
- Customisation of calculation set-ups:
 - interior and exterior airborne sound insulation
 - impact sound levels
 - machinery noise
 - sound reduction indices
 - absorption coefficient
- Reporting :
 - direct printing of results
 - export to office software

dBBATI32 components

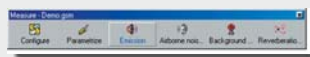
dBBATI32 operates with the following hardware: Jazz (half-length dual channel ISA card for desktop PC), Symphonie (dual channel box with PCCard connection) and Harmonie (four channel box with PCCard connection) with similar performance: type 1 instrument according to IEC 60651 and IEC 60804.



dBBATI32 transfers and processes data stored on the SIP95 range of sound level meters.

dBBATI32 modules

The customisation of the dBBATI32 software, using measurement and calculation set-ups, allows otherwise complex measurements to be reliably performed in the minimum time, not forgetting standardised calculations, which are pre-defined.



Floating window set-up

dBBATI32

Basic module

Spectrum measurement

In single, dual or four-channel mode, the measurement, for example, of source and receiving spectra, can be completely automated: control and programming of the sound source (using the built-in generator), autoranging of the measurement ranges, choice of frequency range and frequency resolution, averaging over several channels or between channels, automatic acceptance of the results... displayed in real-time.

The simplicity of the measurement allows the operator to concentrate on the job in hand.

Reverberation time measurement

Programming is also possible for this measurement: automatic start based on trigger, programming the cut-off of a stationary sound source (using the built-in generator) automatic adjustment of input ranges, definition of the study zone, averaging, Schröder backwards integration and background noise removal, user configurable curve fitting, storage of decays, ...

Machinery noise

The measurement of machinery noise is available in a visual form, and allows the estimation of the maximum level in terms of a time history of LpA. The measurement is made easier still by eliminating parasitic events which can typically affect the maximum level.

This powerful system provides the spectrum, in octaves or 1/3 octaves, corresponding truly to the equipment noise under study.

dBBATI32

Automatic reporting module

In addition to the fact that all the results, curves and tables, can be printed directly or incorporated into office software, the automatic report module also generates a test report:

- conform to the special layout defined by the ISO standards for each standard calculation
- in HTML format, for printing, modification and storage using the Internet

dBBATI32

MLS module

The MLS method (Maximum Length Sequence) allows measurement of impulse response, which, when filtered in frequency bands, yields the reverberation time or spectra (source and receiving rooms for example).

Overall, the output of white noise (pseudo-random binary noise arranged in maximum length sequence) and the simultaneous measurement at a point, allow correct measurement of the frequency content, with a high dynamic range, in noisy environments.

The main interest in MLS is therefore to perform measurements in high insulation situations (e.g., concert halls) or to obtain good measurement results without using a heavy and powerful source.

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Room Criteria Module

Which physical parameters are related to the subjective feeling we have from the acoustics of a room? How do we translate into measurements the feelings of intimacy, warmth, brightness, dryness, metallic tone, confusion, poverty or richness?

The room criteria, having a physical definition, are obtained from the impulse response of the room measured using the MLS technique.

The criteria calculations are taken from the echogram which is analysed in frequency, the curves being generated from a digital filtering of the impulse response.

Moreover, the intelligibility in the room is calculated with several indicators such as RASTI and STI.



Measurement System

Systems	Symphonie, Harmonie, Jazz
Accuracy	Class I according to IEC 60651 & IEC 60804 standards
Range	Typically 20-140 dB in 6 ranges according to used microphone - Automatic or manual ranging (autorange)
Battery Life	Depends on host computer Battery packs can be used

Measurements

Mode	Measurement of spectra in real-time (Symphonie and Harmonie only) and post-processing
Spectra	1/1 & 1/3 octaves from 12.5 Hz to 20 kHz using digital filters
Accuracy	Class 0 according to IEC 61260 standard
Channels	1 to 4 depending on acquisition platform
Averaging	Between channels and over successive measurements

Data processing

Display	Graphs or configurable tables
Storage	Spectra, signals, reverberation decays, indices, criteria, ... Set-ups of measurement, analysis and calculation
Spectra operations	Averaging, recomposition, addition, subtraction
Other	Printing of results, copy & paste and advanced export function Import of 16 bit files and audio signals (WAV or MP3)

Internal Generator (Symphonie and Harmonie only)

Pink noise	Manual or monitored, adjustable setting time for noise in the room, automatic cut-off for RT measurement <i>Radio remote control available for starting the noise source (refer to the appropriate data sheet)</i>
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MLS (option) (Symphonie only)

Length of response and configurable number of averages (order 8 to 18, pass band up to 20 kHz, averaging from 1 to 2048)

Reverberation time

Time step	1 ms minimum (calculation in real time or post processed)
Method	Noise cut-off, impulsive (Schroeder integration and possible background noise removal) or MLS
Adjustment	Possible automatic calculation and manual adjustment

Calculated Indices

Airborne noise	Raw & standardised insulation (internal & external noise) ISO 140 & ISO 717: D / D _n / D _{n,T} / D _{n,w} / D _{n,T,w} BS 2750: D / D _n / ASTM E336 Sound Reduction Index ISO 140 & ISO 717: R / R' / R _w / R' _w / ASTM E90
Impact noise	Sound pressure level ISO 140 & ISO 717: L _n / L' _n / L _{n,T} / L _{n,w} / L' _{n,w} / L _{n,T,w} Standardised level BS 2750: L _{nT} / L _{nAT}
Machinery noise	Standardised level NFS31-057: L _{eT}
Absorption	Absorption coefficient ISO 354: a _s Sound pressure level ISO 140 & ISO 717: L _n / L' _n / L _{n,T} / L _{n,w} / L' _{n,w} / L _{n,T,w}

Room criteria (option)

Intelligibility	STI, RASTI
Quality criteria	EDT, clarity, definition, STI-Gade
Method	Impulsive (direct or using MLS sequence)

Signal Recording

Pass band	From 40 Hz to 20 kHz
Duration	User-defined (limited only by hard disk size)
Trigger	Manual or on threshold (delay, slope, level, AND/OR)
Playback	Digital quality

Sound Level Meter (option)

Module for transfer of spectra and decays from SIP95, SIP95S and SLS95S sound level meters

PC Configuration

Minimum Configuration

Pentium and 16MB RAM with Windows 95/98/Me/2000
Windows NT4 Service Pack 3 (processing and SLM transfer only)

dBBATI32

Benefits

- User friendly
- Upgradeable
- 4 channels
- Type 1
- Immediate calculations
- Complete tool
- MLS method
- Room criteria
- Intelligibility



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Production and servicing for
calibration and repair

The presented characteristics are subject to change
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