

WinMLS 2004

What is WinMLS?

WinMLS is a sound card based software for high quality *audio, acoustics* and *vibrational measurements* using your PC/laptop. The fact that it is sound card based, makes it possible for you to select between a large and growing number of hardware solutions. We sell hardware solutions tested for different applications.

"Your software is great!"
Magnus Wahlberg, Denmark

Do you need a TOY or a TOOL?

Be aware that fancy looking measurement software may give wrong or bad results. WinMLS has been compared and verified with excellent results in several round robins and seminars. If you are looking only for a TOY with fancy looking graphs, skins and buttons, WinMLS may not be the best solution for you. If you are looking for the most efficient and accurate ways of performing your measurements, please consider WinMLS.

"In practice, every measurement software show very different behavior, according to the external (room-noise-hardware) conditions. WinMLS manages to perform measurements under all (reasonable) circumstances."
-Thalis Menexelis, Athen, Greece

Is measurement duration important?

WinMLS supports the latest measurement methods that ensures that the measurement duration is kept to a minimum. In addition, not tedious procedures is required to start a measurement.

"I very much like the convenience of the tool and how quickly measurements can be made"
- Christopher Pye, Integral Acoustics, Canada

Who is it for?

WinMLS is for experts and non-experts. It already has hundreds of professional users in the audio and acoustics consulting business, but it is also aimed at non-professional users, such as home audiophile enthusiasts and students. This is possible because of its ease of use, low-cost personal license and no need for specialized hardware.

"I have to say that I am very pleased with the programme and use it a lot now"
- Peter Mapp, "expert" UK
"I use WinMLS2000 personal version with pleasure"
- Alain Pouillon-Guibert, France

What makes it user friendly?

For the most common application there are setups with pre-defined settings. There is a wizard feature that will guide you step-by-step on how to use the setup.

Why should you purchase WinMLS?

Our policy is to provide the best performance for the lowest price in the market. If you should find a another system you feel has a better performance/price for your type of application, please contact us and we will try to beat this price. We try the best we can to make our users satisfied.

"The technical support is superb and very timely."
- Sunil Bharitkar, PhD California
"Your customer service is fantastic!"
Ed Hatke Cincinnati, Ohio

FREE Evaluation: From www.winmls.com you can download WinMLS and register for a FREE 30 days evaluation.

Applications

Typical WinMLS applications are:

- ✓ Sound system calibration
- ✓ Room acoustics
- ✓ Building acoustics
- ✓ Loudspeaker measurements
- ✓ Distortion/Room buzz measurements
- ✓ Production line testing (microphones and loudspeakers)
- ✓ Concert hall acoustics
- ✓ Musical acoustics
- ✓ Hi-Fi and home theater system calibration
- ✓ Speech parameters (STI, RASTI, etc...)
- ✓ Noise measurements
- ✓ Research and Education

Key properties

- ✓ *reliable* - WinMLS has been benchmarked and tested with excellent results in several international round robins on room acoustical measurements
- ✓ *already in use* – WinMLS has been sold since 1997 and has hundreds of professional users worldwide
- ✓ *portability* - use your laptop to perform your acoustical measurement
- ✓ *simplify writing reports* – no need to transfer data, just cut-and-paste from WinMLS to the report-writing software (e.g. MS Word and Excel)
- ✓ *user friendly* – interface can be customized and advanced settings can be hidden for the non-advanced user
- ✓ *flexible* – advanced settings can be accessed
- ✓ *effective support* – support directly from the developers is available for professional customers (telephone and e-mail). We can help you getting started over the telephone.
- ✓ *low price* compared to the available features
- ✓ simple procedure to upgrade to a *multi-channel* (>2 channel) measurement system)
- ✓ *new features are constantly added*, our policy is to offer the best of the modern measurement methods and listen to requests from our users
- ✓ we also deliver hardware so the customer may order a *complete measurement system*

Key features

Measurement modes

- ✓ Swept sine (recommended for impulse response measurements)
- ✓ External source (pink noise, music, etc...)
- ✓ MLS (recommended for speech parameter measurements)
- ✓ Sinusoid
- ✓ Scope (no excitation signal)
- ✓ Pseudonoise (pink and white noise)

Plot types

WinMLS measures data in time domain. However, the measurement result can be presented as any of the following:

- ✓ Time data / Impulse response (echogram)
- ✓ Integrated time data / Step response

- ✓ Energy-time curve
- ✓ Schroeder curve
- ✓ Spectrum / Frequency response
- ✓ Phase response
- ✓ Group delay
- ✓ Room Acoustics Parameters
- ✓ Parameters (dBA, dBC, THD etc...)
- ✓ Waterfall (time and frequency domain combined)

General parameters

- ✓ Sound level, dB, dBA, dBB, dBC
- ✓ Total harmonic distortion, THD
- ✓ Separate harmonic distortion component
- ✓ Sound reduction, R'w
- ✓ Impact sound level, L'nw

Sound insulation parameters are calculated according to the ISO 717-1 and 717-2 (1997) standard.

Room acoustics parameters

- ✓ Reverberation time (RT60), T30
- ✓ Early decay time (RT60), ETD
- ✓ User defined reverberation time (RT60), Txx
- ✓ Definition, D50
- ✓ Clarity, C50, C80
- ✓ Center time, Tc
- ✓ Support, ST1
- ✓ Speech transmission index, STI, STIrMale, STIrFemale, RASTI and %ALcons (STI-based)
- ✓ Interaural crosscorrelation, IACC
- ✓ Lateral fraction, LF
- ✓ Strength, G
- ✓ Late lateral strength, LG

Room acoustical parameters are calculated according to the ISO 3382 (1997) standard. Noise detection and compensation is included for all parameters, and the calculations are tested against international benchmarks.

Speech measurements (STI and RASTI) include octave band corrections for background noise in compliance with IEC 60268-16 standard.

Digital filtering in octave and 1/3-octave bands is performed according to the IEC 1260 (1995) standard. Backwards filtering for 1/3-octave band reverberation time is included for improved accuracy.

Parameters can also be calculated in double-octaves or without filtering.

General specifications

- ✓ Operative system: Windows 95/98/ME/NT/2000/XP
- ✓ Portable and light-weight measuring equipment, e.g. using blank pistol and laptop PC to measure reverberation time.
- ✓ Flexible hardware, most soundcards are supported. More than 50 sound cards have been tested and are documented. Digigram VXpocket PCMCIA sound card is currently recommended for high-end portable measurement system

- ✓ Input and output levels can easily be set using the built-in software mixer. The mixer levels can easily be calibrated
- ✓ Calibration of hardware allows for measurement of absolute levels such as voltage and SPL. Calibration of microphone using either calibrator or nominal microphone sensitivity
- ✓ 1 or 2 channel measurements in standard version, but can be upgraded to 24 channels with sample-accurate synchronization (hardware dependent). Supports selection from multiple sound cards
- ✓ High frequency range. Sampling rates up to 96 kHz in standard version. Special version is able to measure up to 100 kHz using sampling rate 215 kHz (sound card dependent)
- ✓ High signal to noise ratio, using internally generated MLS loudspeaker signals with optional low-frequency boosting or speech filters
- ✓ Influence of measurement system can be subtracted
- ✓ Auto-name generator for saving data
- ✓ Uses standard WAV, ASCII, MLSSA TIM files in addition to the WinMLS WMB binary file format
- ✓ Initial time delay (distance from loudspeaker to microphone) can be measured sample-accurate with all supported sound cards
- ✓ Toolbars can be removed from the user interface to maximize the screen area used to display the plot(s).
- ✓ Data can be exported, or plotted using WinMLS powerful graphics
- ✓ All important parameters are user configurable through a measurement setup and a post-processing setup.
- ✓ User friendly using default setups (all settings saved in setup files that can easily be restored)
- ✓ Flexible, easily customized user interface, many useful options for the advanced user
- ✓ Graphically displays parameters from multiple measurements and statistics such as mean, min, max and standard deviation
- ✓ Graphs can easily be printed, saved as text files or copied to the clipboard for use in reports
- ✓ Unlimited number of plot-types can be viewed simultaneously, for example the windowing of the impulse response can be changed and the resulting change in the frequency response is immediately displayed simultaneously.
- ✓ Plot features include auto-refreshing and viewing active measurement curve solo.
- ✓ Many features for comparing several curves in a plot. WinMLS is not limited to simple overlays.
- ✓ Flexible statistic treatment of data.
- ✓ Ultra-fast harmonic distortion (THD) measurements using swept sine in addition to standard method using sinusoid.
- ✓ Sound insulation measurements.
- ✓ Measurement modes: Swept sine, MLS, sinusoid, user defined excitation and scope, pink and white noise.
- ✓ Plot types: Time data (impulse response), step response, energy-time curve, Schroeder curve, frequency response/spectrum, phase response, group delay, waterfall, room acoustics parameters, levels
- ✓ Full and third-octave band analysis, dBA, dBB, dBC and waterfall plots.

Background

WinMLS is aimed at professionals, but also for non-commercial users, such as home audio enthusiasts and students. This is possible because of its ease of use, low-cost personal license and no need for specialized hardware. Note that the personal licenses are allowed for personal and class-room usage only, and not for commercial usage or research.

We have professional users worldwide. For example, Genelec and their distributor network are using our software for measuring frequency response when installing monitors in studios. Some other users are PTB - Germany, Aercoustics Engineering Ltd (Dr. John O'Keefe) - Canada, Seas AS - Norway, National Research Council - Canada, Akustikon - Sweden, Duran Audio - the Netherlands and Peter Mapp - England.

Feedback and wishes from our customers have lead to the following features in WinMLS 2004:
User friendly interface with customizable charts for professional presentations. Works on most sound cards,



professional hardware portable and stationary systems may be purchased from us. Benchmarked and tested against and compatibility with other high-quality measurement systems.