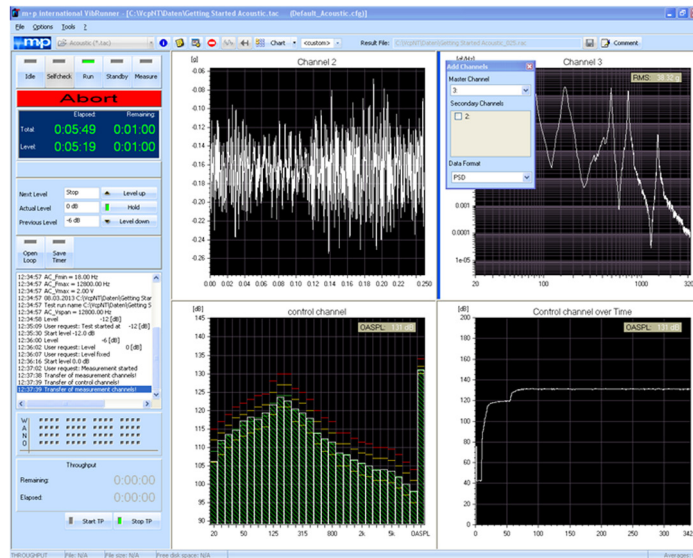


m+p VibControl Acoustic Control

m+p VibControl for Acoustic Control system performs acoustic testing in a reverberation chamber and direct field environments as well as progressive wave tube testing. It is a fully automatic digital control system, providing fast, accurate and repeatable control of high-level noise to a reference octave band spectrum and the overall sound pressure level (OASPL). The control foresees a high level of product safety.

As the Acoustic Control software part is structured on the same user interface and hardware platform as m+p VibControl shaker controllers, a control system can effectively be configured by simply adding software modules.



Acoustic test run window showing the following data:
Time data, PSD, 1/3 octave and OASPL over time

Key Features

- Fully automatic closed-loop acoustic control
- Continuous time domain octave analysis in 1/3 and 1/1 octave bands
- OASPL over time and PSD displays in VibRunner and VibPostTest
- Calibration tool
- Equalizer tool
- Extensive octave band and OASPL alarm and abort checks for safe testing
- Control of octave bands up to 10 kHz with multi-horn control
- 40 microphones for control and/or measurement (more on request)
- Digital sliders with position storage for repeat tests
- Automatic microphone drop-out detection
- Comprehensive post-test analysis and reporting in 2D and 3D
- Progressive wave tube testing
- Acoustic Reporting option for m+p Analyzer
- m+p Analyzer for advanced analysis and reporting
- m+p VibControl for Acoustic Control can easily be expanded to an m+p VibControl shaker control system

Applications

- Acoustic testing in reverberation chambers and direct field environments
- Mainly used in aerospace applications for testing the effects of acoustically induced vibration

Acoustic Testing

The m+p VibControl for Acoustic Control system applies high-level noise to the structure under test going through different user-defined levels during the test run. A signal spectrum is generated, measured, analyzed and controlled. The reference spectrum can be entered manually and copied/pasted from the Microsoft Windows clipboard. For maximum flexibility of the Acoustic Control test, calibration and equalizer tools are available allowing for recalibrating the channels and for adjusting the noise spectrum during an ongoing test.

Input Channels

All input channels can be allocated as control channels or measurement channels. A measurement channel just measures the acoustic response and does not influence the control. A control channel is always in the control loop and its response is fed into the control algorithm defined by average, maximum or minimum control strategy.

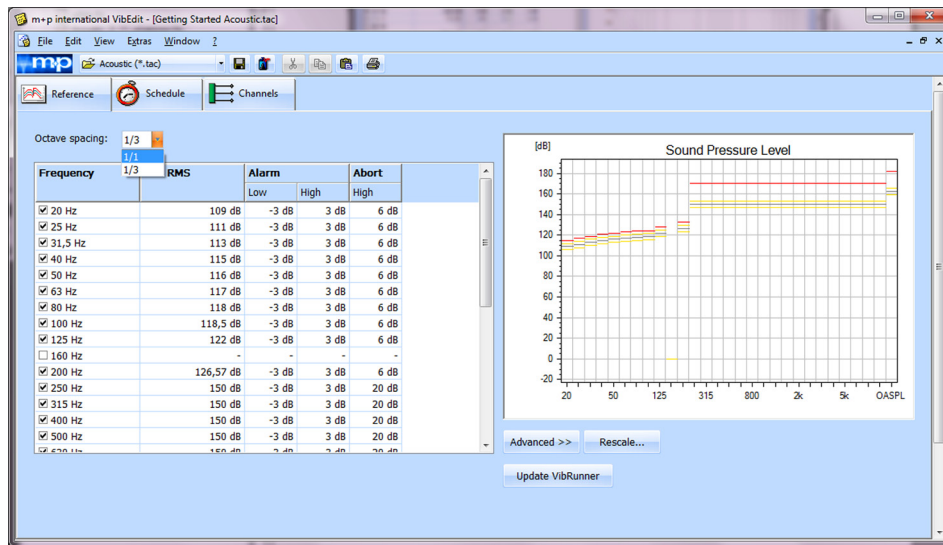
- All input channels as control or measurement channels
- Control on all input channels with average, maximum or minimum control strategy
- Equalizer allows modifying the noise spectrum during the ongoing test
- Channels can be recalibrated during the test run

Test Set-Up & Test Run

The test set-up for acoustic mode is very intuitive and easy to use. It is split into three separate parts: reference spectrum editor, level schedule and channel information. Typical set-up parameters like reference spectrum, channel descriptions, channel sensitivities, etc. can easily be copied and pasted from any Acoustic Control program part using the Microsoft Windows clipboard. Also complete column copy & paste of data series is supported.

While the test is running, all information important to the closed-loop control can be seen at a glance for fast and direct monitoring. Routine testing is done by simple automatic controls. The test safety is assured with microphone signal validation, alarm/abort octave band checks, alarm/abort OASPL checks and drive level limit checks.

Microphones are easily calibrated with standard pistonphone 124 dB SPL at 250 Hz while all input channels can also be recalibrated during the test run using the calibration tool. The equalizer tool enables you to modify the previously defined reference octave spectrum during the ongoing test by varying the gain of the octave spectrum or altering specific points of it. These changes will be applied as live update or later with enabled or disabled control loop. A date and time stamped test log is created showing details of all test events chronologically.



Test definition reference in 1/3 or 1/1 octave bands

- Closed-loop digital acoustic control
- Control bandwidth from 20 Hz to 10 kHz, easily tuned control algorithm achieves optimum chamber performance
- Storage and re-use of equalized drive signals for faster control
- 40 microphones for control and/or measurement (more on request)
- Built-in microphone calibration for a single or multiple microphone input at the same time
- OASPL over time displays in VibRunner and VibPostTest
- OASPL over time window for each channel and the average control channel
- Time data and PSD displays in VibRunner and VibPostTest
- Automatic microphone drop-out detection
- Average and extreme control strategy of multiple microphone inputs
- Automatic OASPL calculation from reference octave band entries
- Online display of the OASPL of the control spectrum and all individual microphone input octave spectra
- True digital time domain octave analysis for fast and accurate control, with online 1/3 and 1/1 octave spectrum displays
- User-defined octave band analysis time constant
- Rescaling (dampening or amplifying) the complete spectrum ranging from 20 Hz to 10 kHz
- Test safety assured with microphone signal verification, alarm/abort octave band checks, alarm/abort OASPL checks, drive level limit check
- User-defined level schedule with pre-test, unlimited steps and looping
- User-defined measurement schedule for data storage during test
- Manual measurement, level up/down, open loop during test (functions can be disabled)
- Interactive real-time programmable output band pass filters during control to increase the performance of the chamber, strongly reducing the necessity to buy a different set of horns

Post-Processing and Reporting

The software's post-testing includes extensive data handling, analysis, single and multiple data graphing and custom report formatting including company logo or other custom styles. High-quality reports are completed easily and quickly. The multiplot function extends the post-test analysis even further with the ability to display and plot data from several test runs. Data filtering is available to quickly select the most relevant data from all that was stored during the test. Data and graphics can be copied and pasted to Microsoft Office applications. For even more advanced analysis and reporting functionality, all acoustic testing results can be directly exported to the m+p Analyzer package.

Peak value analysis

- Peak values will be marked automatically in the graphics and listed with their numerical data in a table

Graphical and numerical measurement and reference data analysis

- Control and response spectra with reference, alarm, abort limits and OASPL
- Response spectra displaying time domain, PSD, octave and OASPL over time data
- Error
- Drive

Printouts

- Data representation in 2D and 3D graphical displays
- Multiplot: Displaying and printing several traces in one graphic
- Autoplot: Automatically printing a preselected series of graphics
- Printing a list of preselected test parameters
- Printing directly to Microsoft Word using a customer defined template

Reporting

- Interface to m+p Analyzer software for comprehensive analysis and reporting
- Acoustic Reporting for analyzing the stability of each octave band during the test (optional program to be purchased by m+p Analyzer customers)
- One-click printing to a Microsoft Word document of all or a selection of result data
- Copy and paste of all or a selection of result data to Microsoft Excel for matrix analysis
- Export of all or a selection of result data in Universal File Format
- Export of complete binary result file into ASCII file

Operating System

- Microsoft Windows XP Pro, Windows 7 Pro and Windows 10 Pro 32 or 64 bit

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