

Smaart v.7

A RATIONAL APPROACH TO SYSTEM MEASUREMENT



WHAT'S NEW IN SMAART v.7 ? IN SHORT..... EVERYTHING:

Smaart v7 is a completely new code base developed from the ground-up. By starting with a clean slate, we have been able to reconsider, revise and improve all areas of the program, from the program's fundamental architecture through to the details of the control interface.

One of the most exciting new features of Smaart v7 is Rational Acoustics itself. We are the same people who have been developing and steering Smaart within SIA and EAW for the past 12 yrs. Now, as Rational Acoustics, we are a small, independent company focused solely on Smaart. This means we can make decisions that make sense for our software and our market. And we can focus full-time on providing the high level of support and development that have been the hallmark of the Smaart platform. In other words, Smaart v7.0 is just the start.

MULTI-CHANNEL, MULTI-PLATFORM, MULTI-MANIA:

Smaart v7 is inherently multi-channel and multi-platform, able to access modern multi-channel input devices and operate native in both Windows and Mac Operating Systems (including 32- and 64-bit versions). Meaning v7 can run multiple, simultaneous Spectrum and Transfer Function Measurements

BUILT FROM THE START TO MAKE USE OF THE POWER:

With the relentless expansion of the processing power, speed and memory in personal computers comes the potential for greater measurement power and possibilities – if you can make use of it. From day one, the Smaart 7 code base was optimized to make use of the all power that modern processor configurations present, whether that be from one processor or eight. Your Smaart rig might not need to use all of your PC's power right now, but if history is any indicator, you will.

NEW PROGRAM ARCHITECTURE:

One of the most powerful aspects of the new Smaart v7 platform is its object-oriented program architecture. Effectively, the program is built of many individual code modules that are run as independent, inter-related programs (objects). For users, this means that you can run as many simultaneous single-channel (spectrum) and dual-channel (transfer function) measurement engines as your PC will allow. This new architecture also means that Smaart is ready for expanded application/interaction beyond the basic program itself. Remote GUIs (Graphic User Interfaces), real-time data export/sharing with other applications and the creation of plug-in versions are all now possible and already on the drawing board.

ENHANCED, STRENGTHENED, AWESOME-IZED MEASUREMENT ENGINES:

All aspects of Smaart's measurement engines were revisited, considered, reconsidered, and everywhere possible, improved. The resulting enhancements range from quite subtle, "under the hood" improvements to obvious quantum leaps in measurement power, stability, accuracy and ability.

SIMPLER, FRIENDLIER GUI

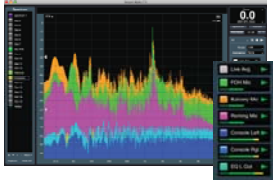
Much effort has been expended in reducing unnecessary User Interface (UI) clutter. Many of the dialog box-based controls have been replaced with modern "point 'n' grab 'n' drag 'n' click" mouse-based controls. If you need to move a trace up or down, just grab it and drag it. Of course the direct-enter dialogs haven't gone away - you can still get to them – but they have been moved off of the top level interface, and out of the way.

Smaart v7 System Hardware Recommended Configuration

- Microsoft XP, Vista or Windows 7 (32 & 64-bit)
- or -
- Mac OSX 10.5 or 10.6 (Leopard & Snow Leopard)
- 2 GHz Dual-Core Processor
- Graphics Processor with 128 M dedicated video RAM
- Compatible Sound Hardware with ASIO, Wav or CoreAudio drivers



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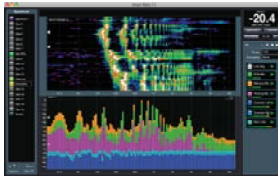
ENHANCED DATA ACQUISITION

New data acquisition module provides increased and improved access to the devices & signals in our system.

- Unlimited input channels / devices
- ASIO, Wav and CoreAudio input
- Able to reference to internal sources
- Time Domain Filtering / Input Calibration

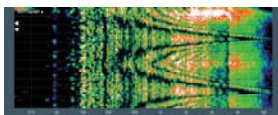
REAL-TIME MODE: SPECTRUM ENGINE:

Users can configure as many single-channel engines as needed, each with the ability to produce its own RTA and Spectrograph data.



RTA

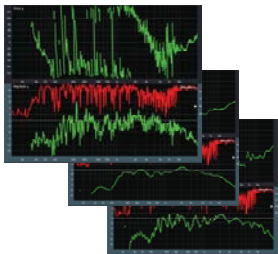
- Improved fractional-octave banding for RTA and Spectrograph, including 1/48th Octave
- Multi-channel input allows for simultaneous display of multiple individual RTAs - as well as “live averages” of active signals
- “Line-Over-Bands” view of RTA displays both raw and banded data



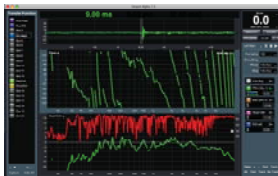
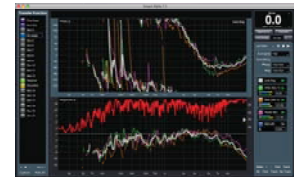
SPECTROGRAPH

- Scrollable 1000 (+) line history
- Real-time adjustable dynamic range
- Store and recall spectrographs

REAL-TIME MODE: TRANSFER FUNCTION ENGINE (Frequency Response):



- New MTW (Multi-Time Window) FFT provides better than 48th Oct frequency resolution from 60 Hz up.
- Improved fractional-octave smoothing provides better trace readability
- New averaging algorithm greatly enhances trace stability
- Overload protection – TF average rejects data during input clip.
- Multi-channel input allows multiple, simultaneous transfer functions as well as the calculation of “live-averages” of those measurements
- Groups of Transfer Function measurements can be configured for managing multi-channel system alignment



LIVE IR

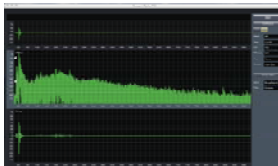
- Window centered at the TF’s delay
- User-selectable FFT size up to 32k
- FIFO Averaging up to 8 Averages

TF DELAY TRACKING

When engaged, Delay Tracking automatically measures and adjusts the TF delay for every measurement cycle! *Go ahead, move the mic, Smart will track the delay change.*

IMPULSE RESPONSE MODE

Smart v7’s Impulse Response mode has been significantly expanded to include much of the functionality from our AcousticTools software package, with the intent of giving a user a robust and intuitive set of tools for making and analyzing Impulse Response measurements.



“Navigator” pane:

Full IR record in linear view for controlling Time Domain zooming

Time Domain Zoom views:

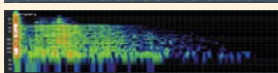
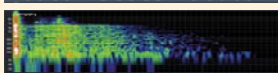
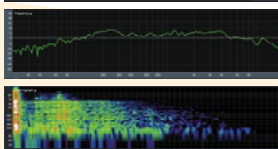
Show zoomed portion of IR as Lin, Log or ETC

Frequency Domain view:

IR in Frequency Domain. (a feature incompletely implemented in v.6.)

Spectrograph:

Shows IR as Spectrograph, with on-screen adjustable dynamic range



IR can be filtered in real-time.

IR filtered with an Octave wide filter at 1KHz (shown in all three panes) →

